

Serving the CoCo Community for

# RAINBOW<sup>®</sup>

10  
YEARS

THE COLOR COMPUTER MONTHLY MAGAZINE

July 1990

Canada \$4.95 U.S. \$3.95

## Birthday Party

with games, puzzles and more



Includes WYSIWYG Labeler  
OS-9 Passwords  
and our annual index





# SUNDOG SYSTEMS

## Sinistaar



Sundog Systems proudly presents the first 512K arcade game available for your CoCo III! If you don't have 512K, you will want to get it just for this game! The evil Sinistaars have invaded the galaxy and it falls to you to destroy them. These fiends will attempt to hold you with a constant barrage of drone ships while they muster their strength, and eventually find and obliterate you. Your mission is to mine the myriad asteroids in search of the precious ore which can be refined into sinibombs, your only weapon against the Sinistaars. Many surprises await as you advance through the increasingly difficult stages. Experience the fast-paced action of 512K packed with spectacular graphics, sound effects, and voices! Dozens of stages will keep you coming back for more. Req. 512K CoCo III and disk drive.

**\$34.95**

## Paladin's Legacy



Years after the mysterious hero called the Paladin disappeared, loathsome creatures, spawned from the bowels of the planet, have overrun the land of Tarinth and captured the king. The situation is grave, for without the king's influence, the three nations will not unite against the growing evil. Only one pure of heart can master the five magics and thereby fulfill the Paladin's legacy and save the realm. Adventure into this vast land of fantasy. Interact with its inhabitants, explore the ruinous mines, and do battle with supernatural forces. Experience the magic of the quest in this fast-paced role-playing adventure, all in the familiar quick scrolling, bird's eye play format. You will love the feeling of playing an action game with great graphics, animation, and sound effects, but all the while solving one of the most involved adventures yet. Tarinth awaits its savior! Available for all CoCo models! Req. 64K CoCo and disk drive.

**\$24.95**

Visa, Mastercard, Check, Money Order, and COD (USA only, please) accepted. All foreign orders must be sent in US currency Money Orders. Include \$2.50 for shipping in USA and Canada. \$5.00 Foreign. \$3.00 extra for COD orders. PA residents add 6% sales tax. Dealer inquiries welcome. Authors: we're looking for new software!

## Kyum-Gai To Be Ninja



Something is killing off the members of the legendary order of Kyum-Gai. In desperation, its leaders have called upon the powers of the life stone to resurrect you, their greatest hero: the NINJA GAI-DAN. Now, you must find and destroy the evil forces behind this dark plot. Use a multitude of martial arts moves to defeat your enemies, obtain treasure and weapons, and evade obstacles. *Kyum-Gai: to be Ninja* uses the most detailed 320x200 resolution, 16 color graphics, the highest quality digital sound effects, and spectacular animation to bring you the greatest martial arts game your CoCo III has ever seen. Created by the author of *Warrior King*, this incredible arcade game is a definite must for your CoCo III software collection. Join the ranks of the Kyum-Gai and find out what it means to be Ninja! Req. 128K CoCo III, disk drive, and joystick (2-button joystick supported).

**\$29.95**

## SOUNDTRACK



SoundTrack is an unprecedented sound sequencing system for the CoCo III. It requires no extra hardware (i.e. midi keyboards, cables, etc.). All of it is contained in your CoCo. This amazing program will read in a digitized sound and play back all of the notes in the octave in which it was recorded. And it's POLYPHONIC! You can sequence up to four voices at one time, and not only the same sound! With as many voices as can be held in your memory, depending on the song, you can create a score of up to THREE DAYS in length using drums, horns, strings, even your own voice! And you can play them all together! Using the built-in windowing point-and-click editor, you can cut, paste, even synchronize the score to just the way you like it. Use the pre-sampled sounds from the disk included, or make your own by importing them from some of the more popular digitizers available. Also, CALL for the availability of extra sound sample disks! Get it today: you won't believe your ears! Req. 128K CoCo III, mouse/joystick, and disk drive.

**\$34.95**

## ALSO AVAILABLE:



In Quest of the Star Lord  
128K CoCo III. \$34.95  
Hint Sheet: \$3.95



Warrior King  
128K CoCo III. \$29.95



Kung-Fu Dude  
64K CoCo. \$24.95

- Hall of the King I, II or III \$29.95 each
- Champion \$19.95
- Dragon Blade \$19.95
- White Fire of Eternity \$19.95
- Hall of the King Trilogy \$74.95

\*All require 64K CoCo.



21 Edinburg Drive • Pittsburgh, PA 15235 • 412/372-5674



# PCM

The Premier Personal Computer Magazine for Tandy® Computer Users

Not only does Tandy produce our favorite CoCo, we think it produces the best portable and MS-DOS computers as well. We've found that when satisfied Color Computer users decide to add portability or MS-DOS to their computing habits, many stick with Tandy. For these people we publish PCM, The Premier Personal Computer Magazine for Tandy Computer Users.

Each month in PCM, you'll find information and programs for the Tandy 100, 102 and 200 portable computers. And you'll find even more coverage for Tandy's MS-DOS machines — from the graphics of the 1000 to the power of the 5000.

## PROGRAMS AND PROGRAM DISKS!

We learned from THE RAINBOW that readers want programs to type in, so each month we bring you an assortment of them: games, utilities, graphics, and home and business applications. For those who don't have time to type in listings, we offer a companion disk with all the programs from the magazine. Also included in PCM each month is the *Software Shopper*, an "onmail" database service from which you can order the latest shareware products from our Delphi databases for Tandy MS-DOS and PC users — even if you don't have a modem!

## TUTORIALS AND PRODUCT REVIEWS!

As if all this weren't enough, we offer regular tutorials on *DeskMate*, telecommunications and hardware; assembly language, BASIC and PASCAL programming tips; and in-depth reviews of the new software, peripherals and services as they are released. Add it all up and we think you'll find PCM to be the most informative and fun magazine for this market today!

**YES!** Please send me a one year (12 issues) subscription to PCM for only \$28.\* A savings of 22% off the newsstand price.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

ZIP \_\_\_\_\_

In order to hold down costs, we do not bill.

My check in the amount of \_\_\_\_\_ is enclosed.

Charge to my:

☐ VISA    ☐ MasterCard    ☐ American Express

Acct. # \_\_\_\_\_

Exp. Date \_\_\_\_\_ Signature \_\_\_\_\_

To order by phone (credit card orders only) call 800-847-0309, 8 a.m. to 5 p.m. EST. For other inquiries call 502-228-4492.

\* Canadian subscribers U.S. \$38. Surface rate elsewhere \$64, airmail \$85. Allow 6 to 8 weeks for first copy. Kentucky residents add 5% sales tax. U.S. currency *only*, please.

**Mail to: PCM, The Falsoft Building, P.O. Box 385, Prospect, KY 40059**



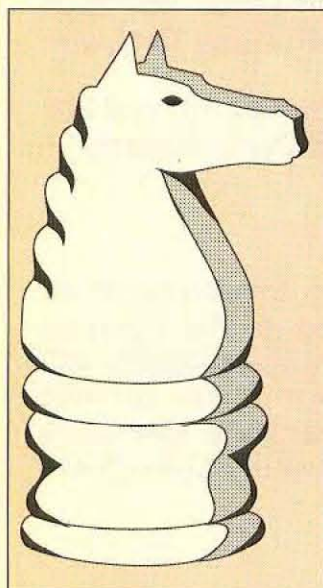
### Features

10

#### Handy Labeler

Timothy W. Hart  
Good-looking labels for a variety of applications

90



28

#### Just Between Terminals

Jeff Steidl  
An action-strategy game in which you play the role of a data communications chip

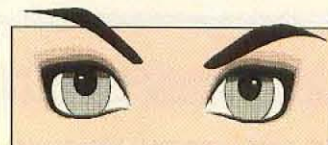
32

#### For Your Eyes Only

Stephen Goldberg  
Logon protection for the single-user OS-9 system



The cassette tape/disk symbols beside features and columns indicate that the program listings with those articles are on this month's RAINBOW ON TAPE and RAINBOW ON DISK. Those with only the disk symbol are not available on RAINBOW ON TAPE. For details, check the RAINBOW ON TAPE and RAINBOW ON DISK ad on page 18.



32

36

#### Do-It-Yourself Database, Part IV

Richard Perlman  
Making reports for your bills, checks and deposits

61

#### Quick Tips

Ernest Zore  
Programming hints

64

#### The Ninth Year of RAINBOW

Kelly Goff  
An index to the articles, programs and reviews of the past year

90

#### Knight's Errant

James Stakelin  
Do in' the white/black knight shuffle

### Product Reviews

#### In the Limelight

Barbarian Quest/SPORTSware \_\_\_\_\_ 83

C3 Fonts/Coless Software \_\_\_\_\_ 78

DMP-PIC Utility/Second City software \_\_\_\_\_ 80

Joy/B&B Software \_\_\_\_\_ 76

Killer Hawk/B&B Software \_\_\_\_\_ 80

Morse CW/Second City Software \_\_\_\_\_ 74

Presto Partner/Alpha Software \_\_\_\_\_ 78

Seventh Link/Oblique Triad \_\_\_\_\_ 74

Space Raiders/Second City Software \_\_\_\_\_ 79

Wild&MV Version 2.1/Burke & Burke \_\_\_\_\_ 77

### Departments

Advertisers Index \_\_\_\_\_ 96

Back Issue Info \_\_\_\_\_ 42

Corrections \_\_\_\_\_ 53

Letters to Rainbow \_\_\_\_\_ 6

Scoreboard \_\_\_\_\_ 46

Scoreboard Pointers \_\_\_\_\_ 47

Received & Certified \_\_\_\_\_ 82

Submitting Material \_\_\_\_\_ 16

Subscription Info \_\_\_\_\_ 76

### Columns

20

#### Barden's Buffer

William Barden, Jr.  
Son of perplexing puzzles

26

#### BASICally Speaking

Larry Boeldt  
Error-trapping troubles

72

#### BreakPoint

Greg Law  
The missing link

58

#### CoCo Consultations

Marty Goodman  
Just what the doctor ordered

62

#### Database Report

Eddie Kuns  
Binary potpourri

86

#### Education Notes

Steve Blyn  
Search the world over

48

#### KISSable OS-9

Dale Puckett  
Loan procedures for MVFinance

8

#### Print#-2,

Lawrence C. Falk  
Editor's notes

54

#### Wishing Well

Fred Scerbo  
Old game, new twist

92

#### Wrapping the Rainbow

Cray Augsburg  
Debugging THE RAINBOW

THE RAINBOW is published every month of the year by FALSOFT, Inc., The Falsoft Building, 9509 U.S. Highway 42, P.O. Box 385, Prospect, KY 40059, phone (502) 228-4492. THE RAINBOW, RAINBOWfest and THE RAINBOW and RAINBOWfest logotypes are registered 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 385, Prospect, KY 40059. Authorized as second class postage paid from Hamilton, Ontario by Canada Post, Ottawa, Ontario, Canada. • Entire contents copyright © by FALSOFT, Inc., 1990 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. • Tandy, Color BASIC, Extended Color BASIC and Program Pak are registered trademarks of the Tandy Corp. • Subscriptions to THE RAINBOW are \$31 per year in the United States. Canadian rates are U.S. \$38. Surface mail to other countries is U.S. \$68, air mail U.S. \$103. All subscriptions begin with next available issue. • Limited back issues are available. Please see notice for issues that are in print and their costs. Payment accepted by VISA, MasterCard, American Express, cash, check or money order in U.S. currency only. Full refund after mailing of one issue. A refund of 10/12ths the subscription amount after two issues are mailed. No refund after mailing of three or more magazines.





# ◀◀ GIMMESOFT ▶▶



A new generation of Color Computer products

## V-Term Terminal

-Vax, Unix, Mainframe, and BBS systems  
-Vt-100, Vt-52, Vidtex & Ascii emulations  
-Serial port to 2400, RS-232 to 19,200 baud  
-XModem, XModem-CRC, YModem, ASCII  
-15 entry autodial, 10 programmable macros  
Disk (128k or 512k CoCo 3 only) .... \$39.95

## Telepak II RS-232

A Truly Compatible RS-232 Interface!  
It comes with a 3 foot DB25 cable, gold edge contacts, and low power drain (5v) components.  
Telepak II & Manual ..... \$49.95



## Xport NOW IN STOCK!

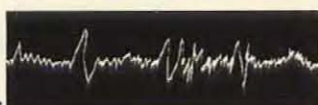
The replacement for the Multi-Pak Interface is here! Xport is just that, an extended port interface that is buffered (unlike a Y-Cable), has 3 ports (2 switchable), and has it's own 12v supply for those devices that require it. Xport is made with the same quality & workmanship as Telepak II

Reg. \$79.95 Introductory price \$74.95

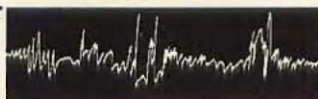
## Turbo 512k Ram

-Fully assembled and tested board  
-Premium 120ns 256x1 memory chips  
-Easy to follow instructions  
-Fast and easy installation  
-Complete with 512k software  
-RamDisk, RamTest, & Print Spooler

512k board w/software ... \$89.95  
0k board w/software ... \$34.95



## Studio Works Digital Audio Sampler



## Studio Works Pro

NEW! CD Quality samples up to 35k by 8 bits! Supports 1 MEG systems! Optional MIDI, MIC, and DC inputs!  
Disk Only - \$38.95 With Cable - \$53.95  
With CD Quality ADC 8 bit Rom Pak - \$94.95

## Soundtrax

The perfect partner for Studio Works! Soundtrax is a sound sequencing system that imports digitized audio samples & provides total control. For CoCo 3, mouse/joystk, & disk .... \$34.95

## Zenix



## Games

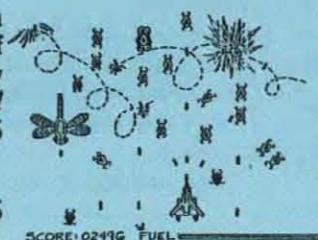
An extremely fast and exciting arcade style game with 32 levels of play! You must Blast your way through a race of spacefaring insectoids and ultimately reach & destroy their planet, ZENIX! For CoCo 3, joystk & disk ... \$29.95

### Kyum-Gai: to be Ninja

For CoCo 3, joystk, & disk ... \$29.95

### Warrior King

For CoCo 3, joystk, & disk ... \$29.95



## Zenix

## Those Darn Marbles

This NEW 512k only, arcade style, 3D marble game features extra smooth, hardware screen scrolling, great sound effects, and almost 1 meg of graphics to produce incredible CoCo 3 action! 512k CoCo 3, joystk, & disk .. \$31.95

### Sinistaar 512k

For CoCo 3, joystk, & disk ... \$34.95

### Paladin's Legacy

CoCo 1,2,3, joystk, & disk ... \$24.95

CoCo 3 \$29.95



## Suprfile III

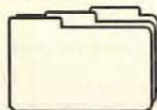


MS/Dos \$39.95

**Suprfile III** is a powerful, user friendly, easy to use, multi-purpose database! It can be used for Mailing lists, Labels, a Checkbook Manager, Shopping lists, Personal items inventory, Audio/Video lists and on and on! Features: Add, Delete, Search, Sort, Print Labels & Reports.

**Fkeys III** (CoCo 1,2, 3) ..... \$19.95

**Sixdrive** (CoCo 1,2, 3) ..... \$16.95



**Locking Plates** (CoCo 2 or 3) \$7.95

**Multi-Label III** (CoCo 3 only) \$16.95

Toll Free

1-800-441-GIME

Order Line

Free 2ND AIR from Midwest to California  
Orders: 9am to 9pm Eastern time  
On-line orders: Delphi's CoCo Sig  
Inquiries & technical assistance: 7pm to 9pm:

GIMMESOFT  
P.O. Box 421  
Perry Hall, MD 21128  
301-256-7558

Add \$3.00 for shipping and handling  
Add \$3.00 for COD (USA only)  
MD residents add 5% sales tax  
VISA/MC/Check/Money Order/COD



## The Rainbow

**Editor and Publisher**  
Lawrence C. Falk

**Managing Editor** Gray Augsburg  
**Associate Editor** Sue Fomby  
**Copy Editor** Kelly Goff  
**Copy Assistant** Theresa Johnson  
**Submissions/Reviews Editor** Tony Olive  
**Technical Editor** Greg Law  
**Technical Assistants** Ed Eilers, Gregory Shultz  
**Editorial Assistant** Julie Hutchinson  
Wendy Falk Barsky  
**Contributing Editors**  
William Barden, Jr. Steve Blyn  
Tony DiStefano, Martin Goodman, M.D.  
Dale Puckett, Fred Scarbo  
**Art Director** Heidi Nelson  
**Designers** Sharon Adams, O'Neil Arnold,  
Teri Kays  
**Consulting Editors** Judi Hutchinson,  
Lauren Willoughby  
**Typesetter** Debbie Diamond

### Falsoft, Inc.

**President** Lawrence C. Falk  
**General Manager** Bonnie Frowenfeld  
**Asst. General Mgr. for Finance** Donna Shuck  
**Admin. Asst. to the Publisher** Kim Thompson  
**Editorial Director** John Crawley  
**Senior Editor** Jutta Kapthammer  
**Director of Production** Jim Cleveland  
**Chief Bookkeeper** Diane Moore  
**Dealer Accounts** Judy Quashnock  
**Asst. Gen. Manager For Administration**  
Sandy Apple  
**Corporate Business Technical Director**  
Calvin Shields  
**Word Processor Manager** Patricia Eaton  
**Customer Service Manager** Beverly Bearden  
**Customer Service Representative**  
Carolyn Fenwick  
**Chief of Printing Services** Melba Smith  
**Dispatch** Tim Whelan  
**Business Assistant** Laurie Falk  
**Chief of Building Security and Maintenance**  
Lawrence Johnson  
**Development and Advertising Manager**  
Ira Barsky  
**Advertising Representatives** Belinda Kirby,  
Kim Vincent  
**Advertising Assistant** Debbie Baxter  
(502)228-4492

For RAINBOW Advertising and  
Marketing Office Information,  
see Page 96

Cover illustration by Heidi Nelson

# Letters to the RAINBOW

## One Little Quirk

**Editor:**

We bought *Label Designer* and *CoCo Graphics Designer Plus* from Zebra Systems at RAINBOWfest in Chicago. Both programs are excellent and do what they claim to do; however, we found one quirk. We could not get the pointer to access certain functions while it is on the screen. We called Zebra and talked to a technician there. He said the left joystick port or the digital/analog converter could be faulty. He suggested we write some BASIC code to see if the port could read all the possible values (0 through 63).

We also had the Tandy Hi-Res interface plugged in the right joystick port while we were using the programs. It states in the CoCo 3 manual that to read the left joystick port, a program must first read the right joystick port even if you aren't using it. Apparently having that interface plugged in at the same time messes up the ability to read the left one properly.

When you are not using the Hi-Res interface for a program, disconnect it first before calling the software company with a complaint. It might save you a few cents for the long distance call.

Mr. and Mrs. Greg Adams  
Sterling, Illinois

## How Much Memory?

**Editor:**

I have a simple question. Printed on the top of my CoCo 3 is 128K. When I type in PRINT MEM after I start up my system, the computer returns the number 22824. Just how much memory do I have?

Deanna Andresen  
Kernjvill, California

A common question with CoCoists. You have 22,824 bytes free for storage of BASIC programs. The rest is used for other features. Refer to "Barden's Buffer" (May 1990, Page 78) for more details.

## Calendar Update

**Editor:**

One of my favorite printer programs is William J. Holdorf's *Calendar* (January

'88), but I have always found it inconvenient to have to print twelve calendar diary pages at once.

To print a single sheet for a given month (1 through 12) in any year, delete lines 1320 and 1430, and enter the following lines into the listing:

```
1185 PRINT@352:PRINT@355,"WHAT M
ONTH (1-12): ";:INPUTMON1
1380 IFAN$="END"THEN1440
1760 FORMZ=MON1 TO MON1+2
1825 END
```

Keiran Kenny  
Cremorne, Australia

## Warning: Static Electricity

**Editor:**

Thank you for the help that I have received from reading *THE RAINBOW* over the last year. Everything from one-liners to machine language and OS-9 programs has taught me something.

I would also like to thank one of your advertisers, Dave Myers, who offered me some helpful advice concerning a 512K board purchased from another vendor. Inasmuch as it is possible that the first board was damaged by static electricity while I examined it, before installing it under static-free precautions, it would be most helpful if sellers of 512K boards would prominently display warnings on the packaging for the benefit of purchasers who are not electronics sophisticates.

David Baker  
Athens, Georgia

## Looking for a Good Book

**Editor:**

Recently, while rummaging around a pawn shop, I found a CoCo 2 system complete with a Multi-Pak Interface; Model 26-3024. The factory seal on the Multi-Pak had never been broken, so I went ahead and paid \$10 for it. Which issues carry articles or letters about modifying that model Multi-Pak for use with the CoCo 3 and OS-9 Level II? Do the upgrades advertised in the magazine come with instructions? And what problems, if any, can I expect once the upgrade is complete?

(continued on page 94)



## CIII Pages



by Walter Bayer

The *ultimate* **desktop publishing** program for the CoCo 3. Pull-down menus, icons & dialog boxes, drawing tools (create boxes, polygons, rays, circles, ellipses, brush shapes), cut, copy, stamp, paste, zoom, flip, enlarge/reduce, rotate, stretch, undo, import any ASCII text, 2/3 columns & page preview. Includes 14 fonts & 60 pieces of clip art. Req. CoCo 3, RGB/ Monochrome Monitor, Min 1 drive, Tandy Hi-Res Interface, Joystick/mouse & DMP 105/106/Epson/Gemini & Compatible Printer. Only \$49.95. w / Hires Interface Only \$59.95.

## CoCo Graphics Designer Plus

Create beautiful greeting cards, signs and banners for holidays, birthdays and other occasions. Features easy-to-use point and click interface and user-friendly operation. Picture, font and Border collections included. Only \$29.95 (Req CoCo 2/3, disk drive, mouse or joystick, Printers: EPSON, GEMINI, Star, DMP, Panasonic KXP 1080/90/91/92, Citoh 8510, Okidata 92/93/182/183 & more)

**Picture Disk #2, #3, #4: \$14.95 each**

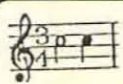
**Font Disk A,B: \$14.95 each    Border Disk #1: \$14.95**

### Label Designer

Print Labels with text and graphics; mail merge option; disk directory option; easy to use interface. Only \$34.95

## Color Schematic Designer Ver 2.0

The **best Circuit Designer** for the CoCo 3. Pull Down Menus, hi-resolution symbol sets, Keyboard / Mouse / Joystick (with proportional cursor speed system), lightning fast multiple UNDOs, Symbol Add / Modify / Rotate/Line/Box Draw, Hi-res Fonts, workspace of 640 x 1000 pixels, 3 layers, font styles (fancy, italic, block, computer, etc). Supports DMP/ EPSON / GEMINI & compatible printers. Supports **near laser quality printouts** on almost all EPSON Compatibles! Only \$39.95. CSD 1.1 / 1.2 owners can upgrade to version 2.0 by sending \$10 with proof of purchase. (See Review in September 1989 Rainbow)



## MUSIC

**Musica II:** Best Music Composition program for the CoCo 1,2 & 3. Disk Only \$29.95

**Lyra:** MIDI Based Music Composition program for CoCo 1,2 & 3. Disk Only \$49.95

**The Lyra Companion (Book): \$9.95**

**CoCo Midi 3 Hardware:** Sophisticated MIDI sequencer / recorder. Only \$99.95

**CoCo Midi 3 Software: \$59.95**

Max 10: \$39.95

Spelling Checker for Max 10: \$29.95

Max 10 Fonts (36 fonts): \$29.95

CoCo Max III: \$49.95

CoCo Max III Fonts (95 fonts): \$49.95

Max Edit (Font Editor): \$19.95

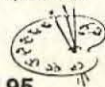
NX1000 Rainbow Driver: \$19.95

CGP 220 Driver: \$19.95

CoCo Max II: \$69.95

CoCo Max I (Tape): \$59.95

MAXPATCH: Run Max 2 on 3. \$19.95



## VIP CALC III

Best Spreadsheet for CoCo 3. \$69.95

## VIP DATABASE III

Best Database for the CoCo 3. \$69.95

## DISTO 1 MEG UPGRADE KIT

- Upgrade your CoCo 3 to 1 MEG!
- Kit Includes 512K Memory and necessary Hardware
- Includes OS9 Drivers by Kevin Darling
- Requires 512K CoCo 3 and soldering experience.

**Zero K Kit: \$159**

**1 MEG Kit: \$199**

## CEBBS (By Kevin Berner)

Features Xmodem Up/Downloading, menus, login, message base, clock/ calendar, execution of external programs. fullSysop control & remote system access. Even HYPERIO Compatible. Only \$49.95. Min Req. CoCo 3, 1 Drive, & RS232 Pack.

## DOS

**EXTENDED ADOS 3:** Here it is! Highly acclaimed DOS from Spectrosystems with built-in Ram-disk & Point-and-pick & much much more. \$39.95  
Driver for Disto RTC: \$5    28-pin Adapter: \$10

Smartwatch RTC: \$34.95    Drivers: \$10

**ADOS 3: \$39.95    ADOS: \$27.95**

**Eprom Burning Service: \$12+ Eprom**

**RGB DOS:** Supports double sided drives, up to 2 hard drives & more. Epromable. \$29.95

**OS9 Hard Disk Drivers Plus Hard Disk Boot: Only \$19.95**

## PRINTERS



**NX1000 Multifont II: \$199**

**Panasonic KXP1180: \$209**

**NX1000 Rainbow 9 Pin: \$249**

**NX2400 24-pin Printer: \$349**

**Panasonic KXP1124 Printer: \$369**

(Please Include \$8 S&H for Printers)

**Serial to Parallel Interface: \$44.95**

## CoCo Util II

Transfer Basic Programs & ASCII Files between CoCo & IBM. Req DOS 3.2 or lower. Req. IBM Compatible w/ 2 drives. Only \$39.95

## Xenocopy

Allows you to format/ duplicate / read/write disks between 300 different computers; for ex. between CoCo, IBM, NEC, etc. Requires IBM Compatible w/ 2 drives. Only \$79.95



**MICROCOM SOFTWARE** 2900 Monroe Ave, Rochester, NY 14618

To Order: Refer to Page 17 of our 6-page series (Pg. 7-17).

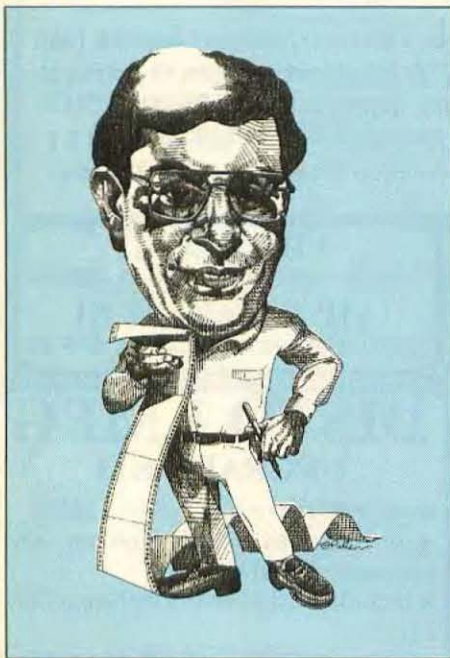
**Credit Card Toll Free Orderline: 1-800-654-5244**  
(9AM-8PM 7 Days/week)

Tech. Info (Between 4-8pm), Order Status, Info: 716-383-8830. Fax: 716-383-0026.





# Happy Anniversary!



the Las Vegas Hilton on the final day of the Consumer Electronics Show. He had promised his wife they would go off and do something she considered "fun" since he had spent the previous several days walking miles and miles through the convention hall looking at gadgets.

I was surprised when I met Barry. I had talked to him on the telephone one or two times, never for very long, and was expecting a hulking bear of a person. It took a moment to digest the thin guy in the cowboy boots was really him.

Our "about 15 minutes" seemed to expand into about four hours without being noticed by either of us. As it turned out, only the fact that he had a plane reservation back to Ft. Worth brought the "meeting" to a close. And Barry was "in trouble" — his wife never got to the "fun" part of the trip.

From what I hear from others, Barry was "in trouble" at other times, too, simply due to the fact he for years and years was among the major champions of the Color Computer, its peripherals, its software. Although Barry Thompson did not "design" the original CoCo, he oversaw changes which were made, planned enhancements, encouraged software developers by the carload and, even, some magazine publishers.

While what I have heard would make it unfair to say that Barry Thompson carried the torch alone without the help, encouragement and support of men such as John Roach, Tandy's president and CEO, and Bernie Appel, Radio Shack's president, it was Barry Thompson who kept the Color Computer a dynamic, growing, affordable computer system for hundreds of thousands of people for longer than any single computer system in history.

When Wayne Green, who used to publish a magazine called *80 Micro*, predicted early on in the CoCo's history that the computer would be scrapped, I called Barry Thompson and asked him about it. "As long as I have this job," he told me, "we will be building Color Computers." I wrote that

Green was wrong. Barry still had his job years later. So, I was right.

Today Barry Thompson has assumed a new challenge directing the direct order software program for Tandy Corporation and the "new" Color Computer is a product of third party developers. They are all building on an owner base established by Barry Thompson through almost a decade during which his official title was "buyer" or "line manager" for CoCo.

Barry Thompson performed his job with dedication, brilliance, intelligence, fore-



sight and an incredible understanding of what made and makes the CoCo Community tick. Although I coined the phrase "CoCo Community," Barry Thompson is its founder, father and guiding light.

Any one who has ever touched the keyboard of a Color Computer, whether to just "fool around," play a game, do real work or write programs, owes Barry Thompson an immeasurable debt of thanks. His job wasn't an easy one, but he did it with intense interest, real devotion, gentle good humor and won simply thousands of friends both in and out of Tandy Corporation in the process.

Thank you, Barry Thompson. From all of us.

— Lonnie Falk

**H**appy Birthday CoCo and thank you, Barry Thompson.

This month's issue marks the ninth anniversary of THE RAINBOW and the beginning of our tenth year of service to the CoCo Community. It also comes at a time when some new, non-Tandy, options are becoming available to the CoCo Community and that, naturally, is a major plus for all of us who are totally enamored with the Color Computer, its abilities, capabilities and cost-effectiveness.

You will read more about this in Dale and Esther Puckett's upcoming book on the history of the Color Computer, which we will publish this fall, but the truth is it would be totally unfair to let this particular moment in time go by without thanking Barry Thompson for being the guiding force he has been in the development and continued support of the CoCo from its infancy through today.

It was January of 1982 when Barry and I met "for about 15 minutes" in the bar of



...Just think of any word processing feature, chances are Word Power has it...packs a lot of features...excellent word processor..." **Word Proc. Comparison**-April 1989 Rainbow; Pg 26.



# Word Power 3.3

## The Best Just Got Better!

"...friendly...amazing execution speed...much easier to use than VIP software & 2 other systems I've tried...very user friendly...highest among word-processors"-Rainbow Oct 88 Rev.



### SPEED

Blazing Fast! Runs at **2 Mhz** and uses the standard text screens for lightning fast execution.



### MEMORY

Word Power 3.3 allows **72K** of workspace on a 128K CoCo and **460K** on a 512K CoCo. More memory than any other word processor. Period.



### DISPLAY

Choice of **40** or **80** columns with your choice of colors. Can be used with RGB/Composite/Monochrome Monitors and TV. Pull down menus, plain english prompts, on-screen underlining and page break display make it a breeze to use!



### EDITING

Powerful full-screen editor w/ word-wrap. 4-way cursor, scrolling; Line Positioning; Block Commands; Search, Replace; OOPs recall during delete, adjustable key-repeat, key-click, typeahead, Tabs, Word-Count and much more! . Built-in extensive **HELP** screen can be accessed anytime during edit.



### SPOOLER

Print and Edit documents at the same time!



### SORTING

Sort lists in a flash!



### GRAPHICS

Insert **graphics** in your documents! Allows you to import PMode 3/4, HSCREEN and CoCo Max II/III pictures!



### CALCULATOR

Built-in 4 function calculator!



### 2 COLUMN PRINTING

Align your text in 2 columns with a few keystrokes!



### SPLIT-SCREEN EDITING

Freeze a portion of text and edit another. Its fantastic!



### SAVING / LOADING

Creates ASCII files that are compatible with other word-processors, terminal programs, etc. Allows directory point & select for easy loading/saving, **Automatic Backup**, file erase, free space display. **ARE YOU SURE?** prompts prevent accidental deletes. The **Auto-Save** feature automatically saves text to disk during user-defined intervals for peace of mind. Supports double-sided drives.



### MACROS

Playback up to 250 keystrokes with a single key! Automate multiple tasks with a single key! You'll love it!



### MAIL MERGE

Type a letter, follow it with a list of names & addresses and have Word Power print out personalized letters. Its that easy!

### SPELLING CHECKER



Word Power 3.3 include a **80,000** word spelling checker which finds and corrects mistakes in your text.



### PRINTING

Works with **all** printers that work with the CoCo. Allows options such as baud rates, spacing, page/print pause, partial print, page numbering/ placement, linefeeds, multi-line headers/footers, right justification and number of copies. The values of these options can be changed in the text by embedding Printer Option Codes. The **WHAT YOU SEE IS WHAT YOU GET** feature allows you to preview the text on the screen as it will appear on the printer. You can view margins, page breaks, justification and more.



### PUNCTUATION CHECKER

This checker will proofread your text for punctuation errors such as capitalization, double-words, a/an usage, spaces and more. Its the perfect addition to any word-processor.



### \$79.95 DOCUMENTATION

Word Power 3.3 comes with a well-written instruction manual & reference card which makes writing with Word Power as easy as pie. Word Power 3.3 comes on an unprotected disk.

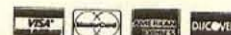
### FREE T-SHIRT

with full order of Word Power 3.3. (Specify Size)

**Upgrade Policy:** Word Power 3.2 owners can get Word Power 3.3 by sending original Word Power disk and \$15 to the address listed below.



**MICROCOM SOFTWARE**, 2900 Monroe Ave, Rochester, NY 14618



All Word Power orders shipped by UPS 2nd Day Air at No Extra Charge in Continental US.

For Detailed Order Information, refer to Page 17 of our 6-page Ad series (Pgs 7-17).

To Place Credit Card Orders Call Toll Free **1-800-654-5244** (9am-8pm 7 days/week)

Technical Support (4-8pm), Order Status, Info, Technical Info; 716-383-8830



# Handy Labeler

by Timothy W. Hart





**F**inally there's a handy labeling utility in a What-You-See-Is-What-You-Get (WYSIWYG) format. Many times I've wanted to make a quick and good-looking label for a variety of applications.

The most popular type of computer labels used today are the 3½-by-1½ inches, one-across. These are easily pin-fed using the tractor-feed of dot-matrix printers. Even if your printer does not have a tractor-feed, I found out that you can effectively feed labels through the platen using only the friction feed of the printer. I originally wrote this program for my DWP-210 printer (for which I do not have a tractor-feed). The DWP-210 is a daisy-wheel printer.

In making Version 2.0, I removed the exclusivity of the program to the DWP-210 so that every RAINBOW reader can take advantage of *Label Maker*. Version 1.0 and 2.0 differ slightly in that 2.0 offers on-screen baud rate and tab settings. Version 2.0 makes some minor improvements over the already excellent Version 1.0.

*Label Maker* requires a minimum of a Color Computer 3, printer and one-across, 3½-by-1½ inch, pin-feed labels. The program is extremely easy to use, with the most used menu selections displayed continuously on-screen. Most all dot-matrix printers default to their 10-pitch setting (pica) on startup, which is required by *Label Maker* since it is set up for 35 characters in

each line and a maximum of five lines per label. If your dot-matrix printer does not default to pica on startup, you need to send the appropriate control codes to it. On daisy-wheel printers, make sure you have the appropriate 10-pitch print wheel installed. On other printers, just make sure they have a setting for 10-pitch (10 characters per

#### Visible Menu Selections

<S>TART LABEL  
<E>DIT LABEL  
<P>RINT

#### Invisible Menu Selections

<B>AUD	baud rate change
<T>AB	tab setting
<C>ENTER	global center
<1>-<5>	local line centering
<Q>UIT	exit program

Table 1: Command Reference

inch) printing.

When you start *Label Maker*, you see below the title and credits a partitioned area of five lines in which to compose your label. Below that are the default baud rate and tab setting. Initially I have set up the printer for 1200 baud and the tab at two character positions.

#### Changing the Baud Rate

To change to default baud rate, simply press B on your keyboard. You hear a tone and the baud rate indicator moves up to the next setting (2400). Keep pressing B until you arrive at the desired baud rate. The baud rates supported by the program are 600, 1200, 2400, 4800 and 9600. If you press B when the current setting indicates

9600, the program cycles back to 600 baud.

#### Changing the Tab Setting

The next setting you will probably need to change for your particular setup is the tab setting. Initially the tab is set for two character positions. The function of the tab is to indent the number of user-defined spaces before printing the label. This feature is provided since labels can be fed into the printer at any location across the platen. You will have to experiment to find the tab setting that works best for you. To change the tab setting, simply press T, and underneath the menu a prompt appears asking you to enter the new tab setting. The allowable range for tab settings provided in this program are from 0 to 999. This should be more than sufficient for any need. After you set the new tab, the screen indicators just below the label work area display the current settings.

#### Building Your Label

Now we are ready to begin the label-making. Take a look at the menu selections. You have <S>TART LABEL, <E>DIT LABEL and <P>RINT. To begin working on a new label, press S. You hear a tone and the cursor is positioned on Line 1. At this point simply compose your label the way you want it to look. Don't worry about making mistakes; you can <E>DIT them later. After you have finished with Line 5, you are returned to the Main menu to begin the next phase of label production. The boundaries for your label composition are set up using brackets as delimiters. Within these brackets, you have 35 characters per line. After you have typed the 35th character the right bracket disappears. Do not type any more characters; just press ENTER. Only the first 35 characters entered onto a line are used.

#### Uppercase and Lowercase

Pressing SHIFT-0 toggles between upper- and lowercase while composing or

*Tim holds a bachelor's degree in computer science from Westminster College in Salt Lake City. He has been working with computers since 1980 and has especially enjoyed his long association with the Color Computer. When not working with his computers, he enjoys photography, classical music and reading. He may be contacted at 7146 Watermill Way, Salt Lake City, UT 84121.*



editing your label. If you are in uppercase, you are toggled to lowercase and vice versa. *Label Maker* can be placed into lowercase mode at the menu with only one keystroke. When you press the CLEAR key at the menu, there is a tone, and the menu selections automatically toggle from one case to the other. This is handy when you want to start your label in any particular case. You then know with which case you are currently working before you press S to start your label. The program indicates what the case was when you finished your last label line and returned to the menu.

You must use SHIFT-0 when you are typing or editing your label. Only use the CLEAR key to toggle the case at the menu. To do so elsewhere in the program does exactly what that key was intended for—it clears the screen. If you accidentally press CLEAR when not at the menu, press BREAK and re-run the program.

### Editing the Label

If you made a mistake or want to redo one or more of the lines in your label, press E at the menu. A prompt appears below the menu, asking you which line you want to edit. Enter a number from 1 to 5. You are now in the Edit mode of the program. You can see the editing window directly below the label area itself. The first line of the window indicates which line you are currently editing. The next line displays a copy of the line to be edited. Below that is a blank line in which you can recompose the line in the label. Simply retype that line and press ENTER when you are finished. You can immediately see the editing window disappear and the change you made appears in the label area. You may edit as many of the lines as you want and each line as many times as you want until you get the desired result.

### Centering the Label

A special feature in *Label Maker* is its ability to center text on a label. This is an extremely useful feature. There are two modes of operation when centering your label: You have the choice between a global center or a local center. If you want to have every line of the label centered, you should use the global feature. To globally center your label, press C at the menu. You are prompted if you want to center all lines. Press Y and your label is automatically centered. Press N if you accidentally pressed C or changed your mind. If you try to globally center the label after the fact, the program prompts you to let you know that the label is already centered. To locally center your label, press the corresponding number key for the line you want centered.

For example, if you want to center line

## The Rainbow Bookshelf

### The Rainbow Book of Simulations

20 award-winning entries from THE RAINBOW's first Simulations contest.

### The Second Rainbow Book of Simulations

The 16 Winners from our second Simulations contest.

### The Complete Rainbow Guide to OS-9

Authors Dale Puckett and Peter Dibble demonstrate OS-9's multitasking and multiuser features.

### The Complete Rainbow Guide to OS-9 Level II Vol.I: A Beginners Guide to Windows

Puckett and Dibble uncover the mysteries of the new windowing environment.

### The First Rainbow Book of Adventures

Contains 14 winning programs from our first Adventure contest.

### The Second Rainbow Book of Adventures

Featuring 24 of the most challenging Adventure games ever compiled.

### The Third Rainbow Book of Adventures

The Excitement continues with 19 new Adventures.

### The Fourth Book of Adventures

Fourteen fascinating new Adventures from the winners of our fourth Adventure competition.

### A Full Turn of the Screw

### The Rainbow Introductory Guide to Statistics

Dr. Michael Plog and Dr. Norman Stenzel give a solid introduction to the realm of statistical processes.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_  
☐ Payment Enclosed, or ☐ Charge to:  
☐ VISA ☐ MasterCard ☐ American Express  
Account Number \_\_\_\_\_  
Card Expiration Date \_\_\_\_\_  
Signature \_\_\_\_\_

<input type="checkbox"/> The Rainbow Book of Simulations (first)	\$ 9.95	\$ 3.50	_____
<input type="checkbox"/> Rainbow Simulations Tape (first)	\$ 9.95	\$ 3.50	_____
<input type="checkbox"/> First Simulations Package	\$19.90	\$ 6.00	_____
<input type="checkbox"/> The Second Rainbow Book of Simulations	\$ 9.95	\$ 4.95	_____
<input type="checkbox"/> Second Rainbow Simulations Tape	\$ 9.95	\$ 4.95	_____
<input type="checkbox"/> Second Rainbow Simulations Disk	\$10.95	\$ 4.95	_____
<input type="checkbox"/> Second Simulations Package with Tape	\$19.90	\$ 8.95	_____
<input type="checkbox"/> Second Simulations Package with Disk	\$20.90	\$ 8.95	_____
<input type="checkbox"/> The Complete Rainbow Guide to OS-9	\$19.95	\$12.95	_____
<input type="checkbox"/> Rainbow Guide to OS-9 Disk Set (2 disks)	\$31.00	\$19.95	_____
<input type="checkbox"/> Rainbow Guide to OS-9 Package	\$47.95	\$29.95	_____
<input type="checkbox"/> The Windows & Applications Disk for The Complete Rainbow Guide to OS-9 Level II, Vol. I		\$19.95	_____
<input type="checkbox"/> The Rainbow Book of Adventures (first)	\$ 7.95	\$ 2.00	_____
<input type="checkbox"/> Rainbow Adventures Tape (first)	\$ 7.95	\$ 2.00	_____
<input type="checkbox"/> First Adventure Package	\$15.90	\$ 3.50	_____
<input type="checkbox"/> The Second Rainbow Book of Adventures	\$13.95	\$ 6.95	_____
<input type="checkbox"/> Second Rainbow Adventures Tape	\$13.95	\$ 6.95	_____
<input type="checkbox"/> Second Adventure Package	\$27.90	\$11.95	_____
<input type="checkbox"/> The Third Rainbow Book of Adventures	\$11.95	\$ 6.95	_____
<input type="checkbox"/> Third Adventures Tape	\$ 9.95	\$ 6.95	_____
<input type="checkbox"/> Third Adventures Disk Set (2 disks)	\$14.95	\$ 7.95	_____
<input type="checkbox"/> Third Adventure Package with Tape	\$21.90	\$11.95	_____
<input type="checkbox"/> Third Adventure Package with Disk	\$26.90	\$12.95	_____
<input type="checkbox"/> The Fourth Rainbow Book of Adventures	\$10.95	\$ 7.95	_____
<input type="checkbox"/> Fourth Adventures Tape	\$ 9.95	\$ 6.95	_____
<input type="checkbox"/> Fourth Adventures Disk	\$14.95	\$11.95	_____
<input type="checkbox"/> Fourth Adventure Package with Tape	\$20.90	\$13.90	_____
<input type="checkbox"/> Fourth Adventure Package with Disk	\$25.90	\$18.90	_____
<input type="checkbox"/> A Full Turn of the Screw		\$19.95	_____
<input type="checkbox"/> Introductory Guide to Statistics	\$ 6.95	\$ 2.95	_____
<input type="checkbox"/> Guide to Statistics Tape or Disk (indicate choice)	\$ 5.95	\$ 2.95	_____
<input type="checkbox"/> Guide to Statistics Package	\$12.90	\$ 4.95	_____
(indicate choice of tape or disk)			
Add \$2 per book Shipping and Handling in U.S.			
Outside U.S., add \$4 per book			
Kentucky residents add 5% sales tax			
(Allow 6 to 8 weeks for delivery)			
Total			_____

FILL OUT  
YOUR COCO  
LIBRARY  
WITH  
THESE  
SELECTIONS

**Mail to: Rainbow Bookshelf, The Falsoft Building, P.O. Box 385, Prospect, KY 40059. To order by phone (credit card orders only) call (800) 847-0309, 8 a.m. to 5 p.m. EST. For other inquiries call (502) 228-4492.**

Please note: The tapes and disks offered by The Rainbow Bookshelf are not stand-alone products. That is, they are intended to be an adjunct and complement to the books. Even if you buy the tape or disk, you will still need the appropriate book for loading and operating instructions. OS-9 is a registered trademark of the Microwave Systems Corporation.



# Programming Secrets Galore

Pokes, Peeks and Execs are your guides into the jungle of computer programming. These commands give you the power of Machine Language without leaving the security of BASIC. Each book is a collection of "inside" information, with explanations and examples to help you immediately put it to use. Everyone from the novice to the professional will find these handy books a wealth of information.

## 300 POKES, PEEKS, 'N EXECs for COCO III

- \*40/80 column Screen Text Dump
  - \*Save Text/Graphics Screen to Disk
  - \*Command/Functions Disables
  - \*Enhancements for CoCo3 BASIC
  - \*128K/512K RAM Test Program
  - \*HPRINT Character Modifier
- Only \$19.95

## 500 POKES PEEKS, 'N EXECs

- \*Autostart your BASIC programs
- \*Disable Color BASIC/ECB/Disk BASIC commands
- \*Disable Break Key/ Clear Key/ Reset Button
- \*Generate a Repeat-key
- \*Transfer ROMPAKS to tape
- \*Set 23 different GRAPHIC modes
- \*Merge two BASIC programs
- \*And much much more!!!

For CoCo 1,2 and 3. Only \$16.95  
ALL 3 BOOKS for: \$39.95

## SUPPLEMENT TO 500 POKES, PEEKS, 'N EXECs

- 200 additional Pokes,Peeks and Execs (500 Pokes Peeks 'N Execs is a prerequisite)
- \*ROMPAK transfer to disk
- \*PAINT with 65000 styles
- \*Use of 40 track single/double sided drives
- \*High-speed Cassette Operation
- \*Telewriter, CoCo Max enhancements
- \*Graphics Dump (for DMP printers)
- /Text Screen Dump

For CoCo 1,2 or 3. Only \$9.95

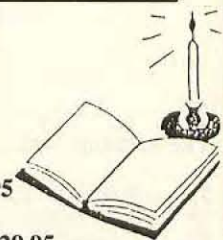
## UNRAVELLED SERIES

An invaluable aid for Basic and Machine Language programmers, these books provide a complete disassembly and annotated listing of the BASIC/ECB and Disk ROMs. These listings give complete, uninterrupted memory maps of the four ROMs. Gain complete control over all versions of the color computer.

- EXTENDED COLOR BASIC UNRAVELLED: COLOR BASIC and EXTENDED BASIC ROM Disassembly: \$39.95
- DISK BASIC UNRAVELLED: DISK BASIC ROM 1.1 and 1.0 Disassembly : \$19.95
- BOTH ECB AND DISK BASIC UNRAVELLED: \$49.95
- SUPER EXTENDED BASIC UNRAVELLED: SUPER EXTENDED BASIC ROM Disassembly for CoCo 3. \$24.95
- COMPLETE UNRAVELLED SERIES (all 3 books): \$59.95

## COCO LIBRARY

- CoCo 3 Service Manual: \$39.95
- CoCo 2 Service Manual: \$29.95
- Start OS9 Book + Disk: \$32.99
- Inside OS9 Level II: \$29.95
- Rainbow Guide To OS9 Level II: \$19.95
- Rainbow Guide To OS9 Level II Disk: \$19.95
- Complete Rainbow Guide To OS9: \$19.95
- Complete Rainbow Guide to OS9 2 Disks: \$29.95
- Assembly Language Programming(tepeco): \$18
- Addendum For CoCo3 (tepeco): \$12
- Color Computer Disk Manual: \$29.95
- Multipak Service Manual (Specify Model): \$19.95
- Disto Turn of the Screw Book: \$19.95



## GAMES

(CoCo 1,2,3 Disk unless otherwise specified; min 32K)

- Warrior King (CoCo 3): \$29.95
- In Quest of the Star Lord (CoCo3): \$34.95 Hint Sheet: \$3.95
- Hall of the King 1,2,3: \$29.95 ea Trilogy: \$74.95
- Kung Fu Dude: \$24.95
- Dragon Blade: \$19.95 Champion: \$19.95
- White Fire of Eternity: \$19.95
- Quest for the Spirit Stone (CoCo 3): \$18
- Sinistaar (512K Req): \$34.95 Kyum-Gai (CoCo 3): \$29.95
- Paladin's Legacy: \$24.95
- Slots & Cards (CoCo 3): \$39.95
- Leisure Suit Larry (512K CoCo 3): \$49.95
- TREASURY PACK #1: Lunar Rover Patrol, Cubix, Declathon, Qix, Keys of Wizard & more. Only \$29.95
- TREASURY PACK #2: Lancer, Ms. Gobbler, Froggie, Madness & Minotaur, Ice Castles, Galagon, Devious. Only \$29.95
- SPACE PAC: Color Zap, Invaders, Planet Invasion, Space Race, Space War, Galax Attax, Anaroid Attack, Whirlybird, Space Sentry & Storm Arrows. Only \$29.95
- Classic Pack: Treasury Pack 1,2 & Space Pac: \$74.95
- Overlord (CoCo 3): \$29



- WIZARD's CASTLE: A hi-res graphics adventure game filled with tricks, traps and treasures. Min 64K. Only \$19.95
- Mine Rescue (For CoCo 3): \$24.95 The Seventh Link: \$38
- Caladuril 2: Weatherstone's End: \$54
- Speed Racer: Buckle your seatbelt and get ready to race in this Pole Position® type game. Only \$34.95
- Pinball Factory: Design, Build, Edit and Play the classic game of Pinball. Min 64K. Only \$34.95
- Demon Seed: Battle the diving & bloodthirsty bats. \$19.95
- Cashman: Explosive color, fast-moving animation and amazing sound-effects! Has over 40 levels! \$29.95
- Fury: An action packed airborne dogfight simulation. \$29.95
- Time Bandit: Fight the Evil Guardians, Killer Smurphs & more. Full animation & over 300 screens. \$29.95
- Rommel 3D: Exciting 3-D Tank Combat Game. CoCo 2.\$34.95
- Outhouse: One of the funniest, most original games. Excellent graphics, sound effects & playability. \$19.95
- Mudpies: Crazy circus fun! Only \$29.95
- Those Darn Marbles: \$32 (Req 512K)



**MICROCOM SOFTWARE** 2900 Monroe Ave, Rochester, NY 14618

To Order: Refer to Page 17 of our 6-page series (Pg. 7-17).

**Credit Card Toll Free Orderline: 1-800-654-5244**  
(9AM-8PM 7 Days/week)

Tech. Info (Between 4-8pm), Order Status, Info: 716-383-8830. Fax: 716-383-0026.









# COCO UTILITIES GALORE

(For CoCo 1,2,3 RSDOS; Min 32K Unless Otherwise Specified)

## Super Tape/disk Transfer

Transfers Tape-To-Disk, Disk-to-Tape, Disk-to-Disk, Tape-To-Tape. Only \$24.95

## Maillist Pro

Add, Edit, View, Print (Select/All), Sort Mailing Labels. Only \$19.95

## Computerized Checkbook

Add, View, Search & Print Checkbook Entries for savings/checking & other accounts. Only \$19.95 \$14.95

## CoCo 3 Screen Dump

32/40/80 column, PMODE 3/4 dump. Take snapshots of screens while program is running! For DMP & Epson/Gemini/Star & Compatibles. Only \$19.95 (CoCo 2 compatible)

## RGB Patch

Displays most graphics in Color on RGB Monitors. For CoCo 3. Only \$24.95

## From GimmeSoft...

FKEYS III: \$19.95  
SixDrive: \$16.95

## Disk Label Maker

Design Professional labels. Allows expanded, normal, condensed text w/ Double-Strike & Borders. Supports DMP, Star, Gemini, Epson & Comp. Printers. Only \$19.95

## Disk Utility 2.1a

Only \$19.95

## Bowling Score Keeper

For Team & Individuals. \$19.95

## Vcr Tape Organizer

Organize your videos. \$19.95

## Home Bill Manager

Organize your Bills. Only \$12.95

## Calendar Maker

Calendr & Appts. Only \$12.95

## From Cer-comp...

**Window Master:** Windowing Environment for CoCo 3. \$69.95 w/ HiRes: \$79.95

**Window Writer:** \$59.95

**Window Basic Compiler:** \$99

**Window ED/TASM:** \$49.95

**Font/Icon Editors:** \$19.95

**Advanced Prog. Guide:** \$24.95

**CBASIC:** Basic Compiler. Specify CoCo 1,2 or 3. Only \$149.95

**The Source:** Best Disassembler. Specify CoCo 1,2 or 3. \$49.95

**EDT/ASM:** Best Assembler. Specify CoCo 1,2,3. \$59.95

## Telewriter 64

Best Word Processor for CoCo 2. Disk: \$57.95 Cas: \$47.95

## Autoterm

Best Terminal Software. Disk: \$39.95 Cas: \$29.95

From Dr. Preble®

**Vocal Freedom:** \$34.95

**Mental Freedom:** \$24.95

**Hacker's Pac:** \$14.95

## From Danosoft...

### DISK UTILITIES

Use all 360K from your double sided drive & more. \$17.95

### MEMORY MASTER

Run 2 programs at once, fix disks, scan, edit memory. \$24.95

### BIG RAMDISK

In memory disk drive. Simulates 80/40/35 track drives. Req 512K. Only \$12.95

## Vterm

Terminal Software w/ VT Emulations and much more. CoCo 3 Only. Only \$39.95

## Basic Windows

By Kevin Berner

Run 6 Basic Programs at the same time! Req. 512K. \$39.95

## Studio Works

Superb Digital Audio Sampler. Great for Special Effects. Only \$39.95. w/ Cable: \$54.95

## Super 88 Utilities

88 must-have utilities for every RSDOS user. Only \$88

## Window Writer

Powerful OS9 word processor with multi-tasking, pull down menus & much more. Only \$59  
**DynaSpell:** 102,000 word spelling checker! Only \$19.95

## RSB v1.3

The revolutionary program that allows you to use Basic under OS9 Level II to take advantage of features. Only \$39.95

## Start OS9

An excellent hands-on guide to OS9 Level II for the beginner. Req 512K, 2 Drives & Monitor. Book & Disk Only \$32.99

## From Alpha Software®

**OS9 Level II BBS V3.0:** The absolute best BBS program for OS9. Even comes with its own terminal Program. Req. 512K & RS232 Pack. Only \$29.95

**Level II Tools:** 25 utilities such as windowing, wildcards, tree and more. Only \$24.95

**Disk Manager Tree:** Change, copy, view, create directories with ease. Req 512K. \$29.95

**Warp One:** Complete Level II Windowing Terminal. Req 512K & RS232 Pack. Only \$34.95

**The Zapper:** Patch Disk Errors. Disk Only \$19.95

**Multi-Menu:** Create your own pop-down windows. Req 512K and Multi-Vue. Only \$19.95

**Presto Partner:** Have a notepad, calculator, calendar, phone book, RT clock & more at your fingertips. 512K Req. \$29.95

## From R3 Systems®

**Screen Control Utility:** Gain Complete control of your text screen. Only \$19.95

**Menuing Utility:** Complete memory resident menuing system. Only \$19.95

**Point & Shoot File Selection:** Only \$19.95

## Multi-Edit

Create, Edit Application Information Files & Icons for Multi-Vue. Only \$24.95

## Transfer Utilities

**GSC File Transfer:** Transfer files from MSDOS / OS9/ RSDOS & Flex. Req OS9 (Level II for Multivue Ver.), 2 drives, SDISK/SDISK3. Standard Version: \$44.95. Multivue Version: \$54.95

**SDISK3:** Standard drive replacement module allows use of 40/80 DS/DD drives. Includes Req. OS9 Level II. \$29.95

**SDISK + BOOTFIX:** \$34.95

**PC-Xfer Utilities:** Programs to format/transfer files to/from MSDOS disks to CoCo under Level 1/2. Req SDISK(3): \$44.95

## OS9 Ramdisk

Blazing fast in-memory disk drive! Req. CoCo 3. Disk Only \$29.95

## Goldberg Utilities

Power-packed utilities w/ 15 useful commands such as sort, lost file location, disk pack & much more. Only \$24.95

**Vol II:** New utilities such as file compare, protection, sort, enhanced delete/move & much more. Only \$24.95.

## From Burke & Burke®..

**File System Repack:** A must utility for every OS9 owner. Unfragments your hard/floppy disk to speed up disk operation and reduce wear on drive heads. Only \$29.95

**Wild & MV Version 2.1:** Use "wildcards" with OS9 & re-arrange directory tree. \$19.95

**EZGen Version 1.04:** Powerful OS9 bootfile editor. Changes names, add/delete modules, patch bytes, etc. \$19.95

## From Frank Hogg®...

**Dynastar:** Most Popular OS9 Word Processor. Only \$99.95

**Both Dynastar & Spell:** \$119.95

**Wiz:** Communications Program. Req RS232 Pack. \$59.95

## From Sugar Software®

**OS9 Calligrapher:** Only \$24.95  
**Calligrapher Massager:** \$19.95

**MICROCOM SOFTWARE** 2900 Monroe Ave, Rochester, NY 14618  
To Order: Refer to Page 17 of our 6-page series (Pg. 7-17).

**Credit Card Toll Free Orderline: 1-800-654-5244**  
(9AM-8PM 7 Days/week)

Tech. Info (Between 4-8pm), Order Status, Info: 716-383-8830. Fax: 716-383-0026.





# Submitting Material To Rainbow

Contributions to THE RAINBOW are welcome from everyone. We like to run a variety of programs that are useful, helpful and fun for other CoCo owners.

**WHAT TO WRITE:** We are interested in what you want to tell our readers. We accept for consideration anything that is well-written and has a practical application for the Tandy Color Computer. If it interests you, it will probably interest lots of others. However, we vastly prefer articles with accompanying programs that can be entered and run. The more unique the idea, the more the appeal. We have a continuing need for short articles with short listings. These are especially appealing to our many beginners.

**FORMAT:** 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 and debug our typing errors. All programs should be supported by some editorial commentary explaining how the program works. We also prefer that editorial copy be included in ASCII format on the tape or disk, using any of the word processors currently available for the Color Computer. Also, please include a double-spaced printout of your editorial material and program listing. Do not send text in all capital letters; use upper- and lowercase.

**COMPENSATION:** 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 wanting more detailed information on making submissions, please send a self-addressed, stamped envelope (SASE) to: Submission Guidelines, THE RAINBOW, The Falsoft Building, P.O. Box 385, Prospect, KY 40059. We will send you comprehensive guidelines.

Please do not submit material currently submitted to another publication.

```

E0,9:PRINT" 3 ";;ELSE IF CF=1 OR
C3=1 THEN LOCATE0,9:PRINT">3<";
3080 LOCATE3,9:PRINT"[
3090 LOCATE4,9:PRINTL$(3);:LOCAT
E39,9:PRINT"]";
3100 IF CF=0 AND C4=0 THEN LOCAT
E0,10:PRINT" 4 ";;ELSE IF CF=1 O
R C4=1 THEN LOCATE0,10:PRINT">4<
";
3110 LOCATE3,10:PRINT"[
3120 LOCATE4,10:PRINTL$(4);:LOCA
TE39,10:PRINT"]";
3130 IF CF=0 AND C5=0 THEN LOCAT
E0,11:PRINT" 5 ";;ELSE IF CF=1 O
R C5=1 THEN LOCATE0,11:PRINT">5<
";
3140 LOCATE3,11:PRINT"[
3150 LOCATE4,11:PRINTL$(5);:LOCA
TE39,11:PRINT"]";
3160 IF LEN(L$(5))=35 THEN 3170
ELSE 3210
3170 LOCATE0,12:PRINTC$;
3180 LOCATE0,13:ATTR0,0,U:PRINTU
$;:ATTR0,0
3190 LOCATE0,14:PRINT"BAUD =";BD
:
3200 IF TB<10 THEN LOCATE31,14:P
RINT" TAB =";TB;:ELSE IF TB<100
THEN LOCATE31,14:PRINT" TAB =";
TB;:ELSE LOCATE31,14:PRINT"TAB =
";TB;
3210 RETURN
3220 '
4000 'CLEAR LABEL LINE VARIABLES
4010 L$(1)=""::L$(2)=""::L$(3)=""::
L$(4)=""::L$(5)=""
4020 RETURN
4030 '
5000 '<P>PRINT LABEL
5010 LOCATE1,22:PRINT"Quantity t
o print ";;INPUTQ:IF Q<0 THEN LO
CATE21,22:PRINT"
";:GOTO 5010;ELSE IF Q=0 THEN L
OCATE1,22:PRINTC$;:GOTO 280
5020 LOCATE1,22:PRINTC$;
5030 LOCATE1,22:PRINT"Ready prin
ter, press <ENTER>";:EXEC&HA171
5040 LOCATE1,22:PRINTC$;:LOCATE1
,22:PRINT"Printing. . .";
5050 FOR I=1 TO Q
5060 PRINT#-2,TAB(TB)L$(1)
5070 PRINT#-2,TAB(TB)L$(2)
5080 PRINT#-2,TAB(TB)L$(3)
5090 PRINT#-2,TAB(TB)L$(4)
5100 PRINT#-2,TAB(TB)L$(5)
5110 PRINT#-2,"":linefeed to re
ady next label
5120 NEXT I
5130 LOCATE1,22:PRINTC$;
5140 RETURN
5150 '
6000 '<C>ENTER LABEL LINES
6010 IF CF=1 THEN LOCATE1,22:PRI
NT"Label centered. Press <ENTER
>";:EXEC&HA171:LOCATE1,22:PRINTC
$;:RETURN
6020 IF (I$="1" AND C1=1) OR (I$
="2" AND C2=1) OR (I$="3" AND C3
=1) OR (I$="4" AND C4=1) OR (I$
="5" AND C5=1) THEN LOCATE1,22:PR
INT"Line centered. Press <ENTER
>";:EXEC&HA171:LOCATE1,22:PRINTC
$;:RETURN
6030 IF I$="C" OR I$="c" THEN IF
(CF=0) AND (C1=0 AND C2=0 AND C
3=0 AND C4=0 AND C5=0) THEN LOCA
TE1,22:PRINT"Want all lines cent
ered (Y/N) ";;INPUTW$;ELSE RETUR
N
6040 IF W$="N" OR W$="n" THEN LO
CATE1,22:PRINTC$;:RETURN
6050 LOCATE1,22:PRINTC$;
6060 IF I$="1" OR I$="2" OR I$="
3" OR I$="4" OR I$="5" THEN CL=V
AL(I$);ELSE GOTO 6080
6070 ON CL GOTO 6090,6120,6150,6
180,6210;'switch to center lines
1,2,3,4,or 5
6080 CF=1;'set center (all) flag
on
6090 LTS=""::LG=LEN(L$(1));IF (LG
>0) AND (LG<35) THEN IN=(INT(35-
LG)/2);FOR SP=1 TO IN:LTS=LTS+"
";NEXT SP:L$(1)=LTS+L$(1)
6100 C1=1;'set line 1 center fla
g on
6110 IF CF=0 THEN RETURN
6120 LTS=""::LG=LEN(L$(2));IF (LG
>0) AND (LG<35) THEN IN=(INT(35-
LG)/2);FOR SP=1 TO IN:LTS=LTS+"
";NEXT SP:L$(2)=LTS+L$(2)
6130 C2=1;'set line 2 center fla
g on
6140 IF CF=0 THEN RETURN
6150 LTS=""::LG=LEN(L$(3));IF (LG
>0) AND (LG<35) THEN IN=(INT(35-
LG)/2);FOR SP=1 TO IN:LTS=LTS+"
";NEXT SP:L$(3)=LTS+L$(3)
6160 C3=1;'set line 3 center fla
g on
6170 IF CF=0 THEN RETURN
6180 LTS=""::LG=LEN(L$(4));IF (LG
>0) AND (LG<35) THEN IN=(INT(35-
LG)/2);FOR SP=1 TO IN:LTS=LTS+"
";NEXT SP:L$(4)=LTS+L$(4)
6190 C4=1;'set line 4 center fla
g on
6200 IF CF=0 THEN RETURN
6210 LTS=""::LG=LEN(L$(5));IF (LG
>0) AND (LG<35) THEN IN=(INT(35-
LG)/2);FOR SP=1 TO IN:LTS=LTS+"
";NEXT SP:L$(5)=LTS+L$(5)
6220 C5=1;'set line 5 center fla
g on
6230 RETURN
6240 '
7000 '<B>AUD RATE CHANGE
7010 IF BD=9600 THEN BD=600 ELSE
BD=BD*2
7020 IF BD=600 THEN POKE150,180
7030 IF BD=1200 THEN POKE150,87
7040 IF BD=2400 THEN POKE150,41
7050 IF BD=4800 THEN POKE150,18
7060 IF BD=9600 THEN POKE150,7
7070 PLAY"L64C"
7080 RETURN
7090 '
8000 '<T>AB SETTINGS
8010 LOCATE1,22:PRINT"Enter new
TAB ->";:INPUT TB
8020 IF TB<0 OR TB>999 THEN LOCA
TE 19,22:PRINT"
";:GOTO8010
8030 LOCATE0,22:PRINTC$;'clear o
ut prompt
8040 TB=INT(TB)
8050 RETURN
8060 '
9000 '<Q>UIT (exit) PROGRAM
9010 LOCATE1,22:ATTR0,0,B:PRINT"
Are you sure (Y/N) ";;INPUTQ$
9020 IF Q$="Y" OR Q$="y" THEN PO
KE113,0;EXEC40999;ELSE ATTR0,0:L
OCATE1,22:PRINTC$;:RETURN

```



## DISTO PRODUCTS

All Disto Products now carry a 1-Year Warranty and are shipped **2nd Day Air** (at no extra charge!) within Continental US. All Disto Add-Ons (& Super Controller II) include OS9 Drivers, unless otherwise specified.

- Disto Mini Controller (with RSDOS or CDOS) : \$74.95
- Disto Super Controller (with RSDOS or CDOS): \$99.95
- Disto Super Controller II (with RSDOS or CDOS): \$129.95
  - Mini Eeprom Programmer Add On: \$54.95
  - Hard Disk Adapter: \$39.95 w/ RS232: \$69.95
- RT Clock & Printer Interface: \$34.95 (OS9 Driver: \$19.95)
- 3-in-1 Multiboard Adapter: Parallel Port, RT Clock & RS232 Port. \$74.95
  - MEB Adapter II: \$34.95
- 4-in-1 Board: Parallel Port, RT Clock, RS232 & Hard Disk Interface: \$129.95

**RS232 Super Pack:** True RS232 Port for your CoCo! Compatible with Tandy® RS232 Pack. Includes DB25 Cable. 100% Compatible with OS9 ACIA Software. Req. Multipak. Only \$54.95

Drive 0  
\$199



## DRIVES

2 Drive System  
\$299

There are a lot of dealers selling disk drives for the CoCo. Why buy from us? **First**, all our drives are **BRAND NEW DOUBLE SIDED** Drives. They are sleek, fast (6ms!), quiet and have a reputation of superb performance and reliability. **Second**, our Drive 0 & 2 Drive Systems come with the acclaimed **DISTO Controller** - with gold plated contacts & built-in ROM which allows you to access **BOTH** sides of our drives! **Third**, our Drive 0 & 2 Drive Systems come with the **Official 200 page Radio Shack Disk Manual**. **Fourth**, you get \$50 worth of our utility software (Disk Util 2.1A & Super Tape/Disk Transfer). Our drive systems are head & shoulders above the rest!

- Drive 0 (with Disto Controller, Case, Power Supply, 1 Drive Cable, Manual, Software): \$199
- Drive 1 (with Case, Power Supply & Software): \$129 Bare 5 1/4" Drive: \$89
- 2 Drive System (With Disto Controller, Case, Power Supply, 2 Drive Cable, Manual & Software): \$299 Full-Height Case/Power Supply: \$59.95 Power Splitter: \$9.95
- 1 Drive Cable: \$16.95 2 Drive Cable: \$22.95 4 Drive Cable: \$34.95
- FD501 Upgrade Kit: Bare Drive, 2 Drive Cable & Instructions: \$109
- FD502 Upgrade Kit: Bare Drive, 2 Drive Cable, Power Cable & Instructions: \$119
- Toshiba 3 1/2" 720K Drive w/ Power Supply & Case: \$149 3 1/2" Bare Drive: \$99

### More Good Stuff...

**DS69B Digitizer:** Use your CoCo to display pictures from your VCR. Comes complete with CSEE Software. Only \$149.95. CoCo 2 Version: \$99.95

**Advanced Gravis Joystick:** Features tension, rotary-centering, free floating controls with 3 buttons. Only \$59.95

**MPI Locking Plate**

(Specify CoCo 2/3 and 26-3024/3124): \$8

5 1/4" DS/DD Disks: \$.40 each

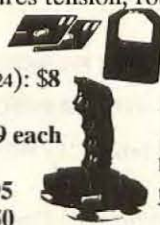
5 1/4" Colored DS/DD Disks: \$.89 each

3 1/2" DS/DD Disks: \$1.29 each

5 1/4" Disk Case (for 70 disks): \$9.95

3 1/2" Disk Case (for 40 disks): \$7.50

Black Ribbon: \$8.50 NX1000 Colr Rib.: \$12.95



### Microcom Serial to Parallel Interface

- Drive your printer at high speed (300-9600)
- Designed by Marty Goodman so you know its quality.
- Unlike other similar converters, this uses CRYSTAL oscillator which is VERY reliable at higher baud rates and different temperatures.

Only \$44.95

w / Serial Modem Switch: \$54.95

NEW

## HARD DRIVES, Etc.

Systems w/ Seagate Hard Drive, Controller, Cables, CoCo XT Interface, Cables, Case (with fan & Power Supply), Software (OS9 Software & HYPERIO Software!) & Instruction Manuals. Assembled/Tested/Formatted. Just **Plug'N'Run**. Req. Multipak.

### Disto Hard Drives Systems Also Available!

Seagate 20 Meg System: \$509

Seagate 30 Meg System: \$539

40 Meg OS9 System \$599

CoCo XT: Use 2 5-120 Meg Drives with your CoCo. Only \$69.95 w/ Real Time Clock: \$99.95

CoCo XT ROM: Boots OS9 from hard/floppy. Only \$19.95

HYPERIO: Allows Hard Drive use with RSDOS. Only \$29.95

HYPERIO Disto Version. Only \$29.95

HYPERIII: RAMDisk & Spooler to CoCo 3 HYPER I/O. \$12.95

**HYPERIO Utilities** (by Kevin Berner)

**Hard Drive Utilities:** MSA Backup, Copy/Kill/Rename, Hard Disk Backup to Floppies (vica versa) & more. Only \$21.95

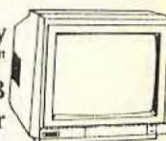
**Disk Doctor:** Checks/locks out bad sectors. only \$17.95

**Hard Drive Zap:** View tracks, sectors, modify data on your hard disk. Only \$21.95

## MAGNAVOX 1CM135 RGB

### Monitor

**Razor Sharp** picture quality for your CoCo! Has 14" Screen, Analog/TTL RGB & Composite Inputs for CoCo 2/3, Stereo Sound, Text Display Switch, Tilt Stand & 2 Year Warranty. Compatible with CoCo, IBM & many other computers! Only \$298 (add \$12 S&H/\$40 in Canada)



**Magnavox RGB Cable** for CoCo 3 and Composite Video / Audio Cable Set with Purchase of Monitor: \$19.95

**MAGNAVOX 7622 12" AMBER MONITOR:** 80 Column Mono Monitor w/ Speaker: Only \$98 (Add \$8 S&H in US)

## 512K CoCo 3

Brand new Color Computer 3 with 512K Installed and tested! Comes with complete manuals and \$100 worth of software!

Only \$259

Please Add \$10 S&H  
512K Installat. Voids Warranty



**MICROCOM SOFTWARE** 2900 Monroe Ave, Rochester, NY 14618

To Order: Refer to Page 17 of our 6-page series (Pg. 7-17).

**Credit Card Toll Free Orderline: 1-800-654-5244**  
(9AM-8PM 7 Days/week)

Tech. Info (Between 4-8pm), Order Status, Info: 716-383-8830. Fax: 716-383-0026.





# Still pounding away at that keyboard?



**Save Time and Money with a Combination Subscription!**

## SAVE up to 19%

when you buy a joint subscription to the magazine and either RAINBOW ON TAPE or RAINBOW ON DISK! A one-year subscription to THE RAINBOW and RAINBOW ON TAPE is only \$91 in the U.S., \$108 in Canada, \$153 foreign surface rate and \$188 foreign airmail. A one-year subscription to THE RAINBOW and RAINBOW ON DISK is only \$115 in the U.S., \$138 in Canada, \$183 foreign surface rate and \$218 foreign airmail.\*

Every month, these convenient services bring you as many as 24 ready-to-run programs. Using the current issue of THE RAINBOW as documentation, all you have to do is load and run them. A one-year combination subscription to THE RAIN-

BOW and RAINBOW ON TAPE or RAINBOW ON DISK give you more than 230 new programs! The typing time you save can be spent enjoying your CoCo!

### RAINBOW ON TAPE For No-Fuss Fun

Back issues of RAINBOW ON TAPE are available beginning with the April 1982 issue. A single copy of RAINBOW ON TAPE is \$10 within the United States; U.S. \$12 in all other countries. The annual subscription rate for RAINBOW ON TAPE is \$80 within the U.S.; U.S. \$90 in Canada; and U.S. \$105 for all other countries.\*

### RAINBOW ON DISK Offers OS-9 Programs

In addition to all the programs offered on tape, part of one side of RAINBOW ON DISK is formatted for the OS-9 operating system. That means you can now get all the OS-9 programs from the magazine — programs that cannot be put on tape. Back issues of RAINBOW ON DISK are available beginning with October 1986. Subscriptions to RAINBOW ON DISK are \$99 a year in the U.S. Canadian rate is U.S. \$115. All other countries, U.S. \$130. Single copy rate is \$12 in the U.S.; U.S. \$14 in Canada; and U.S. \$16 in all other countries.\*

**To order by phone (credit card orders only), call (800) 847-0309, 8 a.m. to 5 p.m. EST. All other inquiries call (502) 228-4492.**

**Look for our envelope located between pages 66 and 67 for ordering individual subscriptions to THE RAINBOW, RAINBOW ON TAPE and RAINBOW ON DISK.**

**YES! Sign me up for a joint 1-year subscription (12 issues) to:**

- ☐ THE RAINBOW and RAINBOW ON TAPE  
☐ THE RAINBOW and RAINBOW ON DISK  
☐ NEW ☐ RENEWAL (attach labels)

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Payment Enclosed ☐ (\*payment must accompany order)

Charge: ☐ VISA ☐ MasterCard ☐ Am. Express

Account Number \_\_\_\_\_

Signature \_\_\_\_\_ Exp. \_\_\_\_\_

\*U.S. currency only, please. In order to hold down costs, we do not bill. Kentucky residents add 5% sales tax. Please allow 6 to 8 weeks for delivery of first copies. Joint subscriptions to THE RAINBOW and RAINBOW ON TAPE or RAINBOW ON DISK begin with the current issue.

**Please note:** While group purchases of RAINBOW ON TAPE and RAINBOW ON DISK are permitted (and multiple subscriptions are even discounted, if purchased in one order from a club), no license to make copies is conveyed or implied. Yes, your group may even purchase a subscription to our disk/tape services, but such purchase in no way authorizes that any copies be made of that original disk/tape. Specifically, this means that the original disk/tape itself may indeed be kept in a club library for use by members. However, a group purchase *does not* entitle club members, individually or as a group, to copy that disk/tape.

Unauthorized copying of any copyright product is strictly illegal. The copyright (right to make copies) is in no way conveyed in the purchase transaction.



## BIG BASIC

Full Power for your CoCo 3!

(From Danosoft)

Gives up to 92K User Memory in 128K CoCo and 476K in 512K CoCo from BASIC with any mix of program/variables. You can have one BIG program or 58 Separate ones running at once from computer memory in multiple windows! Big Basic also allows you to Disk Chain any size program. Step up to the full potential of your CoCo 3 with Big Basic. Only \$39.95

**SUPER BIG BASIC:** for Disto 1 MEG Upg. Only \$49.95

**BABY BASIC:** Tips & Tricks for Basic Programmers. \$8.95

## 512K Upgrades

Fully assembled, tested and ready to be shipped NOW! Our design allows mounting chips on top to prevent any heating problems. No soldering; Easy instructions for 2 minute installation! Comes with following software (value \$100):

- 512K Ramtest
- 512K Backup Lightning
- 512K Print Spooler
- 512K Ramdisk
- OS9 Level II Ramdisk

The absolute best 512K Upgrade Package Available!

90 day warranty! **New Low Price \$99.95**

**OK Upgrade Board** (with 512K Ramtest/Ramdisk/Spooler): \$39.95

### Upgrades for CoCo 2

**64K Upgrade** (8 chip) for CoCo I, CoCo II's with Cat # 26-3026/3027/3134/3136: \$29.95

**64K Upgrade** (2 chip) for 26-3134 A/B CoCo II: \$39.95  
(Free 64K Software included with 64K Upgrades)

Only  
**\$99**

## KEYBOARDS, ETC...

**6 Feet Keyboard Extension Cable. Only \$39.95**

**CoCo 3 Keyboard: \$39.95** w/ Extension Cable: \$69.95

**CoCo 2 Keyboard: \$19.95** w/ Extension Cable: \$49.95

(CoCo 3 Keyboard includes free Function Keys Software)

## XPort (From Orion Technologies®)

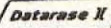
The extended multi-port interface for CoCo 1, 2 or 3.

• 3 Cartridge Slots • 12 Volts powers anything • Use for disk, RS232 Pak much more • Buffered I/O • Perfect replacement for discontinued multi-pak. Intro Special. Only \$74.95

## EPROM ...

**INTRONICS EPROM PROGRAMMER:** Programs 2516 to 27010 & more! Includes software & complete documentation. Latest version. Lowest Price Anywhere. CoCo 1,2,3. Only \$137.95

**DATARASE Eprom Eraser:** For 24/28 pin Eproms. Erases up to 4 EPROMs at a time. Only \$49.95

**Both Eprom Programmer & Eraser: \$179.95** 

**2764 Eprom: \$8**

**27128 Eprom: \$9**

**ROMPAK (w/ Blank PC Board, 27xx Series): \$12.95**

**BLANK CARTRIDGE (Disk Controller Size): \$10.95**

## CABLES, Etc.

**Magnavox 8505/8515/8CM643 Analog RGB Cable: \$24.95**

**Serial-to-Parallel Interface:** Use your parallel printer at high speed (300-9600 baud) with the CoCo. Comes with all cables. No software compatibility problems. Only \$44.95

**15' Shielded Multipak Extension Cable: \$36.95**

**Y Cable:** Use your disk system with Speech/RS232 Pack, DS69 Digitizer, etc. Only \$27.95

**RGB Analog Extender Cable: \$19.95**

**SONY Monitor Cable: \$29.95**

**MODEM Cable:** 4 pin to DB25. Only \$19.95

**2 Position Switcher:** Hook 2 devices to serial port. \$29.95

**HI-RES Joystick Interface: \$11.99**



## COMMUNICATIONS EXTRAVAGANZA 2400

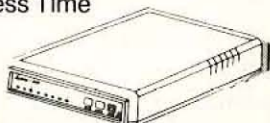
(1) **ZOOM 2400 Modem:** Fully Hayes Compatible 300/1200/2400 w speaker, Auto Dial/Answer & **Seven Year Warranty!**

(2) **MODEM CABLE** (4pin to DB25; Reg \$19.95)

(3) **Autoterm Software** (Reg \$39.95)

(4) **Free Compuserve Offer & Access Time**

(5) **UPS 2nd Day Air Shipping**  
Only \$189.95



**Zoom 2400 Modem: \$149**

**Avatex 1200e Modem Only: \$85**

**Communications Extravaganza 1200:** Includes Avatex 1200e modem w/ 2 Year Warr., cable, Compuserve Offer, software & 2nd Day Air Shipping. Only \$129.95

## CHIPS, Etc.

**Genuine RS Disk Rom 1.1** (Needed for CoCo 3): \$29.95

**ECB Rom 1.1: \$29.95**

**68B09E Chip: \$14.95**

**68B21 Chip: \$5.95**

**GIME Chip for CoCo 3: \$39.95**

**Genuine RS Multipak PAL Chip** (Specify 26-3024 / 26-3124): \$19.95

**PAL Switcher:** Allows you to switch between CoCo 2 & 3 modes when using the Multipak. You need the OLDER & NEW PAL Chip for the 26-3024 Multipak. Only \$39.95. With NEW PAL Chip Only \$49.95



**MICROCOM SOFTWARE** 2900 Monroe Ave, Rochester NY 14618

**TO ORDER:** All orders \$75 & above (except Printers, Monitors, Drives, Computers) shipped by **UPS 2nd Day Air** at no extra charge in Continental US. We accept Visa, MC, Discover & Amex (3% surcharge for Amex), check, MO & School PO's. COD Orders (for orders less than \$100) within US add \$5 extra. Please add 5% (min. \$3) S&H in Continental US & 10% (min. \$5) for Canada, Hawaii, Alaska & Puerto Rico. All foreign orders except Canada pay actual shipping charges (min \$5) for US Air Parcel Post/Surface Mail (specify). NYS residents please add sales tax. Our Australian Agent: Australian Peripheral Development: Ph: 07-341-9061.

**Credit Card Toll Free Orderline 1-800-654-5244 (9AM-8PM 7 Days/Week)**

Tech Info (between 4-8 pm), Order Status, Info: 716-383-8830. To Fax your order: 716-383-0026.





# Son of Perplexing Puzzles

by William Barden, Jr.  
Contributing Editor

Last year about this time I ran a series of brain teasers that could be easily solved by CoCo BASIC programs. Columns like this are always well received, especially since the disappearance of Martin Gardner's "Mathematical Recreations" column in *Scientific American*. The premise in that article is that many brain teasers can be solved by the power of the CoCo, letting it do the grunt work of slogging through test cases. Some of you may think this is cheating, but I have another view. Many complex mathematical puzzles have been solved by the use of high-speed computers. One example is the four-color map problem: Can four colors color a map of world countries? A computer solved the puzzle by going through all possible permutations.

This month's column presents eight more puzzles for the computer. CoCo programs of two to twenty-four lines of BASIC code do the trick. I also present a special challenge puzzle for you determined hackers out there, with a cash prize for the best answer!

## Puzzle 1: Coin Toss

The CoCo easily simulates a coin toss. Just use a 0 for heads and a 1 for tails and a binary number with the number of bits equal to the number of tosses. For example, the eight-bit binary number 01101110 represents tosses from 1 to 8 (left to right) for: heads, tails, tails, heads, tails, tails, tails and heads. ANDing with 128 gives you the head or tail bit for the first toss; ANDing

with 64 gives you the head or tail bit for the second toss, etc.

Here's the question: You may think there is an equal number of heads and tails about 50 percent of the time. Is this true? If not, about what percentage of the time will eight tosses result in four heads and four tails?

## Coin Toss Solution

This is our old friend the permutation, which you may have seen previously in this column. In a permutation, order is important, unlike a combination in which there is no order. If eight coin tosses are represented by a string of eight bits, the possible ways the tosses can come out are given by the binary numbers from 00000000 through 11111111:

00000000	all heads
00000001	one tail
00000010	one tail
00000011	two tail
00000100	one tail
10101001	four tails, four heads
10101010	four tails, four heads
11111100	six tails
11111011	seven tails
11111110	seven tails
11111111	eight tails

You can see from the above that all heads or all tails come out only one time each in 256 possible toss permutations. But what about an equal number of heads and tails? The solution is to count the heads and tails in each of the 256 permutations. A short program for this is shown in Listing 1.

The program first fills Array C with the binary values from 00000000 (Decimal 0) through 11111111 (Decimal 255). It then goes through each of the 256 entries in the

array and counts one bit by ANDing each bit position. If CT=4 at the end of each count operation, the number of tails equals 4 and the number of heads equals 4, and there are an equal number of heads and tails. Running this program prints 27.45 percent as the probability of an equal number of heads and tails, much less than the 50 percent you might have imagined. The complete list of percentages is:

Percentage of	
all tails	= 0.39
one	= 3.14
two	= 10.98
three	= 21.96
four	= 27.45
five	= 21.96
six	= 10.98
seven	= 3.14
all heads	= 0.39

Notice that the distribution of heads and tails is symmetrical about the four/four value, as you might expect.

## Puzzle 2: Making a Buck

I love the *Saturday Night Live* commercial about the New York Change Bank — you know, the one that's only in business to make change. They make their money on volume dealing. And that poses a question: Using pennies, nickels, dimes, quarters and half dollars, just how many ways are there to make change for a dollar? Fifty? Seventy-five? Let your CoCo figure it out.

## Making a Buck Solution

Surprisingly, there are 292 distinct ways to make a buck. The three-line program shown in Listing 2 shows the brute force code that uses five loops to change pennies, nickels, dimes, quarters and half dollars. There are  $21 \times 21 \times 11 \times 5 \times 3 = 72,765$  possible configurations. Each configuration is checked to see if the total coins add up to \$1. If so, the current number of each coin is

*Bill Barden has written 35 books and hundreds of magazine articles about small computers. His newest Color Computer book is "Connecting the CoCo to the Real World", a book of CoCo interfacing projects. He has over 20 years experience in the industry on systems ranging from mainframes to micros.*



printed in the order of pennies, nickels, dimes, quarters and half dollars.

### Puzzle 3: Easy as Pi

Calculus and I just don't see eye to eye. However, I found the computation of pi on the CoCo absurdly easy. Suppose you have a circle plotted as shown in Figure 1. The graph of a circle of radius one centered at the origin is represented by  $x^2 + y^2 = 1$ .

The graph uses  $x$  as the horizontal axis and  $y$  as the vertical axis. For example, if  $x=0$ , then the equation reads  $0 + y^2 = 1$ , making  $y$  either plus or minus 1. If  $y=0$ , then the equation is  $x^2 + 0 = 1$ , making  $x$  either plus or minus one. Intermediate values are calculated the same way.

Given this circle formula, can you program a way to find the area of the circle? Since the radius is one, the area of the circle should be equal to  $\pi * r * r$  or pi in this special case of radius one.

### Easy as Pi Solution

One way to find the area is to cut the

circle into thin vertical segments as shown in Figure 1 and then total the area of individual segments.  $x$  is varied from -1 to 1 in small steps. We used .001 sized steps, an arbitrary number. For each step, the height of the segment is twice the value of  $y$ , which can be found by taking the square root of  $1 - x^2$ . The width of each segment is .001. Adding up the area of each segment gives you the area of the circle, or pi. The answer is 3.14155614, a fast and (fairly) accurate computation of the constant.

If you got the answer, congratulations, you've just completed a problem in integral calculus! My version of the program to do this integration is shown in Listing 3.

### Puzzle 4: Hacker's Disease

One problem plaguing the CoCo community is an irritating but non-deadly disease called Hacker's Disease. It's a toss-up whether the disease was named after CoCo freaks or from its discoverer, Thomas J. Hacker. Hacker's Disease is characterized by a ravaging thirst, numb fingers and a

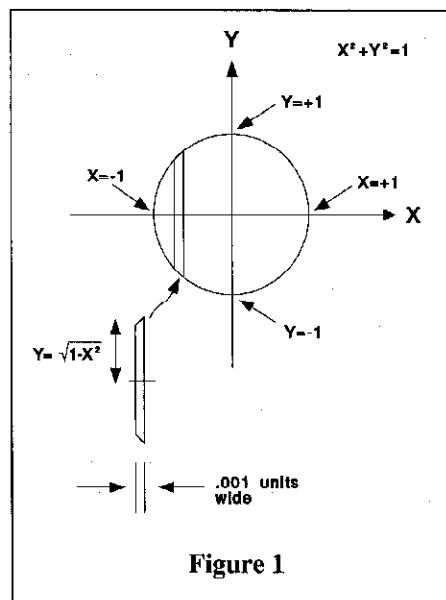


Figure 1

seemingly insatiable hunger for Twinkies while sitting at a CoCo keyboard.

Hacker's Disease infects about one percent of the CoCo community — about

## William Barden Jr. Color Computer Products

You know me from **Barden's Buffer in Rainbow** and from **Radio Shack's Color Computer Assembly Language Programming, Color Computer Graphics, and Color Computer and MC-10 Programs** books. I love the CoCo so much that I have a new book and an exciting new CoCo Weather Station Project I think you'll enjoy.

### Connecting the CoCo to the Real World

Connect your CoCo 1, 2, or 3 to the real world! This book shows you how to **dial a phone, measure windspeed with an anemometer, sense temperature, measure barometric pressure, measure rotation of fan blades, detect liquid levels, read burglar alarm switches, capture and play back up to 70 seconds worth of sound and voice**, and do much, much more. In most cases, only a few simple parts are needed, with typical costs **under \$10!** All program listings are provided, together with diagrams and listings that even novices can follow. 192 pages. \$19.95 plus 6% for CA residents.

### CoCo CX-1 Weather Station Kit

The CoCo CX-1 Weather Station is designed to provide windspeed and outside temperature with a sturdy anemometer. Readout is on the CoCo screen. Windspeed and temperature may be logged to a disk file. **All parts, software, and instructions are included in the kit.** Assembly time is approximately two hours and requires common tools. With proper calibration, windspeed is within 5% and temperature is within one degree. Send for a free brochure. \$39.95 plus 6% for CA residents.

William Barden, Jr., Box 3568, Mission Viejo, CA. 92692  
(714) 589-8426

## Classic Solitaire

Klondike • Pyramid • Canfield



Play these classic favorites in 16 color high-res graphics  
128K CoCo3 one disk drive Joystick \$14.95

## Zenix

Fight your way through waves of Xenians in this fast-paced arcade game by Jeremy Spiller and Mike Newell. Experience breakneck speed. Exceptionally smooth 320x225 color graphics. 32 levels of play. Sound. 100% machine language.

128K CoCo3 one disk drive Joystick \$29.95

Also available:

Tazman (CoCo3)(requires OS9/II).....\$24.95  
Armchair Admiral (CoCo3).....\$14.95  
Riddle of the Ring (CoCo3/CoCo2).....\$10.00  
Games Pack I (CoCo3/CoCo2).....\$10.00

Checks, Money Orders, MasterCard & Visa  
All orders add \$2.00 shipping. COD add additional \$2.00  
Washington addresses add 8.1% sales tax.

Eversoft Games, Ltd  
P.O. Box 3354  
Arlington, Wa 98223

(206) 653-5263  
10am - 6pm PST



100,000 sorry individuals. Because of this widespread infection THE RAINBOW contacted the NCDC (National Center for Diehard CoCobuffs) and had them design a diagnostic test for the disease. The test is 90 percent accurate. That is, when given to a CoCo user with Hacker's Disease, the test is positive in 90 percent of the cases. When given to a CoCo user without the disease, the test is positive only 10 percent of the time and negative in 90 percent of the cases. A random sample of 1000 users is tested. Ten of these 1000 users have the disease (one percent). If you are diagnosed as having Hacker's Disease by the test, what are the odds that you actually have it?

### Hacker's Disease Solution

Incredibly, the odds of your having the disease are only about 8.33 percent. The reason for this is the large number of users without the disease — 99 percent of them. In the statistical sample of 1000 users, 990 do not have the disease, but because of the test error, about 10 percent of these have positive results (about 99 users). Of the 10 users who have the disease, about 9 test positive, and one diseased user is missed. This example has analogies for real, rather than imagined, disease testing. Even with a fairly high accuracy in a test, there will be many people falsely testing positive.

To validate these results, run the program shown in Listing 4. It first establishes a sample size of 1000, setting all 1000 users to 0 (no disease). Ten users are then set

randomly to 1 (diseased). All 1000 users are then tested, using the 90 percent accuracy of the test. If the RND command returns a value less than 9, the test is simulated as valid; if greater than 9, the test is simulated as invalid. (Variable RE is set to 0 if the test is valid or to 1 if the test is invalid.) Variables NC and CO are used to count the number of well people testing positive and the number of diseased people testing positive; the results are then printed:

Well people diagnosed with disease: 91  
Sick people diagnosed with disease: 9

The numbers for the results vary, depending upon your system.

### Puzzle 5: Stacking Cannonballs

My hometown has a typical war memorial commemorating the great Yuppie Uprising of 1987. Like many other towns, there's a large cannon in the square with a stack of cannonballs next to it. The cannonballs are stacked in several levels. The bottom level has nine balls, three to a side. Another level of four cannonballs are stacked in the four depressions created by this first level. The top cannonball is stacked in the single depression created by the second level, making three levels of nine balls, four balls and one ball, respectively, for a total of 14 balls. Every year the cannonballs are unstacked, cleaned, repainted and re-stacked. This year the town derelict, a former Amiga user, observed the maintenance

and posed a question. Is there any number of cannonballs that can be unstacked and then placed in a perfect square in one level? For example, a square of ten-by-ten balls makes a perfect square of 100 balls, but when restacked they cannot be restacked perfectly. There is one ball on top, followed by four balls on the next level, followed by nine balls on the next level, followed by 16 balls on the next level, followed by 25 balls on the next level, followed by 36 balls on the next level, with 19 balls left over (see Figure 2). Try this with up to 10,000 cannonballs and you may have an answer. My CoCo program takes eight lines to compute the result.

### Stacking Cannonballs Solution

There are really two parts to this puzzle. The first part computes the square number, using the number of balls on a side of the square. Squares of 1, 2, 3, 4, 5 and 6, for example, have 1, 4, 9, 16, 25 and 36 balls in the square. The total number of balls are perfect square numbers.

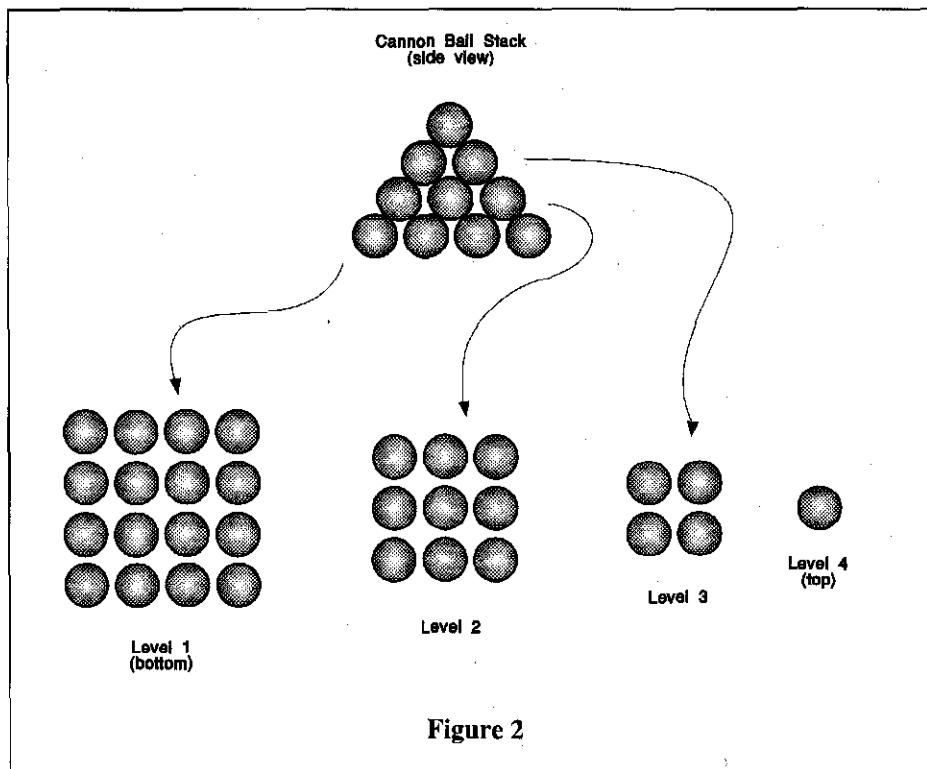
The second part needs a way to compute the total number of balls in the cannonball stack. For one level, the number of balls is 1. For two levels, the number of balls is 1 + 4 or 5. For three levels, the number of balls is 1 + 4 + 9 or 14. The number of cannonballs is actually the sum of these square numbers for all levels considered. The secret here is the formula for computing the total number of balls:

$$\text{total balls in stack} = (n(n+1)(2n+1))/6$$

where  $n$  is the number of balls on one side of the bottom layer. This formula is not obvious but can be found by mathematicians with a technique known as induction. With the formula things are a lot easier, as shown in Listing 5. Just construct two tables: NC, number of cannonballs in stack and NS, number of cannonballs in a square for sides of 1 through 100. Then scan both tables, looking to see if the total number of balls in any stack entry match any perfect square value. If so, there's a stack that contains the exact number of balls as found in a perfect square. The answer here is a stack of 1 or 70 balls on a side. The 70 case results in a square of 4900 balls, which can also be stacked as 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400, 441, 484, 529 and 576 balls in 24 levels — quite a stack!

### Puzzle 6: Take a Meeting

The executive council of the BBCUG (Buffalo Breath, Wyoming CoCo Users Group) meets once a month. It always has





a great deal of difficulty with its five officers. Ed hates Bill and the two of them won't meet together. Likewise, Sue and Mary won't be seen together. Complicat-

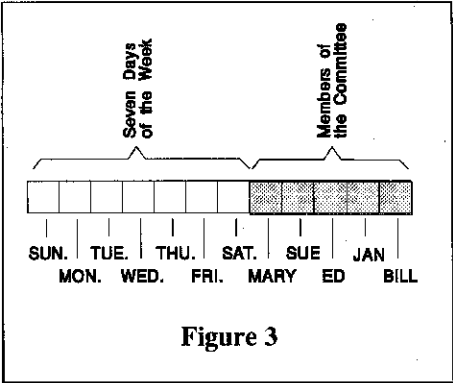


Figure 3

ing it further, Mary likes Ed and will only show up if he is there. Since Mary is the recording secretary, she must be there. Three people must be present to conduct business. Lastly, Jan can only meet on Sundays. Are there any combinations of members and meeting days that provide for at least three members in a monthly meeting?

#### Take a Meeting Solution

One way to handle this is with a table of all possible configurations. Suppose we

have 12 bits in each table entry, as shown in Figure 3. The first seven bits represent days of the week, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, from left to right. There can only be one day for the meeting, so possible day configurations are:

```
1000000XXXXX
0100000XXXXX
0010000XXXXX
0001000XXXXX
0000100XXXXX
0000010XXXXX
0000001XXXXX
```

The next five bits represent Mary, Sue, Ed, Jan and Bill, in that order from left to right. Now all possible configurations for each meeting day are the values of 00000 through 11111, 32 in all. The value 10100, for example, would indicate Mary and Ed are present.

The table of entries consist of  $7 \times 32 = 224$  entries. Now, some of these entries are invalid and must be crossed off. Test each condition and do so. The remaining entries are valid entries.

Listing 6 shows a program to construct a table and then to cross off entries. The

first check tests whether Ed and Bill are present (AND 5). All entries that have both Ed and Bill (XXXXXXXXXX1X1) are deleted from the table by setting them to 0 (see Listing 6). The next check tests whether Mary and Sue are present (AND 24) and deletes any such entries. The next check tests to see if Mary is present and Ed is not present (AND 16 and AND 4). For all such cases, the entry is deleted. The next check tests to see if Mary is present and deletes all entries in which Mary is not there (AND  $16 \ll 16$ ). The next check counts all members, putting the count in Variable CT. If the count does not equal 3 or greater, the entry is deleted. The final check tests whether Jan is present and the day is not a Sunday (AND 2048). All such entries are deleted. All entries not reset to 0 are then printed. In this case, there is one entry left, a value of 2070, indicating a meeting Sunday with Mary, Ed and Jan present (100000010110).

#### Puzzle 7: Faro Shuffle

Faro shuffles are used by magicians specializing in card tricks, among other things. A Faro shuffle is a precise card shuffle that interweaves cards from two halves of a deck precisely to position cards in the deck. One version of a Faro shuffle

**NEW!!**

**NEW!!**

**NEW!!**

**NEW!!**

**We've Just Converted Over 250 Macintosh Quality Pictures For The Color Computer. Each Set Includes An Excellent Graphics Editor! Pictures are CoCo-MAX II compatible.**

Set #1	Set #2	Set #3
Clipart	Celebrities	Adult Only
Space Pictures	Cartoon Characters	R-Rated
Animals	Great Graphics	Beautiful Women
More	More	

**Each Set Of 10 Disks  
Only \$35.00!  
Buy 2, Get One Free!**

**Coco 1,2 And 3  
32K Minimum  
Disk Only**

**T&D Subscription Software • 2490 Miles Standish Dr., Holland, MI 49423 • 616-399-9648**







**Listing 1: COINTOSS**

```

100 ' COIN TOSS
110 DIM C(255)
120 FOR I=0 TO 255: C(I)=I: NEXT
130 CT=0: PT=0
140 FOR I=0 TO 255
145 CT=0
150 IF (C(I) AND 256)=256 THEN C
  T=CT+1
160 IF (C(I) AND 128)=128 THEN C
  T=CT+1
170 IF (C(I) AND 64)=64 THEN CT=
  CT+1
180 IF (C(I) AND 32)=32 THEN CT=
  CT+1
190 IF (C(I) AND 16)=16 THEN CT=
  CT+1
200 IF (C(I) AND 8)=8 THEN CT=CT
  +1
210 IF (C(I) AND 4)=4 THEN CT=CT
  +1
220 IF (C(I) AND 2)=2 THEN CT=CT
  +1
230 IF (C(I) AND 1)=1 THEN CT=CT
  +1
240 IF CT=4 THEN PT=PT+1
250 NEXT
260 PRINT "% OF EQUAL HEADS AND
  TAILS=": (PT*100/255)

```

**Listing 2: MAKEBUCK**

```

100 ' CHANGING A DOLLAR
110 FOR P=0 TO 100 STEP 5:FOR N=
  0 TO 20:FOR D=0 TO 10:FOR Q=0 TO
  4:FOR H=0 TO 2
120 IF P+N*5+D*10+Q*25+H*50=100
  THEN CNT=CNT+1: PRINT P;N;D;Q;H:
  CNT
130 NEXT: NEXT: NEXT: NEXT: NEXT

```

**Listing 3: EASYASPI**

```

100 ' EASY AS PI
110 FOR X=-1 TO 1 STEP .001:Y=SQ
  R(1-X*X):A=A+2*Y*.001:NEXT:PRINT
  A

```

**Listing 4: HACKER**

```

100 ' HACKER'S DISEASE
110 DIM P(1000)
120 FOR I=1 TO 1000: P(I)=0: NEX
  T
130 P(13)=1: P(213)=1: P(500)=1:
  P(717)=1: P(861)=1
140 P(17)=1: P(134)=1: P(381)=1:
  P(816)=1: P(978)=1
150 FOR I=1 TO 1000
160 IF RND(10)<=9 THEN RE=0 ELSE
  RE=1
170 IF P(I)=0 THEN IF RE=0 THEN
  NO=NO+1
180 IF P(I)=0 THEN IF RE=1 THEN
  YES=YES+1: NO=NO+1
190 IF P(I)=1 THEN IF RE=1 THEN
  NO=NO+1
200 IF P(I)=1 THEN IF RE=0 THEN
  YES=YES+1: CO=CO+1
210 NEXT I
220 PRINT "WELL PEOPLE DIAGNOSED
  WITH DISEASE:": NO
230 PRINT "SICK PEOPLE DIAGNOSED
  WITH DISEASE:": CO

```

**Listing 5: CANNON**

```

100 ' CANNONBALLS
110 DIM NC(100), NS(100)
120 FOR I=1 TO 100
130 NC(I)=(I*(I+1)*(2*I+1))/6
140 NS(I)=I*I
150 NEXT
160 FOR I=1 TO 100: A=NC(I): FOR
  J=1 TO 100: IF A=NS(J) THEN PRI
  NT "BASE OF CANNONBALL STACK IS"
  ; I : "BY": I : ". SQUARE ON GROUN
  D IS": SQR( NS(J) ): "ON A SIDE"
170 NEXT: NEXT

```

**Listing 6: MEETING**

```

100 ' THE MEETING
110 DIM M(224)
120 FOR W=1 TO 7
130 WD=INT(2*(7-W+5))
140 FOR J=0 TO 31
150 M((W-1)*32+J+1)=WD+J
160 NEXT J: NEXT W
170 FOR I=1 TO 224: IF (M(I) AND
  5)=5 THEN M(I)=0
180 NEXT
190 FOR I=1 TO 224: IF (M(I) AND
  24)=24 THEN M(I)=0
200 NEXT
210 FOR I=1 TO 224: IF (M(I) AND
  16)=16 THEN IF (M(I) AND 4) <>
  4 THEN M(I)=0
220 NEXT
230 FOR I=1 TO 224: IF (M(I) AND
  16)<>16 THEN M(I)=0
240 NEXT
250 FOR I=1 TO 224
260 CT=0
270 IF (M(I) AND 16)=16 THEN CT=
  CT+1
280 IF (M(I) AND 8)=8 THEN CT=CT
  +1
290 IF (M(I) AND 4)=4 THEN CT=CT
  +1
300 IF (M(I) AND 2)=2 THEN CT=CT
  +1
310 IF (M(I) AND 1)=1 THEN CT=CT
  +1
320 IF CT<3 THEN M(I)=0
330 NEXT
340 FOR I=1 TO 224: IF (M(I) AND
  2)=2 THEN IF (M(I) AND 2048) <>
  2048 THEN M(I)=0
350 NEXT
360 FOR I=1 TO 224: IF M(I)<>0 T
  HEN PRINT M(I):
370 NEXT

```

**Listing 7: SHUFFLE**

```

100 ' FARO SHUFFLE - INTERPERSE
  CARDS FROM TWO HALVES - OUT SHU
  FLE
110 DIM CA(52), NW(52)
120 DATA 6,33,45,37,41,3,25,23,5
  ,49,36,27,50,16,48,29,34,38,17,8
  ,28,22,2,39,26
130 DATA 12,24,18,51,15,19,46,21
  ,11,35,13,7,31,9,42,43,47,10,44,
  51,30,1,52,40

```

```

140 DATA 20,14,15
150 FOR I=1 TO 52: READ CA(I): N
  EXT
160 FOR I=1 TO 52: PRINT CA(I):;
  NEXT: PRINT
170 FOR J=1 TO 8
180 PRINT "SHUFFLE #:"; J
200 FOR I=26 TO 1 STEP -1:NW(I*2
  )=CA(26+I): NW(I*2-1)=CA(I): NEX
  T
210 FOR I=1 TO 52: CA(I)=NW(I):
  NEXT
220 NEXT
230 FOR I=1 TO 52: PRINT CA(I):;
  NEXT: PRINT

```

**Listing 8: SUMDIGIT**

```

100 ' SUM OF DIGITS MATRIX
110 P1=0: P2=0: P3=0: P4=0: P5=0
  : P6=0: P7=0: P8=0
120 OPEN "O", #1, "RESULTS"
130 P1=P1+1: IF P1=10 THEN CLOSE
  : STOP
140 P2=P2+1: IF P2=10 THEN P2=0:
  GOTO 130 ELSE IF P2=P1 THEN GOT
  O 140
150 P3=P3+1: IF P3=10 THEN P3=0:
  GOTO 140 ELSE IF P3=P2 OR P3=P1
  THEN GOTO 150
160 P4=P4+1: IF P4=10 THEN P4=0:
  GOTO 150 ELSE IF P4=P3 OR P4=P2
  OR P4=P1 THEN GOTO 160
170 P5=P5+1: IF P5=10 THEN P5=0:
  GOTO 160 ELSE IF P5=P4 OR P5=P3
  OR P5=P2 OR P5=P1 THEN GOTO 170
180 P6=P6+1: IF P6=10 THEN P6=0:
  GOTO 170 ELSE IF P6=P5 OR P6=P4
  OR P6=P3 OR P6=P2 OR P6=P1 THEN
  GOTO 180
190 P7=P7+1: IF P7=10 THEN P7=0:
  GOTO 180 ELSE IF P7=P6 OR P7=P5
  OR P7=P4 OR P7=P3 OR P7=P2 OR P
  7=P1 THEN GOTO 190
200 P8=P8+1: IF P8=10 THEN P8=0:
  GOTO 190 ELSE IF P8=P7 OR P8=P6
  OR P8=P5 OR P8=P4 OR P8=P3 OR P
  8=P2 OR P8=P1 THEN GOTO 200
210 P9=P9+1: IF P9=10 THEN P9=0:
  GOTO 200 ELSE IF P9=P8 OR P9=P7
  OR P9=P6 OR P9=P5 OR P9=P4 OR P
  9=P3 OR P9=P2 OR P9=P1 THEN GOTO
  210
215 IF P9<>P3+P6 THEN GOTO 310
220 C1=0: C2=0: C3=0
230 C3=P3+P6: IF C3>=20 THEN C3=
  C3-20: C2=2 ELSE IF C3>=10 THEN
  C3=C3-10: C2=1
240 C2=C2+P2+P5: IF C2>=20 THEN
  C2=C2-20: C1=2 ELSE IF C2>=10 T
  HEN C2=C2-10: C1=1
250 C1=C1+P1+P4: IF C1>=10 THEN
  GOTO 310
260 IF C1<>P7 OR C2<>P8 OR C3<>P
  9 THEN GOTO 310
270 PRINT#1,P1,P2,P3,P4,P5,P6,P7
  ,P8,P9
280 PRINT P1:P2:P3
290 PRINT P4:P5:P6
300 PRINT P7:P8:P9
310 PRINT "-"
320 GOTO 210

```



# Error - Trapping Troubles

by Larry Boeldt

Dear Larry:

*I am having trouble with error-trapping routines in some programs. For example, one of my programs has the following lines:*

```
10 ON ERR GOTO 300
.
. (main program)
.
300 IF ER=26 THEN PRINT "INSERT
THE CORRECT DISK AND PRESS ANY K
EY":EXEC 44539:RUN
```

*The program entirely ignores the PRINT statement and skips to the EXEC 44539 statement. Why does this happen, and how can I fix it? Also, what is X=RND(-TIMER) supposed to do? I have seen this in several program listings.*

Dan Crosby  
Eagle, Idaho

The problem you are experiencing is easy to fix. Simply store ER=26 in a variable in Line 300 and process the routine with the variable. Let me show you, using your example:

```
10 ON ERR GOTO 300
.
. (main program)
.
300 ER=ERNO
301 IF ER=26 THEN PRINT "INSERT T
HE CORRECT DISK AND PRESS ANY KE
Y":EXEC 44539:RUN
```

Color BASIC requires this procedure for error trapping in order to process error-handling routines correctly.

As for  $X=RND(-TIMER)$ , this statement in theory resets the random number generator

*Larry Boeldt has programmed on the Color Computer for five years. He has experience with BASIC, Pascal and FORTRAN IV. He runs a software customizing business for the CoCo market.*

in BASIC to help it generate a new set of random numbers. Color BASIC always uses the timer value to set random numbers. By setting the selection value to the logical opposite of TIMER, BASIC becomes "tricked" into resetting the random number generator. (This procedure does not really change the pattern that much, though.)

Run the following program twice for a demonstration of how well the statement works. The second time you run it, remove Line 20. Notice a less predictable pattern in the second run.

```
10 FOR X=1 TO 20
20 R=RND(-TIMER)
30 PRINT RND(30)
40 NEXT X
```

After running the program four or five times each way and comparing them, I concluded that there is not much difference in the two patterns (at least not enough to appear truly random). As a result, I decided to try a different approach and came up with an even more unpredictable pattern. Try the following routine:

```
10 FOR X=1 TO 20
20 R=INT(RND(-TIMER)*30)
30 PRINT R
40 NEXT X
```

## Joystick in Hi-Res

Dear Larry:

*I am 13 years old and have a CoCo 3, one disk drive, a DMP-130 printer and a Multi-Pak Interface. I was working on some programs that use the HSCREEN 2 command and came across the problem of trying to use a joystick to move an object placed in a box. Can you give me a short program that explains this concept better?*

Joel W. Carmichael  
Pine Bush, New York

I assume you won't be using a Hi-Res interface for your joystick. For starters,

keep in mind that HSCREEN 2 is a 320-by-192 screen. Your joystick can produce values from 0 to 63 (64 actual values) both horizontally and vertically; therefore you must use the following formulas:

```
10 DEF FNH(J)=JOYSTK(J)*5 ' HORIZONTAL MEASURE (J=0 OR J=2)
20 DEF FNV(J)=JOYSTK(J)*3 ' VERTICAL MEASURE (J=1 OR J=3)
```

Notice the remarks at the end. If you want to call the horizontal position of the right joystick, JOYSTK(0), and store the value in H, use  $H=FNH(0)$ . Please note that every fifth horizontal pixel and every third vertical pixel is accessed. Pinpoint accuracy is not possible with these formulas; however, the formulas allow your joystick to cover roughly the whole screen.

## He's Dreaming of an Alphabetized Christmas List

Dear Larry:

*I have written a short program as a names and numbers file for Christmas cards or general mailing list. The program is enclosed (with the letter) for you to examine. Do you know of a way to get the program to sort the names alphabetically? The program is not fancy, but I have grown accustomed to it and it's a hassle to have to delete and retype names when I add a new name to the file. Any help would be greatly appreciated.*

David Moore  
Rapid City, South Dakota

While studying the Pascal programming language, many of my assignments required sorting routines. It was up to us to choose a routine suitable for our program. For your program a sort called the Quick Sort would be best because of the large number of names you might be processing. I decided instead to include a listing for the Bubble Sort with a short explanation of how it



works as a lesson for all you BASICally Speaking fans. I chose the Bubble Sort because it is very easy to understand. Plus I think I have a pretty good analogy for explaining the theory of operation.

Let's pretend that each letter of the alphabet has a certain weight. For instance, the letter A has a weight of air, the letter Z has the weight of heavy sand. All other letters have weights suiting their position in the alphabet. Now, each letter is put into a jar of water. The jar is covered and jostled until the letters are all mixed up and disorganized. The jar is then placed down and nature "sorts" the individual letters by their weight. Therefore the letter A bubbles to the top while the letter Z drops to the bottom; this continues until all the different weights have been settled. A Bubble Sort operates under the same theory in that the names with the lowest ASCII values float to the top while those with the highest sink to the bottom. Without being overly critical of the analogy, you should now understand the theory of the bubble sort.

### Disabling the Reset Button

Dear Larry:

*I was wondering if you knew of any pokes for disabling the Reset button on the*

*CoCo 3? If so what are they? I'd also like to know how I can find a copy of EDTASM+ on cassette. The people at Radio Shack say they don't have any such assembler. If you know of one, how much would it cost me and where can I get it? Does it require any patches?*

*Russel Morton  
Lawrence, Kansas*

Let me answer your second question first. There is a version of EDTASM+ that works with tape systems, but it is on a ROM Pak. This cartridge is available through Radio Shack's Express Order Software system. Call (800) 321-3133. I do not think there are any patches for the program since it is all in ROM.

As for your second question, see the listing below and simply merge these lines into your program:

```
410 '
412 ' RESET PROTECTION
415 '
420 POKE 114,1:POKE 115,&HD1
421 FOR I=&H1D1 TO &H1D9:READ A$
:POKE I,VAL("&H"+A$):NEXT I
422 DATA 12,1A,50,7F,FF,DF,7E,C0
,E7
423 '

```

16K

### The Listing:

```
1000 ' Bubble Sort
1020 '
1030 ' This routine will sort the elements of array A$()
1040 ' into ascending alphabetical order (A-Z). It is
1050 ' assumed that A$() is full of names to be sorted.
1060 '
1070 ' Variables
1075 '
1080 ' A$()= An array of 200 names (be sure to DIM(200))
1090 ' NE= Number of elements used in the array
1100 ' CO= Counter for sort loop
1110 ' FL= Flag variable to see if more sorting is necessary. 0=no / 1=yes
1130 ' T$= Temporary string
1140 ' PO= Tells how many names are in place
1199 '
1200 FL=0
1210 FOR CO=PO TO NE-1
1220 IF A$(CO)<A$(CO+1) THEN 1270 ' Are elements in order?
1230 FL=1 ' Sorting needs to be done.
1240 T$=A$(CO) ' Exchange the variables.
1250 A$(CO)=A$(CO+1)
1260 A$(CO+1)=T$
1270 NEXT CO ' Move on to next element.
1275 IF FL=1 THEN 1200 ' If sorting done, run loop again.
1280 ' RETURN or GOTO as appropriate.

```

## RASCAN-2

RASCAN is back in a new and improved version. Includes RAS\*MAX (SEE BELOW) You can digitize video from any B&W or color camera, VCR or videodisk player in near photo quality. The BEST & only color video digitizer for the CoCo. All software included, nothing else to buy! No personal checks for RASCAN. CoCo3, 512k, disk **ONLY \$189.95**

## SPRITE-BASIC

CREATE graphic SPRITES & write your own video games with BASIC. Adds 18 new commands to BASIC. This is a complete new system to create & control SPRITES. CoCo3, 128k, 1 disk **ONLY \$44.95**

## SUPERSOUND

Digitize any sound for your programs or add sound effects to animated graphics. Easy to use with BASIC demos to get you started. ALL features work in only 128k. The BEST sound system for the CoCo3. CoCo3, 128k, disk **ONLY \$39.95**  
**SUPERSHOW** **ONLY \$7.95**

## SAY'N'SPELL

Let your CoCo3 help your 1st grade & up child learn their spelling words in YOUR voice saved to disk. Easy & fun to use. CoCo3, 128k, disk **ONLY \$19.95**

## ULTRAED

The BEST CoCo3 assembler/disassembler available. Two work buffers, online help file & true source code disassembly make this utility a must for the serious programmer. 80 col. screen, disk 1/0. Requires EDTASM+ cart, to make a working copy. CoCo3, 128k, disk. **ONLY \$19.95**

## COLOR GRAPHICS

Our \*MAX graphics drivers offer: True What-You-See-Is-What-You-Get printouts. RGB to CMY conversion for REAL colors. ON-SCREEN color editing/preview. Mirror prints for T-shirts, partial printouts Real grayscale prints with black ribbon. NX1000 ribbons BLACK **\$6.95**  
4 color **\$9.95**  
Heat Transfer 4 color **\$12.95**

## RAS\*MAX

Print 4906 & 16 color RASCAN pictures on the NX1000, DMP-240, GSX-140, CGP-220, plus B&W on all but the CGP-220 printer. Even edit 16 color RASCAN on-screen. RASCAN not needed to print IMG pictures. CoCo3, 128k, disk **ONLY \$19.5**

## STAR\*MAX

Print CM3, MGE, HSCREEN2 etc., pictures on NX1000, DMP-240 & other EPSON compatible color printers. Full color editing. CoCo3, disk **ONLY \$19.95**

## CGP\*MAX

Same as STAR\*MAX but for the CGP-220. CoCo3, 128k, disk **ONLY \$14.95**

## PM\*PRINT

Now you can print those PMODE3 color or PMODE4 B&W/artifact color on NX1000 or compatible. Limited color editing. CoCo1,2,3, 32k, disk **ONLY \$14.95**

## SUPERSOFT, INC.

363 Oakwood Ave., Jackson, MI 49203  
(517) 787-3610 \$2.50 S/H per order  
Visa/M.C. Check, M.O., MI res add 4% sales tax



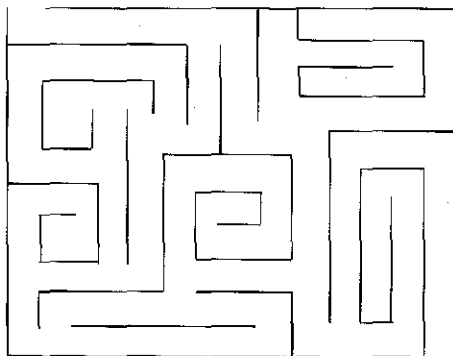
*A game in which you play the role of a data communications chip*

# Just Between Terminals

by Jeff Steidl

**D**ata Transfer is a combination action/strategy game in which you become a data communications chip. The program draws two CoCos on opposite sides of the screen; one of the computers tries to transmit data to the other. The transmitting computer has a series of numbers next to it. The idea is to go through the maze of computer circuitry, collect the data by moving on top of it, and go back through the maze with the data to the other computer. When you accomplish this, you gain a number of points equal to the time remaining on the clock. If you fail to accomplish the transfer before time is up, the game is over.

As you travel through the maze, three blue lightning-shaped negative charges attempt to zap you or block off your path. For every successful data transmission another blue negative charge appears. You aren't defenseless, however. You can fire white, star-shaped positive charges at them to cancel the charges, giving you 20 points. The number of positive charges you have is



indicated by the number of them drawn next to your score at the top of the screen. You get an extra positive charge every 500 points. But beware, you must be moving when you fire to give it direction. If it doesn't have a direction, it lands on you. This is deadly. If you fire the positive charge and it misses the negative one, the positive charge wanders around. Wandering charges prevent you from firing other charges and are also deadly to you, so remember to avoid them as you do negative

16K Standard

✓	6 .....	143
	16 .....	253
	24 .....	199
	34 .....	206
	44 .....	230
	50 .....	175
	62 .....	74
	72 .....	34
	84 .....	103
	94 .....	140
	110 .....	111
	120 .....	17
	130 .....	240
	END .....	66

## The Listing: DATATRAN

```
0 * COPYRIGHT 1990 FALSOFT, INC
2 CLS:PRINT@8,"DATA TRANSFER":PR
INT@104,"BY JEFF STEIDL":PRINT@1
66,"PRODUCED IN 1989 &":PRINT@19
8,"MADE IN THE U.S.A.":PRINT@453
,"(SETTING UP MEMORY)"
4 POKE65495,0:CLEAR200,13069:DIM
```

```
M(15,8):FORA=13210T013307:READB:
POKEA,B:NEXT:EXEC13266
6 FORA=0T06:READA(A),B(A):NEXT:F
ORA=0T036:READB:D=A*32:FORC=1T06
:E=INT(B/7):POKEC+D+13856,A(B-E*
7):POKE15039-C-D,B(B-E*7):B=E:NE
XT:POKE13856+D,63:POKE13863+D,19
2:POKE13887+D,252:POKE13880+D,3:
NEXT
8 POKE14372,253:POKE14436,254:PO
KE14819,19:POKE14523,127:POKE144
59,191:POKE14076,196
10 FORA=0T0248STEP256:READB,E:F
ORC=0T014STEP2:IFB-INT(B/2)*2THE
NPOKEA+C+14080,255:POKEA+C+14081
,255:POKE14110-C+A,255:POKE14111
-C+A,255
12 IFE-INT(E/2)*2THENFORD=A TOA+
256STEP32:POKED+C+14081,PEEK(D+C
+14081)OR3:POKE14109-C+D,PEEK(14
109-C+D)OR3:NEXT
14 B=INT(B/2):E=INT(E/2):NEXT:NE
XT
16 FORA=14087T014343STEP64:POKEA
,255:POKEA+17,255:NEXT
18 FORA=0T024STEP2:FORB=0T0192ST
```

Jeff Steidl spends much of his time writing BASIC and assembly language programs as well as designing computer systems and languages. He has eight years of programming experience, ranging from the MC-10 to the VAX. Jeff's other interests include mathematics, music and electronics. He may be contacted at 605 Evergreen Drive, Holmen, WI 54636.



# Unlock The Real Power of Your CoCo !

## "BIG BASIC" Basic Users get full control of managing all CoCo memory

COCO 3'S MISSING LINK

"Danosoft has a winner in *Big Basic*, and I would recommend it to anyone wanting to get the most out of a Color Computer 3." - Rainbow, Oct./89.

- Now you can access up to 472K of memory in a 512K CoCo or up to 92K in a 128K machine with any mix of programs and/or data. At last, you can do sizable basic programming with a CoCo 3.
- BIG BASIC creates programming windows where you can put up to 58 separate running programs, or up to 58 parts of one large program or database. Concept permits big programs to run fast.
- Chain in unlimited sized programs, or program parts, or data, from disk(s) without erasing existing programming or variables. Also works with the RGB-DOS Hard Disk system and ADOS3.
- 3 new simple basic words create the power.
- Provides for holding as many as 28 Hi-Res Graphics Screens in Memory for instant recall. Up to 4 HSCREEN's in a 128 K CoCo.
- Modifies your basic operating system in some 70 locations but does not occupy user memory. 100 % M.L. runs in background.
- Includes 7 Demo Programs and Manual. Any disk version RS-DOS.

ONLY \$39.95 U.S. or \$46.50 CDN. + \$2.50 S & H (Add 8% PST in Ont.)

**NEW! "SUPER BIG BASIC"** Same as "BIG BASIC" except it also accesses 1 Meg. of Memory if you have CRC/DISTO's Board. \$49.95 U.S. or \$57.95 CDN. Upgrade with Proof of Purchase: \$9.90 U.S. or \$11.50 CDN. Add \$2.50 S&H (Add 8% PST in Ont.).

**"BABY BASIC"** If you need more memory for Basic program lines, this Tutorial will show you how to store and execute them from anywhere in memory; and how to chain in any number of program modules from disk without erasing variables. Includes Disk with 7 basic enabling subs and a demo program. For any CoCo with 64K or more. Doesn't replace "Big Basic". Only \$8.95 U.S. or \$10.50 CDN. + \$2.50 S&H (Add 8% PST in Ont.).

## "MEMORY MASTER"

OUR FAVORITE PROGRAMMING TOOL

"*Memory Master* is a unique hacker's program offering about all you could ask for in a disk and memory utility." - Rainbow, Sept./89.

- Scan, Edit, Copy, Printout any memory in your computer or on disk. Fix disks. Restore killed files.
- Fast entry of M.L. Listings.
- Dual Windows! Runs 2 Basic Programs at once!
- Disk chains unlimited amounts of program sections or data.
- Includes Demo Program and Manual.
- Any CoCo (at least 64K) with 1.1 or 2.1 Disk Extended Basic.

Only \$24.95 U.S. or \$28.95 CDN. + \$2.50 S & H (Add 8% PST in Ont.)

## "BIG RAMDISK" (512k CoCo3 V.2.0 or V.2.1)

"Danosoft's *Big Ramdisk* is a thoroughly useful utility that combines a great product with the ease of use that marks a winner." - Rainbow, April 1990.

- Copy or backup your programs or data to "BIG RAMDISK" and get the speed of program/data saving or loading to an "in memory" M.L. device. ("COPYDISK" Utility included.)
- Great for use with all other programs on this page (except "Simply Better") and most commercial software.
- You can install, re-install, format and reformat from direct mode or from a program without erasing programming or variables. Does not occupy user memory, but can be user located elsewhere if needed.
- **NEW!** Works double if you have CRC/DISTO's 1 Meg. Memory Board.
- Your choice of one big 158 granule ramdisk (80 tracks-360k) or two 68 or 78 granule ramdisks (35-40 tracks to 360k total), depending on your DOS. (i.e. RS-DOS, "BIG DISK", "DOUBLE40", etc.) Allows 4 physical drives and 2 ramdisks. (4 ramdisks to 720k with 1 Meg. Board.)
- Ramdisk files and directory do not erase with a reset or if a program crashes. This lets you use some programs that need a Coldstart to exit.

ONLY \$12.95 US or \$14.95 CDN. + \$2.50 S & H (Add 8% PST in Ont.)

**"GRAPHICS UTILITY"** If you want to store multiple Hi-Res Graphics screens in CoCo3 memory for instant recall, this Tutorial is for you. Load/Save graphics screens to memory from disk. Instantly switch them into your program. Max capacity is: HSCREENS 1 & 3: 512K = 27; 128K = 3. HSCREENS 2 & 4: 512K = 13; 128K = 1. Has Disk & Demo. Only \$8.95 U.S. or \$10.50 CDN. + \$2.50 S&H (Add 8% PST in Ont.).

## "UTILITIES PACKAGE"

ACCESS BOTH SIDES OF YOUR DRIVES

"Must - have software for the disk user"

• Rainbow, Nov. /89.

"BIG DISK"

- Makes computer see double-sided drives as one 360K (80tk) drive; 158 granules.

"DOUBLE40"

- Sets drives for 40 tracks each side.

"CONVERT/DISK"

- Formats 40 tracks on each side of a disk without disturbing the first 35. Doubles all your present storage.

"QUIKDRIV/6MS"

- Sets fast drive stepping rate.

"QUIKDRIV/30M"

- Fast drive shut off.

"SET FEED"

- Sets line spacing for printouts.

All are Machine Language Running in Background

For any CoCo (at least 64K) with 1.1 or 2.1 Disk Extended Basic

Only \$17.95 U.S. or \$20.85 CDN. + \$2.50 S & H (Add 8% PST in Ont.)

NOW FROM DANOSOFT! DALE RICKERT'S

Feature Packed



"Simply Better"

- Run 2 interactive Wordprocessors at once • Mail Merge • Create Indexes • Table of Contents • ..... An excellent choice at an unbelievable price." - Rainbow, April /89

Displays Underlining • Print Spooling • Auto Saves • Print/Save Blocks of Text • To 480K of Text Storage • Sorts Text • Numbering • Indenting • Calculator • Tasks • Headers • Footers • Paging • Finds • Case Reversal • Help Screens • Preview "WYSIWYG" • Many More Features.

## BEST WORD PROCESSOR

Easy to use. Includes some Database Features

Will hold a customer list of more than 5000 in memory for quick recall or editing.

"Significantly Better? Mais Oui!" - Rainbow, Feb., 1990

"An excellent choice at an unbelievable price." - Rainbow, April /89

Includes extensive, well indexed Manual, with Tutorials.

128k or 512k CoCo3. Any disk version RS - DOS.

ONLY \$39.95 U.S. or \$46.50 CDN. + \$2.50 S & H (Add 8% PST in Ont.)

Add \$7.00 U.S. or \$8.20 CDN. for French Version of Manual

Need more info? See the Rainbow Reviews of these Programs.

DANOSOFT

Box 124, Station "A"

Mississauga, Ontario L5A 2Z7

10% Discount

on purchase of  
3 or more items  
at the same time.

Order by Phone or Mail

(416) 897-0121

Shipped Airmail Same Day

VISA

Master Card



charges.

*Data Transfer* works on any CoCo with at least 16K, but you may need to make some small modifications. If you have 32K or more, change the CLEAR 200,16383 in Line 90 to CLEAR 200,32767. If you have a CoCo 3, change the POKE 65495,0 at the beginning of Line 4 to POKE 65497,0 and

change the POKE 65494,0 in Line 90 to POKE 65496,0. If your CoCo cannot handle the ROM speed-up poke, delete the POKE 65495,0 at the beginning of Line 4. Any CoCo with Extended Color BASIC needs a PCLEAR1: added to the beginning of Line 4.

*Data Transfer* uses the artifact colors on the PMODE 4 screen. On a CoCo 1 or 2 you

may have to press the Reset button if you don't want the blue and the orange mixed around. The game is in black and white if you are using an RGB monitor. If you want color on an RGB, you can change the 248 in Line 142 to 224. The colors are then correct except the background is green instead of black. □

```
EP32:READC:POKEA+B+13347,C/32:PO
KEA+B+13348,C*8-INT(C/32)*256:NE
XT:NEXT
20 FORA=0TO10STEP2:FORB=0TO192ST
EP32:READC:POKEA+B+13600,C/64:PO
KEA+B+13601,C*4-INT(C/64)*256:NE
XT:NEXT
22 FORA=0TO8STEP2:FORB=0TO192STE
P32:READC:POKEA+B+13864,C/64:POK
EA+B+13865,C*4-INT(C/64)*256:NEX
T:NEXT
24 FORA=0TO9:READA(A):NEXT:FORA=
0TO138STEP2:READB:POKEA+13070,A(
B/10):POKEA+13071,A(B-INT(B/10)*
10):NEXT
26 FORB=0TO8:FORA=0TO15:READM(A,
B):NEXT:NEXT
28 T=200:SC=0:Z=0:A=7:B=5:POKE13
310,51:X=2:D(0)=8:D(1)=1:D(2)=2:
D(3)=4:D(4)=8:S(1)=1:S(4)=1:T(2
)=1:T(8)=1:H=13311:I=13308:J=13
309:K=13280:L=154:M=168:N=182:O=
196:S1=2:O1=500
30 X(0)=0:X(1)=0:X(2)=15:Y(0)=4:
Y(1)=8:Y(2)=8:P=100:Q=10:R=14:S=
59:V=.03:U=54:F=32:G=2
32 Z1=0:GOSUB72:GOSUB142
34 IFT THEN T=1:POKEI,U:POKEJ,5
0:POKEH,INT(T/P)*R+R:EXECK:POKEJ
,52:POKEH,INT((T-INT(T/P)*P)/Q)*
R+R:EXECK:POKEJ,U:POKEH,INT(T-IN
T(T/Q)*Q)*R+R:EXECK:ELSE82
36 IFZ1=0THENZ1=1:P1=(RND(G)-1)*
7:ELSEIFZ1=2THEN40
38 POKEH,RND(Q)*R:POKEI,55:POKEJ
,40+P1*G:EXECK:IFB=.ANDA=4+P1 TH
ENZ1=G:SC=SC+50:GOSUB72:FORC=89T
O239STEP10:SOUNDC,1:NEXT
40 POKEI,55+B:POKEJ,F+G*A:POKEH,
L:EXECK:C=SGN(INT(JOYSTK(1)/S-V)
):IFC THENE=2.5*C*1.5:IFM(A,B)AN
DE THENA=A+C:GOTO44ELSE44
42 D=SGN(INT(JOYSTK(1)/S-V)):E=5
+D*3:IFM(A,B)ANDE THENB=B+D
44 POKEI,55+B:POKEJ,F+G*A:POKEH,
M:EXECK:IFPEEK(65280)ANDIORZ OR(
S1=0)THEN48
46 SOUNDC,1:SOUNDC,1:S1=S1-1
:POKEH,L:POKEI,53:POKEJ,U+G*S1:E
XECK:IFE ANDM(A,B)THEND1=E:X1=A+
S(E):Y1=B+T(E):Z=1:POKEI,55+Y1:P
OKEJ,F+G*X1:POKEH,O:EXECK:ELSE82
48 IFZ1=2ANDB=0ANDA=11-P1 THENSC
=SC+P+T:T=200:GOSUB72:Z1=0:FORC=
239TO89STEP-10:SOUNDC,1:NEXT:X=X
+1:X(X)=(RND(G)-1)*15:Y(X)=4+(RN
D(G)-1)*4
50 IFX<0THEN64ELSEIFZ THENFORW=0
TOX:IFX1=X(W)ANDY1=Y(W)THENX=X-1
:FORC=W TOX:X(C)=X(C+1):Y(C)=Y(C
+1):NEXT:SOUNDC,1:SOUNDC,1:S
OUNDC,1:Z=0:SC=SC+20:POKEI,55+
Y1:POKEJ,F+G*X1:POKEH,L:EXECK:GO
SUB72:GOTO50ELSENEXT
52 FORW=0TOX:POKEI,55+Y(W):POKEJ
,F+G*X(W):POKEH,L:EXECK:IFA=X(W)
```

```
ANDB=Y(W)THEN82
54 ONRND(3)GOTO56,58,60
56 D=D(RND(4)):IFM(X(W),Y(W))AND
D THENX(W)=X(W)+S(D):Y(W)=Y(W)+T
(D):GOTO62ELSE62
58 D=D(SGN(X(W)-A)+G):IFM(X(W),Y
(W))ANDD THENX(W)=X(W)+S(D):Y(W)
=Y(W)+T(D):GOTO62ELSE62
60 D=D(SGN(Y(W)-B)+1):IFM(X(W),Y
(W))ANDD THENX(W)=X(W)+S(D):Y(W)
=Y(W)+T(D)
62 IFA=X(W)ANDB=Y(W)THEN82ELSEPO
KEI,55+Y(W):POKEJ,F+G*X(W):POKEH
,N:EXECK:NEXT
64 IFZ=0THEN34
66 IFA=X1 ANDB=Y1 THEN82ELSEPOKE
I,55+Y1:POKEJ,F+G*X1:POKEH,L:EXE
CK:IFX>1THENFORW=0TOX:IFX1=X(W)
ANDY1=Y(W)THENX=X-1:FORC=W TOX:X
(C)=X(C+1):Y(C)=Y(C+1):NEXT:SOUN
DC,1:SOUNDC,1:SOUNDC,1:Z=0
:SC=SC+20:EXECK:GOSUB72:GOTO34EL
SENEXT
68 IFD1 ANDM(X1,Y1)THENX1=X1+S(D
1):Y1=Y1+T(D1):ELSE82=D(RND(4))
70 IFA=X1 ANDB=Y1 THEN82ELSEPOKE
I,55+Y1:POKEJ,F+G*X1:POKEH,O:EXE
CK:GOTO34
72 POKEI,53:D=10000:IFSC>99999TH
ENSC=SC-99999
74 E=SC:FORC=44TO52STEP2:POKEJ,C
:POKEH,INT(E/D)*R+R:EXECK:E=E-IN
T(E/D)*D:D=D/Q:NEXT:IFSC>01 THEN
O1=O1+500:IFSC<5 THENS1=S1+1
76 POKEH,O:C=U:E=S1
78 IFE=0THENRETURN:ELSEPOKEJ,C:E
XECK:E=E-1:C=C+G:GOTO78
80 RETURN
82 FORC=1TO3:SOUNDC,1:SOUNDC,1
:1:NEXT:FORC=1TO3:SOUNDC,1:SOU
NDC,1:1:NEXT:FORC=1TO3:SOUNDC,1
:SOUNDC,1:1:NEXT:SOUNDC,2:SOUNDC
1,2:SOUNDC,1,2:SOUNDC,1,2:SOUN
DC,1,2:SOUNDC,1,2:SOUNDC,1,2
84 CLS:PRINT@160,"SCORE:"SC:IFSC
>HS THENHS=SC
86 PRINT:PRINT"HIGH SCORE:"HS:PR
INT@448,"PLAY AGAIN?"
88 POKEH,L:FORA=8TO22STEP2:POKEJ
,32+A:FORB=0TO3:POKEI,55+B:EXECK
:NEXT:NEXT:FORA=0TO3STEP2:POKEJ
,F+A:FORB=4TO8:POKEI,55+B:EXECK:
NEXT:NEXT:GOSUB144:A$=INKEY$
90 A$=INKEY$:IFA$=""THEN90ELSEIF
A$="Y"THEN82ELSEIFA$<"N"THEN90E
LSECLS:CLR200,32767:POKE65494,
0:END
92 DATA,,,,,,,,,17,16,85,84
,21,80,85,84,21,80,85,84,17,16,1
28,160,42,10,128,2,160,
94 DATA40,,8,,192,12,204,3,240
,12,204,,192,,
96 DATA142,52,,204,,237,129,140
,64,,38,249,57,190,51,254,16
98 DATA142,,7,254,51,252,230,65,
196,3,166,128,234,128,237,196,51
```

```
,200,32,49,63,38,239,57
100 DATA0,0,3,192,48,12,51,204,2
43,207,252,63,255,255
102 DATA117648,117648,117648,624
25,117355,117362,62245,117363
104 DATA62244,62140,117469,62142
,61903,61799,61903,61799
106 DATA60188,117365,115411,6179
9,61903,61799,117126,61799
108 DATA61903,62142,117469,62140
,62244,62154,117307,62153
110 DATA62132,62425,117648,11764
8,117648
112 DATA240,136,96,152,128,168,9
6,168,159,96,46,169,20,107,172,6
5,62,128
114 DATA340,65,65,65,65,65,340,1
6,68,257,257,341,257,257,341,16,
16,16,16,16,16,68,257,257,341
,257,257,,,,,341,16,16,16,16,
16,16
116 DATA340,257,257,340,272,260,
257,16,68,257,257,341,257,257,25
7,257,321,273,261,257,257,84,257
,256,84,1,257,84
118 DATA341,256,256,336,256,256,
256,341,256,256,336,256,256,341,
340,257,257,340,272,260,257
120 DATA84,257,256,84,1,257,84,8
4,257,256,256,256,257,84,84,257,
257,257,257,257,84
122 DATA340,257,257,340,272,260,
257,341,256,256,336,256,256,341,
,80,80,,80,80,
124 DATA341,16,16,16,16,16,16,84
,16,16,16,16,16,84,257,325,273,2
73,257,257,257,341,256,256,336,2
56,256,341,,80,80,,80,80,
126 DATA0,1,4,5,16,20,64,68,80,8
4
128 DATA18,22,25,27,32,22,18,6,1
6,6,6,6,6,18,18,22,2,18,20,20,39
,18,22,2,8,2,22,18,4,8,14,24,39,
4,4
130 DATA39,20,38,2,2,22,18,8,10,
20,38,22,22,18,39,2,4,6,10,20,20
,18,22,22,18,22,22,18,18,22,22,1
8,2,4,16
132 DATA,,,,,9,5,5,12,9,5,5,12,,,
,,,,,10,9,13,6,3,13,12,10,,,
134 DATA,,,,,11,6,3,12,9,6,3,14,,
,,,,,3,12,9,6,3,12,9,6,,,
136 DATA9,5,5,5,13,6,10,9,12,10,
3,13,5,5,5,12,10,9,5,12,3,12,11,
14,11,14,9,6,9,5,12,10
138 DATA10,10,1,6,9,6,10,3,6,10,
3,12,3,4,10,10,10,3,5,5,7,5,14,9
,12,11,5,7,5,5,6,10
140 DATA3,5,5,5,5,5,7,6,3,7,5,5,
5,5,5,6
142 POKE65485,0:POKE65487,0:POKE
65477,0:POKE65314,(PEEK(65314)AN
D7)OR248:RETURN
144 POKE65484,0:POKE65486,0:POKE
65476,0:POKE65314,(PEEK(65314)AN
D7):RETURN
```



Welcome to the Revolution.

# MM ONE

Over the next few months, Kenneth-Leigh Enterprises will be showing you glimpses of the future, a future that includes the revolutionary **MM/1** personal computer from Kenneth-Leigh Enterprises and Interactive Media Systems, Inc.

This revolutionary computer was designed by you, the Color Computer community, to bring us into the 1990's.

The **MM/1** is powerful, fast, and affordable. It respects the hardware you have purchased -- it uses your disk drives and RGB monitor. The **MM/1** respects your time -- it offers a familiar multitasking environment. And it respects your common sense -- because the **MM/1** is here to stay.

---

Each month, we'll be telling you more about the **MM/1**, about Interactive Media Systems, and about Color Computer vendors who have put their support behind the **MM/1**. You'll learn that our astounding software brings you into the mainstream, with the ability to run thousands of MS-DOS programs, the ability to multitask with windows, and the ability to enjoy the first personal computer based on the CD-I interactive, multimedia technology.

---

**Just some of the MM/1's features --**

- Runs at 15 MHz!
- 256 colors on-screen!
- Five resolution modes!
- Supports animation!
- Expand to 9 Megs!
- Lots of software included!
- Full system runs faster than Mac, Amiga, Atari, PC-AT!
- Already in demand around the world!



One of the MM/1's lower resolution modes -- 320 x 400.  
The MM/1 handles up to 720 x 560 pixels on screen.

## 1-800-866-9084

**Call for more information!**  
**Ask about our MM/1 video!**

Copyright © 1990 Interactive Media Systems, Inc. MM/1 is a trademark of Interactive Media Systems, Inc. Color Computer is a trademark of Tandy Corporation. CD-I is a trademark of Sony and Philips.





*Logon protection for the single-user OS-9 system*

# For Your Eyes Only

*by Stephen B. Goldberg*

**M**any users protect their OS-9 disks from unauthorized use by using the `tsmon` utility in the startup file. This utility provides password protection in conjunction with the `login` command. The price you pay for `tsmon` is a RAM overhead of almost 2K; 2K is devoted to a routine that just sits there and waits for a new user to log in. And most Color Computer OS-9 systems are not set up for multiple users.

`Log` provides the same protection as `tsmon` with no RAM loss. It can also free disk space, plus you can delete `tsmon` and `login` from your `CMDS` directory, and `password` and `motd` from your `SYS` directory.

Use `edit` to enter the source code. At the label `usr`, replace the underscores with your own login name, and in the next line (`pwd`) replace the underscores with your

password. You may use the welcome message provided at the end of the program, or supply your own message.

Assemble `log` (`asm log o #10K`), then delete your startup file. Build a new startup that contains the line `log </term`.

When you boot OS-9, `log` executes and disables the keyboard abort, interrupt and escape functions so that the login procedure cannot be bypassed. The `setime` utility is executed and a rough check of the date is made. If you enter a month greater than 12 or a day greater than 31, or if you do not set the date, you are reprompted until a reasonable entry is made.

Next, you have three chances to enter your correct name and password. (The screen does not display your password entry so that, even if watched, it remains your secret.) If in three attempts you cannot make the correct entries, you are notified of your failure. To try again, press `ENTER`.

When you have replied correctly to the name and password prompts, the interrupt, abort and escape functions are enabled again, your message is printed on the screen and `log` unlinks itself. You end up in the shell with all available RAM at your disposal. □

---

*Steve Goldberg is a dentist who enjoys programming on his son's CoCo. He may be contacted at 695 Plainview Road, Bethpage, NY 11714. Please include an SASE when requesting a reply.*





## IT'S SUPER SALE TIME AGAIN!!

### BARBARIAN QUEST



Save your bride to be from the horrors of the evil Luthor's domain! Screen after screen of beautiful graphics and exciting arcade action with fully animated characters. Great digitized sound. Walk, run, jump, climb and fight cohorts. Game includes an optional continue feature that allows you to keep playing even if you loose! Set your own level of stress! It's great arcade action! Requires 512K and 1 disk drive. ~~\$34~~ ON SALE!!!! JUST \$29

Reviewed July '90

### THE SUPER DISK

Never before have so many powerful disk utilities been assembled in one package. The manual contains NEVER BEFORE PUBLISHED information about copy protection techniques and the disk has ALL of the utilities you need to use that information. If you are an author, this is a MUST HAVE package! If you just like to SNOOP, this disk has everything you need to read & write any part of a disk, even the data you were not meant to see! If you want to create copy protected disks or copy your valuable originals, THE SUPER DISK is for you! ~~\$39~~ ON SALE!!!! ONLY \$29

Reviewed March '90



### WARGAME DESIGNER II

WGD II is a complete graphic oriented war game design system. Create your own graphic icons for units and terrain features. Design your own maps. Assign each unit it's own unique attributes. Then play the games you want to, the ones YOU designed. It's easy. All modules are menu driven, no programming knowledge required. Comes complete with manual, 2 floppy disks and 4 ready to play scenarios. ~~\$29~~ ON SALE!!!! JUST \$24

Reviews August '88, July '89, September '89

### WARGAME DESIGNER ICON DISK

This disk contains hundreds of ready to use icons for units and terrain features. Save hours of design time. Just transfer these icons to your WGD II game disk (automatically from menu) and you're ready to design a new scenario. A real bargain at just \$15

Reviewed June '89

### WEEKLY WINNER 3.0

Recently updated, WW 3.0 now handles 3,4,5,6 and 7 digit lotto's. We've personally seen it pick 4 and 5 out of 6 in the Ohio SUPER LOTTO and have had reports of winnings from users in other parts of the US. Enhance YOUR chance! Invest in WEEKLY WINNER 3 today ONLY \$15



### COCO 3 FLAGS

This is the BEST "RISK" play alike available for the COCO 3. Screen shows the entire world and zooms in on the area you choose. For 1 to 6 players. It's great entertainment for a mere ~~\$21~~ ON SALE!!!! ONLY \$19

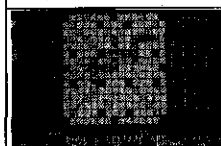
Reviewed August '89



### COCO 3 WHEEL

Outstanding party fun of 1 to 6 players! You can even design your own word puzzles. ~~\$21~~ ON SALE!!!! JUST \$19.

Reviewed May '89



### VOCAB

If you like SCRABBLE, you'll love VOCAB. It even includes a family of computer opponents. For 1 to 6 players. ~~\$21~~ ON SALE!!!! JUST \$19

Reviewed March '90

### NEW!!!

### GNOME

### NEW!!!

Great addictive non-violent arcade action fun by Mike Snyder. See if you as Tel Hilar, the Gnome Prince can recover the Spirit Sword from the evil Jarane. Dozens of screens to conquer require quick reflexes and concentration. ML, COCO 3 128K Disk. INTRODUCTORY PRICE JUST \$21.

### NEW!!!

### FIRESPIRE

### NEW!!!

Here comes the sequel to GNOME already! We should have waited but this is just too much fun to hold back! Now that you've recovered the Spirit Sword, it's time to find the Firespire. More screens, more action than GNOME. GNOME not required to play. ML, COCO 3, Disk. ALSO INTRODUCTORY PRICED AT \$21.

Get both! GNOME and FIRESPIRE for JUST \$32

All orders are shipped via first class mail within 24 hours of receipt. We accept VISA, MASTERCARD, MONEY ORDERS, PERSONAL CHECKS and COD orders. COD's add \$3.00. Phone or mail your order in today!

## SPORTSware

1251 South Reynolds Road, Suite 414  
Toledo, Ohio 43615 • (419) 389-1515

OS-9

### The Listing: log.asm

```
*****
*
* LOG - COPYRIGHT (c) 1985 by S. B. GOLDBERG
*
* Login utility for single user OS-9
*
* Enter:
*      use /d0/defs/os9defs
*      use /d0/defs/scfdefs
* between ifpl and endc
*
*      ifpl
*      nam log
*      ttl Login utility for single user OS-9
*      use /d0/defs/scfdefs
*      use /d0/defs/os9defs
*      endc
*
*      mod len,name,prgrm+objct,reet+1,entry,dsiz
*
* sta rmb 32 status options
* count rmb 1 count tries
* buffer rmb 50 line buffer
* rmb 200 stack
*
* dsiz equ
* name fcs /log/
* fcc /COPYRIGHT (c) 1985 by S. B. GOLDBERG/
*****
*
*
* LOGIN NAME AND PASSWORD
*
```

```

*
usr      fcs  /_____/  enter your own name
pwd      fcs  /_____/  enter your own password
*****
*
* DISABLE QUIT, ABORT AND ESCAPE
*
entry    lbrs  getsta  get terminal option package
          std  pd.int  disable abort and quit
          clr  pd.eof  disable escape (eof)
          os9  f$setstt set new status
*****
*
* SET CLOCK
*
getime   leax  time,pcr  name of SETIME utility
          ldy  #0
          lda  #prgrm+objct
          ldb  #3
          os9  f$fork  execute SETIME
          lbrs  error  branch on error
          os9  f$wait  wait for SETIME exit
          bcs  error  branch on error
*****
*
* CHECK DATE
*
          leax  sta,u  time package buffer
          os9  f$time  get time package
          ldd  l,x  month and day
          cmpa #12  month >12?
          bhi  getime  yes, reset clock
          cmpa #1  <1?
          blo  getime  yes, reset
          cmpb #31  day >31?
          bhi  getime  yes, reset
          cmpb #1  <1?
          blo  getime  yes, reset
*****
*
* INITIALIZE
*
enter    ldb  #3  three tries
          stb  count  save it
          leax spce,pcr  line feeds
          bsr  print  put on screen
*****
*
* GET NAME AND PASSWORD
*
agn      leax  nm,pcr  user name prompt
          ldy  #11  length of prompt
          bsr  print1  put on screen
          bsr  get  get input of name
          leax  usr,pcr  address of user name
          os9  f$cmpnam  compare with input
          bcs  nonam  branch if not same
          leax  pass,pcr  password prompt
          ldy  #10  length of prompt
          bsr  print1  put on screen
          bsr  getsta  get terminal option package
          clr  pd.eko  disable screen echo
          os9  f$setstt  set new status
          bcs  error  branch on error
          bsr  get  get input of password
          pshs  b  save length
          bsr  getsta  get terminal option package
          inc  pd.eko  enable screen echo
          os9  f$setstt  set new status
          bcs  error  branch on error
          puls  b  get password input length
          leax  pwd,pcr  address of password
          leax  buffer,u  address of input
          os9  f$cmpnam  compare input with password
          bcs  nopas  branch if not same
          bsr  getsta  get terminal option package
          ldy  #0305
          sty  pd.int  enable abort and quit

```

```

          lda  #27
          sta  pd.eof  enable escape (eof)
          clra
          os9  f$setstt  set new status
          bcs  error  branch on error
          leax  message,pcr  address of login message
          bsr  print  put message on screen
          clr  clear error flag
          error  os9  f$exit  end of login
*****
*
* GET STATUS OPTION PACKAGE
*
getsta   leax  sta,u  status package address
          ldd  #0  path and option
          os9  f$getstt  get option package
          bcs  error  branch on error
          rts  return
*****
*
* SCREEN PRINT
*
print    ldy  #2000  maximum length (full screen)
print1   lda  #1  standard output path
          os9  f$writin  write to screen
          bcs  error  branch on error
          rts  return
*****
*
* GET KEYBOARD INPUT
*
get      clra  standard input path
          ldy  #50  maximum length
          leax  buffer,u  input buffer address
          os9  f$readln  get input line
          bcs  error  branch on error
          tfr  y,d  transfer input length
          decb  discount carriage return
          rts  return
*****
*
* ERROR MSG. IF NO MATCH
*
nonam    leax  badnam,pcr  bad name prompt
          bra  show  put on screen
nopas    leax  badpas,pcr  bad passwd prompt
show     bsr  print  put on screen
          dec  count  count incorrect entry
          lbne  agn  not 3? Try again
*****
*
* FAILURE MESSAGE
*
sorry    leax  fail,pcr  address of fail display
          bsr  print  put on screen
          bsr  get  wait for input
          lbra  enter  start over
*
nm       fcc  /User name: /
pass     fcc  /Password: /
badnam   fcc  /Who?/
spce     fdb  $0a0d
badpas   fcc  /Invalid password./
          fdb  $0a0d
fail     fcc  /It's been nice communicating with you./
          fcb  $0a
          fcc  /Better luck next time./
          fcb  $0d
message  fcb  $0a
*
* You can use any message you want in place of welcome.
*
          fcc  /WELCOME TO COLOR COMPUTER OS-9./
          fcb  $0d
time     fcc  /setime/
          fcb  $0d
          emod
len      equ  *

```





## Pyramix

This is a fascinating CoCo 3 game of skill and coordination. Pyramix is 100% machine language written exclusively to take advantage of all the power in your 128K CoCo 3. The Colors are brilliant, the graphics sharp, the action fast. Written by Jordon Tsvetkoff and a product of ColorVenture. Disk: \$19.95



## The Freedom Series



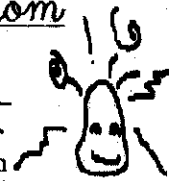
### Vocal Freedom

Vocal Freedom turns your computer into a digital voice recorder. The optional Hacker's Pac lets you incorporate voices or sounds that you record into your own BASIC or ML programs. This is not a synthesizer. Sounds are digitized directly into computer memory so that voices or sound effects sound very natural. One "off-the-shelf" application for Vocal Freedom is an automatic message minder. Record a message for your family into memory. Set Vocal Freedom on automatic. When Vocal Freedom "hears" any noise in the room, it plays the prerecorded message directly from its Random Access Memory with amazing fidelity! You may also SAVE or LOAD sounds to and from DISK. VF also tests memory

to take advantage of from 64K up to a full 512K. Requires low cost amplifier (RS cat. #277-1008) and any microphone. Will run on a CoCo 1, 2, or 3. Vocal Freedom Disk: \$34.95. Optional Hacker's Pac Disk: \$19.95. Disk for both: \$49.95

### Mental Freedom

Would your friends be impressed if your computer could read their minds? Mental Freedom uses the techniques of Biofeedback to control video game action on the screen. Telekinesis? You control the action with your thoughts and emotions. Your goal is to materialize and levitate objects with the power of your mind while avoiding the insidious cobra. Mental Freedom teaches peace of mind in the face of adversity. Mental Freedom even talks in a perfectly natural voice without using a speech synthesizer! Requires Radio Shack's low cost Biofeedback monitor, Cat. #63-675. Will run on a CoCo 2 or 3 but not CoCo 1. Disk: \$24.95



### Lightning Series

These three utilities give real power to your CoCo 3.

### Ramdisk Lightning

This is the best Ramdisk available. It lets you have up to 4 mechanical disk drives and 2 Ram drives on-line and is fully compatible with our Printer Lightning. Disk: \$19.95

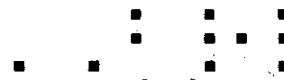
### Printer Lightning

Load it and forget it--except for the versatility it gives you. Never wait for your printer again! Printer runs at high speed while you continue to work at the keyboard! Disk: \$19.95

## Backup Lightning

Reads your master disk once and then makes super fast multiple disk backups on all your drives! No need to format blank disks first! Supports 35, 40 or 80 track drives. This utility requires 512K. Disk: \$19.95

### COCO Braille



Produce standard grade 2 Braille on a Brother daisy wheel printer. Easy to use for sighted or blind user. No knowledge of Braille is necessary. Call for free sample. Will run on CoCo 1, 2, or 3. Disk: \$69.95

### VDOS the Undisk

VDOS, The Undisk, ramdisk for the CoCo 1 or 2 only. Available only on tape: \$24.95  
VDUMP, backup Undisk files to single tape file. Requires VDOS. Tape: \$14.95  
VPRINT, Print Undisk directory. Requires VDOS. Tape: \$9.95

Add \$2.50 shipping/  
handling in USA or  
CANADA

Add \$5.00 to ship to  
other countries

Dr. Preble's Programs  
6540 Outer Loop  
Louisville, KY 40228  
24 Hour Hot Line  
(502) 969-1818  
Visa, MC, COD, Check

# Do-It-Yourself Database, Part V

by Richard Perlman

**T**he database we've built holds all of your bills, checks and deposits for the entire year. You will probably not want to see all of them at once, but only those checks written after a certain date, which have cleared your account, or all checks and deposits for one specified month. The RETRV program lets you do this with a minimum of fuss and bother. You describe the records you want to see by supplying a range of values for any or all of the data fields in the record. The program tests each record in the database to determine whether its information is within this range. If it is, that record appears on the report. If not, the record is excluded from the report. But you can't be lazy. If you don't supply a range, the program does not test that data field or exclude records based on the information in that data field. If you don't supply any ranges at all (which is allowed), the program assumes you want to see all of the records in the file.

## Making Choices

Your first choice is shown on Menu A. You may choose to list Checks, Deposits or Bills, or one of two combined listings. The combined listings include Checks and Bills or Checks and Deposits. To get the ranges, the program sends you to Menu Z, which identifies each data field with a number and

lets you use that number to select the data field for which you want to supply a range. When you enter a number from 1 to 6, the program requests that you enter both the high and low values for that range. After you supply these values, the program places an asterisk (\*) on the screen next to the item number and allows you to choose another item. You can provide ranges for any, all or none of the items numbered 1 to 6. You can also respecify the high and low range values for the same item. The program stores the ranges for later use and sets a Range Value indicator to 1. You can also choose Option 7, which calculates totals and prints them at the end of the report. Choose Option 8 when you are finished supplying range values to start the report.

## Speed

Choosing Option 8 begins the report. The first time I did this it took a long time to finish the report, because the program had to open and close each of the 24 files on the database, read each record, examine each data field on each record to see if it was to be included or excluded, and switch to the next file when end-of-file was detected on the current file. If you find the wait long, you can speed things up by reducing the number of tests on each record and reducing the total number of data files processed.

You can reduce the number of tests per record by using the Range Value indicators to control the testing. These Range Value indicators are in Array RV. Each element in the array corresponds to one data field. If the indicator is set to 1, ranges are set and the data field in each record must be tested against the ranges. If it is zero, no range is

entered and no tests are made. The program doesn't waste time with tests not included and therefore runs faster.

To limit the number of files processed, skip as many of them as possible and stop reading them when possible. Also stop the search at any time by pressing the space bar.

Supplying a range of dates activates the Skip-and-Stop. As mentioned earlier, the database records are filed in date sequence. There are a total of 24 files, and each contains records with a specific range of dates (1/2 month). The program calculates which file corresponds to any date, so if you supply a starting date of April 1 and ending date of August 15, the program begins its search by opening the April file and proceeding from there. The lines below accomplish this:

```
1790 RC=0:ON RV(2) GOTO 1820
1800 SG$="M01D01/CHK":GOTO 1860
1820 IF LD$ > "15" THEN DD$ = "1
5" ELSE DD$ = "01"
1840 MM$=LM$:SG$ = "M"+MM$+"D"+D
D$+"/CHK"
1860 OPEN "I",#1,SG$
```

The name of the first opened database file is placed in the variable SG\$. Line 1860 opens this file. If a date range is entered, RV(2) is set to 1, LD\$ is set to the lowest day in the range, and LM\$ is set to the lowest month. Line 1790 directs control to Line 1820 if RV(2) is set to 1 and to Line 1800 if it isn't. Lines 1820 and 1840 construct the correct filename. Control passes to the search subroutine, which ends the search when the first record with a date higher than August

---

*Richard Perlman spends his time at work helping others use their PCs. At home, he shares his CoCo 2 with his wife and two children. He may be contacted at 83-84 169 Street, Jamaica, NY 11431.*



5 is found.

Even if you don't supply a date range, you may decide you've seen enough and want to stop the report. Do this by pressing the space bar. The program checks to see if the space bar is pressed before it reads each record. Because the program may not be reading a record when you press the space bar, hold it down. The program eventually checks it and stops the report. If you ask for totals, the program calculates and prints those records already displayed.

### Record Search and Selection

The subroutine begins at Line 10280 and ends at Line 11240. It requires you to place values in specific variables before you call it. Variable SG\$ must contain the name of the database file, and each element in the RV array must have a value. The Range Value code places a value of 1 in RV(1) through RV(6) when you specify ranges for the corresponding data field. Otherwise RV(n) is zero. These fields are as follows: RV(1) for Check, Bill or Deposit number; RV(2) for Date; RV(3) for Cleared; RV(4) for Amount; RV(5) for Paid To; and RV(6) for Purpose. The select subroutine consists mostly of ON GOSUB statements. See lines 10340 through 10460. If RV(n) is set to 1, the ON GOSUB statement calls the associated checking subroutine.

The INPUT statement reads each database record in Line 10300. Remember, the program stops running if you attempt to read past end-of-file. So check to see if this

condition is present before processing the INPUT statement. Line 10282 prevents you from reading past the end of a data file. Since your database contains 24 files, reaching end-of-file does not mean you have reached the end-of-database. The database filename is contained in the variable SG\$. The last file in the database is M12D15/CHK. If that is the name in SG\$, you have reached end-of-database. Depending upon this test and other tests the subroutine performs, values are placed in the indicator fields RJ and RI. Figure 1 shows the possible values found when all tests are complete.

If any range test other than the date-higher test fails, the program adds 1 to RJ. (RJ is also a Return Indicator.) When all range tests are complete, Line 10520 tests RJ. If it contains any value greater than zero, the record is excluded as the program goes back to Line 10280 to read another record. If the program passes all tests, RI is set to 1 and the subroutine returns to the program. The program then uses an ON GOTO statement to test the value in RI. If it finds a 1, it processes the record. If it finds a 2, it must end the report, printing whatever totals are required, and return to the previous menu.

### Scrolling the Screen

When you repeatedly use the PRINT statement to display lines on the screen, each line prints below the previous one. When you get to the last line on the screen, the CoCo scrolls (moves) the entire display

Condition	RJ	RI
Record passed all tests and can be included in the report	0	1
Record failed some of all of the tests	1-7	0
No more records. You are past the end of the last data file in the database, or have read a record with a date higher than the the highest date specified in the date range	0	2
Operator pressed the space bar while the report was printing	0	2
End-of-database condition described above causes the program to place a 2 in the RI (Return Indicator) variable. Subroutine returns control to the program with either a 1 or a 2 in this variable.		

The "if the space bar was pressed then end the report" test is made immediately before the record is read (Line 10280).

The "read a record with a higher date than was in the allowable range" test is seen in Line 10380. If a date range was specified then RV(2) was set to 1 and the Line 10660 will place 2 in RI if the date was found to be higher.

Figure 1: Return Indicator Condition Codes

**PERRY**  
**COMPUTERS**  
*The Ideal Buy*  
1-800-248-3823

### TANDY COMPUTERS

Tandy 1000-HX 256K 5 1/4"	549.00
Tandy 1000-SL/2 512K 3 1/2"	755.00
Tandy 1000-TL/2 640K 3 1/2"	955.00
Tandy 1100FD Portable	805.00
Tandy 1400FD Portable	1210.00
Tandy 1400HD Portable	1975.00
Tandy 2500XL 1 Meg 3 1/2"	1239.00
Tandy 4016 SX 1 Meg 3 1/2"	1495.00
Tandy 4016 DX 1 Meg 3 1/2"	2235.00
Tandy 4020-LX 1 Meg 3 1/2"	2950.00
Tandy 4025 LX 2 Meg 3 1/2"	3650.00
Tandy 4033 LX 2 Meg 3 1/2"	5049.00
Tandy 5000MC 2 Meg 1 Drive	3825.00
Tandy 5000MC 2 Meg 84 Meg	5395.00
Tandy 102 24K	435.00
Tandy Color 3 128K	155.00
WP-2 Wordprocessor	285.00
WP-100 Wordprocessor	495.00

### MONITORS & CARDS

VM-5 Monochrome Green	115.00
CM-5 Color RGB	220.00
CM-11 Color RGB	315.00
Magnavox 9CM053 Color EGA	370.00
Packard Bell Monochrome TTL	89.00
Paradise Basic EGA Card	99.00

### DISK DRIVES

5 1/4" External Drive 1000HX	180.00
Tandy 20 Meg Hard Card	450.00
30 Meg Hardcard	395.00
Weltec 5 1/4" for Tandy 1400	215.00
Seagate 20 Meg Drive & Card	269.00

### MODEMS

Prac. Peripherals 1200B Internal	75.00
Prac. Peripherals 2400B Internal	175.00

### PRINTERS

DMP-107 Dot-Matrix	210.00
DMP-133 Dot-Matrix	279.00
DMP-300 Dot-Matrix	479.00
Epson LX-810 Dot-Matrix	195.00
Epson FX-850 Dot-Matrix	365.00
Epson LQ-510 Dot-Matrix	345.00
Epson LQ-850 Dot-Matrix	585.00
Epson FX-1050 Dot-Matrix	485.00
Panasonic KX-P1180 Dot-Matrix	195.00
Panasonic KX-P1191 Dot-Matrix	265.00
Panasonic KX-P1124 Dot-Matrix	329.00

All prices and offers may be changed or withdrawn without notice. Advertised prices are cash prices. C.O.D. accepted add 2% (minimum charge \$10.00). N.C., Visa add 2%. All non defective items require return merchandise authorization. Call for RMA Number before returning. Delivery is subject to product availability. Add 1 1/2% for shipping and handling. \$5.00 minimum charge.

TM - Registered Trademark of Tandy, Epson, and IBM  
Monday thru Friday 9am - 5pm EST.

**PERRY**  
**COMPUTERS**

124 South Main Street, Perry, MI 48872  
CALL 1-517-625-4161 or TOLL-FREE  
1-800-248-3823

### CHECK AND DEPOSIT REPORT

DATE	NMBR	CD	DEPO-AMT	CHCK-AMT
1010	1234			123.45
1011	1235			56.90
1012	0100	*	200.10	
1013	1238	*		1000.24
1020	0101		500.10	
SUBTOTALS			700.20	1180.59
OP BAL/TOTALS			500.00	19.61

Figure 2: Checks and Deposits Report

up by one line and prints the next line at the bottom. The top line on the screen gets lost in this process. Even if you have very quick eyes, you cannot keep up with the scrolling. To solve this problem, pause printing after the last line prints. The program keeps track of the line numbers on the screen by using the variable PL. When PL=14, the program goes into a wait state. After you press any key, the screen clears and the display begins again at the top of the screen.

### Producing a Statement

A Statement Report is a listing of Checks and Deposits over a period of time. Use the Statement Report to verify the accuracy of your bank statement, to provide your own statement before the end of the month, to include checks and deposits not yet cleared

on your account, or to produce a quarterly (or other non-monthly time period) report.

Before you run the Statement Report, know whether you want to include an opening balance, totals, all activity or only that cleared by the account, and the time period you want to use; then type RUN"RETRV". From Menu A choose Option 4, Special Reporting. This takes you to Menu X from which you choose Option 1, Checks and Deposits Statement. Next you see Menu Y (the Opening balance Menu). Here you can enter and re-enter a balance. When you are ready to continue, choose Option 2, Enter Record Selection Ranges. Next you see Menu R. On this screen you might choose Option 2, By Date; then Option 7, Print Totals; then Option 8, Continue. A sample report is shown in Figure 2.

This report covers the period of time from October 10 through October 20. During this time three checks were written and two deposits were made. One check and one deposit have not yet cleared the account. There is an opening balance of \$500. When the outstanding check and deposit clear the account, the closing balance is \$19.61.

### Balance Report

A Balance Report is a listing of check and bills over a period of time. Before you run the Balance Report, know whether you want to limit the report to a specific person or company, whether you want subtotal and totals, whether you want to see a activity or only that which has cleared the account, and the time period you want to use. To run this report, enter RUN"RETRV". From Menu A choose Option 4, Special Reporting. When you see Menu X, choose Option 2, Checks and Bills Balance. When you see Menu R, choose Option 2, By Date then Option 5, By Paid To Or From; then Option 7, Print Totals; then Option 8, Continue. Figure 3 shows a sample report.

This report covers the period of time from January 10 through March 10. To/From is entered as Telephone. In this time three bills were received and two checks were written. All items have cleared the account. There is an outstanding amount owed of \$99.44.

### CHECK/BILL REPORT

Date	Number	TC	Description	Amount
0110	0010	B	TELEPHONE	123.45
0120	1235	C	TELEPHONE	-123.45
0210	0034	B	TELEPHONE	57.80
0220	1238	C	TELEPHONE	-57.80
0310	0059	B	TELEPHONE	99.44
BILL TOTAL				290.69
CHECK TOTAL				-181.25
OUTSTANDING AMOUNT				99.44

Figure 3: Balance Report

### Your Own Reporting

It is not difficult to create your own reports. You can create other screen formats (some folks like to have today's date somewhere on the screen), print your report, (with a longer line you can display more information), or write it to a data file for editing or inclusion into some other program. It is easy to fit the code into RETRV, especially if you use the existing subroutines to help you. You should start with the Special Reporting Menu X, Line 3000.

## THE BEST COCO ASSEMBLY LANGUAGE PROGRAMMING BOOKS IN PRINT

"Assembly Language Programming for the CoCo" (The Book) and the CoCo 3 (The Addendum). Professionally produced (not just skimpy technical specifications). THE CoCo reference books.

**THE BOOK** - 289 pages of teaching assembly language for the CoCo 1 & 2. It's used as a school text and is an intro to Computer Science. It describes the 6809E instructions, subroutines, interrupts, stacks, programming philosophy, and many examples. Also covered are PIAs, VDG, SAM, kybd, jystk, sound, serial port, and using cassette and disk. \$18.00 + \$1.50 s/h.

**THE ADDENDUM** - Picks up where the BOOK left off. Describes ALL the CoCo 3 enhancements & how to use them with assembly language. The most complete GIME spec. WOW - Super-Res Graphics, Virtual Memory, New Interrupts, and more information not available elsewhere. Find out what the CoCo 3 can really do. \$12.00 + \$1.00 s/h.

**COCO 3 SPECIAL** Start your CoCo library right. See what the CoCo can really do and save money - buy the BOOK and ADDENDUM for only \$27.00 + \$2.00 s/h.

US check or money order. RI orders add 6% sales tax

**TEPCO**  
68 James Court  
Portsmouth, RI 02871

See Us On DELPHI



✓ 320	89
442	45
500	128
640	111
755	0
880	164
940	176
1030	92
1110	207
1180	213
1320	42
1460	253
1620	99
1790	23
1868	223
1950	161
1996	221
3000	191
3014	215
3080	49
3150	182
3240	46
3270	59
4105	186
4175	13
4255	243
4280	206
9100	165
9240	72
9420	185
9860	83
10000	187
10160	178
10280	241
10318	66
10432	224
10510	6
10580	162
10700	167
END	72

```

160 CLSO:PRINT @0,"— DATA BA
SE RETRIEVAL—a
180 LI$(1)="1. CHECK LISTING
200 LI$(2)="2. DEPOSIT LISTING
220 LI$(3)="3. BILL LISTING
240 LI$(4)="4. SPECIAL REPORTING
260 LI$(5)="5. RUN THE DATABASE
UPDATE
280 LI$(6)="6. END THIS SESSION
300 SL=96:NL=6:RC=0:GOSUB 9020
320 ON A GOTO 460,444,442,3000,4
40,340
340 PRINT @416,"** SESSION OVER
- TOUCH ANY KEY"
360 FOR I= 1 TO 150:AA$= INKEY$:
IF AA$ <> "" GOTO 420
380 NEXT I:PRINT @416,STRING$(31
," ")
400 FOR I= 1 TO 60:AA$= INKEY$:I
F AA$ <> "" GOTO 420 ELSE NEXT I
:GOTO 340
420 CLS:END
440 RUN "DATAB"
442 RT$="BILL":RV(8)=2:RX$="B":G
OTO 470
444 RT$="DEPOSIT":RV(8)=3:RX$="D
":GOTO 470
460 RT$="CHECK":RV(8)=1:RX$="C"
470 AD=1:LI$(1)="1. FIND A SPECI
FIC "+RT$
480 LI$(2)="2. FIND A RANGE OF "
+RT$+"S":LI$(3)="3. RETURN TO TH
E MAIN MENU
490 LI$(4)="4. RUN THE DATABASE
UPDATE":LI$(5)="5. END THIS SESS
ION
500 CLS:PRINT @25,"—b":PRIN
T @0,"— FIND (SOME) ";RT$;"S
":
520 SL=96:NL=5:GOSUB 9020
540 ON A GOTO 560,1035,160,440,3
40
560 CLS:PRINT @25,"—c":PRIN
T @0,"— SEARCH FOR A ";RT$;" ":
580 SL=64:VT$="N":LV=1000:HV=999
9:P$="ENTER "+RT$+" NUMBER"
600 GOSUB 9220:SN$=VA$
620 SL=128:VT$="N":HV=12:LV=1
640 P$="ENTER MONTH OF "+RT$+"
1-12":GOSUB 9220:MM$=RIGHT$("0"+
VA$,2)

```

### The Listing: RETRV

```

0 'COPYRIGHT 1990, FALSOFT INC
100 CLEAR 650
120 DIM LI$(8)
140 DIM RV(8)

```

This section of code is ideally placed for you to add reports of your own. You can run your report from Menu X by doing the following:

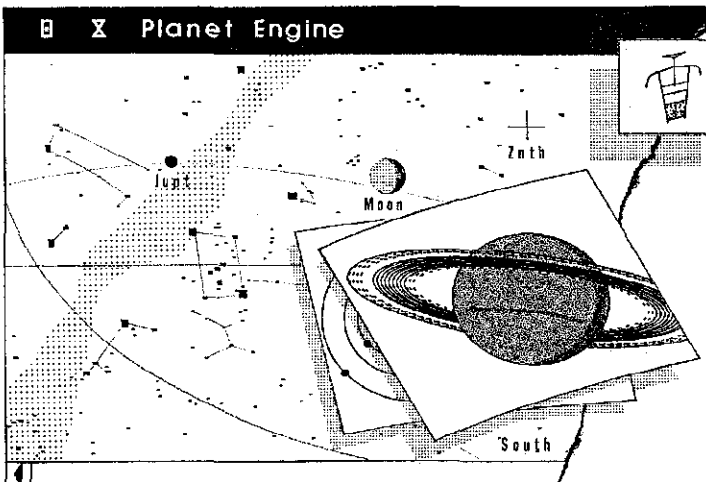
- add the report title as an element in the LI\$ array between lines 3005 and 3014.
- change Line 3016 from NL=5 to the number of lines you want on the menu.
- change Line 3018 so the program can transfer control to the line number of your report code when the proper number is entered.
- begin your report code in an available range of sequence numbers (5000 through 8000 are available).
- end your code with a GOTO 3000.

Look at the existing reports to pick up some ideas. The first report (Checks and Deposits) begins at Line 3020 and ends at 3920. The second report (Checks and Bills) begins at 4000 and ends at 4920. Lines in the 3900 and 4900 range are reserved for the action when the screen fills up.

There are several subroutines to use. To get data field ranges, GOTO 1040. It is important to see lines 1862 and 1863 as examples for how to get back to your original location. Make sure you clear all the necessary RV(x) elements to zero before you get to Line 1040. To use the end-of-screen logic, follow the coding scheme used in the 3900 and 4900 range. See how the program uses them at the beginning of and during the report. To use the record selection subroutine, use GOSUB 10280 and test the value in RI to see what action should be taken when it returns to your code.

### A Database on Cassette?

You can do this, but there are some limitations to consider such as memory size, database size and the method of update. For articles about a database on cassette, please



## GRAVITY STUDIO

Send check or money order only to...  
Box 791 Belton, TX 76513-0791  
Add \$2 S/H, Add \$5 S/H if outside US, Add 7.5% tax if in Texas

Planet Engine is a program that takes your time and location to chart a colored sky of planets, stars, and the Moon and Sun. Upon startup, the planets are mapped from current computer time and boldly drawn on the field of equatorial stars beyond. From here you can request orbits, practice date, planet drawings, or skip around to any past or future time or location. The Moon and all planets are shadowed to their proper phase. Earth is shadowed for its appearance from the Moon.

Multi-View users with 512k can execute Planet Engine from menu orbits and icons: the pull-down menus, scroll buttons, and overlay windows make your experience stimulating and delightful. Your Earth location and display group list is conveniently stored in the RIF file and passed to Planet Engine every time you double-click on the Planet icon. Also with Multi-View, you can scroll the sky east or west to check the approximate rise or set times of any displayed object with the horizon line.

Teachers and star-gazers will love the display groups that can be switched on or off: Planets, Stars, Moon/Sun, and Annotation (Labels). This feature lets you watch just the Sun and Moon in the sky, or turn everything off except the stars and save the stars through their seasonal appearances. Teachers, make your students leave off the labels to identify planets by appearance only. Teachers can make the Planet Engine's location to another part of the world and preobserve what astronomical opportunities await them. Your personal planetarium is ready!

**\* THE PLANET ENGINE IS ONLY \$24 - A REMARKABLE BARGAIN...\***

- \* Requirements: Geo 3 + 256 Level 2 + 128k Minimum
- \* Multi-View and 512k are strongly recommended to maximize Planet Engine.
- \* Also included for Multi-View users: RIF Files, and Planet Icon.
- \* Multi-View and 512k version are included at one price.
- \* Also included is an 11-page manual with World Map, examples, & suggestions.

The biggest difference between using cassette and disk is that only one file on the cassette is processed at a time. To update a cassette file, read the entire file into an array in the memory of the computer (maintaining the identity of each record), perform the update, and write the entire array

out to another cassette file. Both the update program and the database file must fit into the memory of the computer at the same time. Concerning chaining, even if the computer has 32K or 64K, you don't have nearly this amount of space to use for programs. You must devise a method to split your database so it can be stored on more than one cassette. If your database is small, you can use one cassette file. To find out how much memory you have left after a program is loaded, load the program (without running it) and type PRINT MEM. Also use the CLEAR *nnnn* command to reserve enough space for the array. If you do not do this, an OB Error occurs.

## Modifying the Database

Using the principles illustrated in this series, you can modify this database for other uses. This is really handy. You can have the system you want and know how it

```

1157 GOTO 1040
1160 P$="ENTER LOWEST NUMBER 100
0-9998":SL=320:VT$="N"
1180 LV=1000:HV=9998:GOSUB 9220:
LN$=VA$
1200 P$="ENTER HIGHEST NUMBER "+
STR$(INT(VV+1))+"-9999"
1220 SL=320:VT$="N":LV=VV+1:HV=9
999:GOSUB 9220:HN$=VA$
1240 RV(1)=1:GOTO 1040
1260 P$="ENTER LOWEST MONTH 1-11
":SL=320:VT$="N"
1280 HV=11:LV=1:GOSUB 9220:LM$=R
IGHT$("0"+VA$,2)
1300 P$="ENTER LOWEST DAY 1-30":
SL=320:VT$="N"
1320 LV=1:HV=30:GOSUB 9220:LD$=R
IGHT$("0"+VA$,2)
1340 P$="ENTER HIGHEST MONTH 1-1
2":SL=320:VT$="N"
1360 HV=12:LV=1:GOSUB 9220:HM$=R
IGHT$("0"+VA$,2)
1380 P$="ENTER HIGHEST DAY 1-31"
:SL=320:VT$="N"
1400 LV=1:HV=31:GOSUB 9220:HD$=R
IGHT$("0"+VA$,2)
1420 RV(2)=1:LX$=LM$+LD$:HX$=HM$
+HD$:GOTO 1040
1440 P$="ENTER 'Y' OR '*'":SL=32
0:VT$="A":HV=1
1460 GOSUB 9220:CC$=VA$:RV(3)=1:
GOTO 1040
1480 P$="ENTER LOWEST AMOUNT":SL
=320:VT$="D"
1500 LV=1:HV=99999.99:GOSUB 9220
:LA=VV
1520 P$="ENTER HIGHEST AMOUNT":S
L=320:VT$="D"
1540 LV=1:HV=99999.99:GOSUB 9220
:HA=VV
1560 RV(4)=1:GOTO 1040
1580 P$="ENTER LOW VALUE OF TO/F
ROM":SL=320:VT$="A"
1600 HV=24:GOSUB 9220:LT$=VA$
1620 P$="ENTER HIGH VALUE OF TO/
FROM":SL=320:VT$="A"
1640 HV=24:GOSUB 9220:HT$=VA$
1660 RV(5)=1:GOTO 1040
1680 IF RV(8)=3 THEN GOTO 1040
1690 P$="ENTER LOW VALUE PAID FO
R":SL=320:VT$="A"
1700 HV=58:GOSUB 9220:LF$=VA$
1720 P$="ENTER HIGH VALUE PAID F
OR":SL=320:VT$="A"
1740 HV=58:GOSUB 9220:HF$=VA$
1760 RV(6)=1:GOTO 1040
1780 CLS:PRINT "SEARCH
HING _____:PL=64:CLOSE #1
1790 RC=0:ON RV(2) GOTO 1820
1800 SG$="M01D01/CHK":GOTO 1860
1820 IF LD$ > "15" THEN DD$ = "1
5" ELSE DD$ = "01"
1840 MM$=LM$:SG$ = "M"+MM$+"D"+D
D$+"/CHK"
1860 OPEN "I",#1,SG$
1862 IF RV(8) = 4 THEN GOTO 3105
1863 IF RV(8) = 5 THEN GOTO 4105
1865 PL=1:GOSUB 1866:GOTO 1880
1866 PRINT @0,"SEARCH
FOUND _____"
1867 PRINT @2,RT$;
1868 PRINT @32,"DATE NUMBR CD
AMOUNT _____";
1870 IF RV(8) = 1 THEN PRINT "TO
" ELSE PRINT "FROM":RETURN
1879 'RI=1 RECORD FOUND - PRINT

```



```

RI=2 END-OF FILE
1880 GOSUB 10280:ON RI GOTO 1900
,2020
1900 RC=RC+1:PL=PL+1
1920 J=INSTR(10,LI$,CHR$(127)):K
=INSTR(J+1,LI$,CHR$(127))
1940 PRINT @(32*PL),LEFT$(LI$,2)
;"/";MID$(LI$,3,2);" ";
1950 PRINT MID$(LI$,6,4);" ";MID
$(LI$,10,1);" ";
1952 CA=VAL(MID$(LI$,11,J-11))
1955 PRINT USING "##,###.## ";CA
/100;
1960 ST=ST+CA
1980 PRINT LEFT$(MID$(LI$,J+1,K-
J-1),9);
1990 IF PL< 14 THEN GOTO 1880
1992 PRINT @480,"PRESS ANY KEY T
O CONTINUE";
1994 A$=INKEY$:IF A$="" THEN GOT
O 1994
1996 CLS:GOSUB 1866:PL=2:GOTO 18
80
2020 IF RC=0 THEN PRINT "*** NO R
ECORDS IN THIS RANGE"
2022 IF RV(7) = 0 THEN PRINT @48
0,"-END OF SELECT - PRESS ANY KE
Y-";
2024 IF RV(7) = 1 THEN PRINT @48
0,"PRESS ANY KEY";:PRINT USING "
##,###.##";ST/100;:PRINT " TOTA
LS";
2030 CLOSE #1
2040 A$=INKEY$:IF A$="" THEN GOT
O 2040 ELSE GOTO 470

```

```

3000 CLS5:PRINT @0,"— SPECIA
L REPORTING —x
3002 LI$(1)="1. CHECKS & DEPOSIT
S (STATEMENT)
3004 LI$(2)="2. CHECKS & BILLS
(BALANCE)
3006 LI$(3)="3. RETURN TO THE MA
IN MENU
3008 LI$(4)="4. RUN THE DATABASE
UPDATE
3010 LI$(5)="5. END THIS SESSION
3011 CT=0:BT=0:DT=0:OB=0:RC=0
3012 RT$="RECORD":SL=96:NL=5:GOS
UB 9020
3014 ON A GOTO 3020,4000,160,440
,340
3020 FOR I=1 TO 7:RV(I)=0:NEXT I
3030 CLS0:PRINT "— OPENING B
ALANCE? —y
3040 LI$(1)="1. ENTER AN OPENING
BALANCE
3050 LI$(2)="2. ENTER RECORD SEL
ECTION RANGES
3060 LI$(3)="3. RETURN TO REPORT
ING MENU-x
3070 SL=128:NL=3:GOSUB 9020
3072 ON A GOTO 3080,3100,3000
3080 P$="BALANCE ( . PLUS 2 DECI
MALS REQUIRED)":SL=320:VT$="D"
3090 LV=1:HV=99999.99:GOSUB 9220
:OB=VV:GOTO 3030
3100 RV(8)=4:GOTO 1040
3105 GOSUB 3900
3110 GOSUB 10280:ON RI GOTO 3120
,3250

```

```

3120 RC=RC+1:PL=PL+1
3130 J=INSTR(10,LI$,CHR$(127)):K
=INSTR(J+1,LI$,CHR$(127))
3140 PRINT @(32*PL),LEFT$(LI$,2)
;"/";MID$(LI$,3,2);" ";
3150 PRINT MID$(LI$,6,4);" ";MID
$(LI$,10,1);" ";
3160 CA=VAL(MID$(LI$,11,J-11))
3170 IF MID$(LI$,5,1)="C" THEN P
RINT " ";
3180 PRINT USING "#####.##";CA/1
00;
3190 IF MID$(LI$,5,1)="C" THEN C
T=CT+CA ELSE DT=DT+CA
3210 IF PL< 14 THEN GOTO 3110
3220 PRINT @480,"PRESS ANY KEY T
O CONTINUE";
3230 A$=INKEY$:IF A$="" THEN GOT
O 3230
3240 CLS:GOSUB 3900:GOTO 3110
3250 IF RV(7)=0 THEN PRINT " ":G
OTO 3270
3255 PRINT " ":PRINT "SUBTOTALS
";
3257 PRINT USING "#####.##";DT/1
00;
3260 PRINT USING " #####.##";CT/
100
3265 PRINT "OP BAL/TOTALS ";
3266 PRINT USING "#####.##";OB;
3267 FT=OB+((DT-CT)/100)
3268 PRINT USING " #####.##";FT
3270 IF RC=0 THEN PRINT "*** NO R
ECORDS IN THIS RANGE
3275 PRINT "-END OF SELECT - PRE

```

**GET 'EM WHILE  
THEY'RE**

**STILL HOT**

**BACK ISSUES STILL AVAILABLE**

Have you explored the wealth of information in our past issues? From our very first, four-page issue to many with more than 300 pages of material, it's all just for CoCo users — a great way to expand your library!

**A WORLD OF INFO AT A BARGAIN PRICE**

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. There is a \$5 charge for the first issue, plus a \$1 charge for each additional issue on orders sent by U.S. Mail. UPS will not deliver to a post office box or to another country.

**MOST ISSUES STILL AVAILABLE**

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 sales tax. In order to hold down costs, we do no bill, and no C.O.D. orders are accepted.

Due to heavy demand, we suggest you order the back issues you want now while supplies last.

To check availability and order, review and fill out the form below and mail it with your payment.

For greater convenience, order through the Rainbow Magazine Services area of our Delphi CoCo SIG.

---



```

SS ANY KEY-";:CLOSE#1
3280 A$=INKEY$:IF A$="" THEN GOT
0 3280 ELSE GOTO 3000
3900 CLS:PRINT "— CHECK/DEPOSIT
REPORT —"
3910 PRINT @32,"DATE  NMBR CD  D
EPO-AMT CHCK-AMT"
3920 PL=1:RETURN
4000 RV(8)=5:FOR I=1 TO 7:RV(I)=
0:NEXT I
4100 GOTO 1040
4105 GOSUB 4900
4110 GOSUB 10280:ON RI GOTO 4120
,4250
4120 RC=RC+1:PL=PL+1
4130 J=INSTR(10,LI$,CHR$(127)):K
=INSTR(J+1,LI$,CHR$(127))
4140 PRINT @$(32*PL),LEFT$(LI$,2)
:"/":MID$(LI$,3,2):" "
4150 PRINT MID$(LI$,6,4):" "
MID
$(LI$,5,1):MID$(LI$,10,1):" "
4160 CA=VAL(MID$(LI$,11,J-1)):T
F$=MID$(LI$,J+1,K-J-1)
4170 PRINT LEFT$(TF$+"
",
9);
4175 IF MID$(LI$,5,1)="C" THEN P
C=-1*CA/100 ELSE PC=CA/100
4180 PRINT USING "#####.##":PC:
4190 IF MID$(LI$,5,1)="C" THEN C
T=CT+CA ELSE DT=DT+CA
4210 IF PL< 14 THEN GOTO 4110
4220 PRINT @480,"PRESS ANY KEY T
O CONTINUE";
4230 A$=INKEY$:IF A$="" THEN GOT
0 4230
4240 CLS:GOSUB 4900:GOTO 4110
4250 IF RV(7)=0 THEN GOTO 4270
4255 PRINT " BILL TOTAL
":PRINT USING "#####.##":DT
/100
4260 PRINT "CHECK TOTAL
":PRINT USING "#####.##":CT
/100
4265 PRINT "OUTSTANDING AMOUNT
":
4267 FT=((DT-CT)/100):PRINT USIN
G "#####.##":FT
4270 IF RC=0 THEN PRINT "*** NO R
ECORDS IN THIS RANGE
4275 PRINT "—END OF SELECT - PRE
SS ANY KEY-";:CLOSE#1
4280 A$=INKEY$:IF A$="" THEN GOT
0 3280 ELSE GOTO 3000
4900 CLS:PRINT "— CHECK/BIL
L REPORT —"
4910 PRINT @32,"DATE  NMBR TC DE
SCRIP  AMOUNT"
4920 PL=1:RETURN
9020 FOR I= 1 TO NL:PRINT @SL,LI
$(I)
9040 SL= SL+32:NEXT I
9060 PRINT @32,"**  SELECT FROM
THE FOLLOWING"
9080 FOR I = 1 TO 200
9100 A$ = INKEY$:IF A$ <> "" GOT
0 9180 ELSE NEXT I
9120 PRINT @32," ":FOR I = 1 TO
65

```

works. You can use DATAB and RETRV as a guide and let your imagination do the rest. Though your data is different, the flow from menu to menu is followed pretty much as it is. Start by creating your Data Dictionary and formulate your set of database rules.

To use a printer for output, follow the manufacturer's print codes. These control such things as lines per inch, characters per inch, lines per page, page eject, print format, tabulation, etc. Now that you are no longer a beginner, look at the disk manual. It has many useful techniques to incorporate into your system to make managing information easier. There are many sophisticated methods of placing data on a disk. This one gets the job done and I hope you find it helpful.

### Off-the-Shelf Packages

Even though you know how to modify this database, you may find it simpler to purchase a ready-to-use database system. They are relatively inexpensive, fast and feature-packed; however, if the system isn't designed to do what you need it to, it is of no use. There are several database programs that run on the CoCo. They are listed in advertisements in RAINBOW. Each system has its advantages and disadvantages.

## MLBASIC 2.0 - BASIC Compiler

If you want your BASIC programs to run up to 60 times faster, or want more programming features without learning another language, MLBASIC is for you. MLBASIC is the most compatible BASIC compiler available for the Color Computer. WHY? Because MLBASIC fully supports:

- Low- and high-resolution graphics
- All types of I/O (disk, screen, printer, RS232)
- All available commands offered with BASIC
- Floating point functions and expressions
- Integer, floating point and string type variables and arrays
- Use of all available 512K RAM in the COCO 3
- 80,40 or 32 column text displays

MLBASIC not only contains everything that you would expect a BASIC programming language should contain, MLBASIC has features that offer flexibility of other languages like C, Pascal, FORTRAN and even assembly language. These features will allow programmers to directly access the CPU registers on the COCO, produce modular program code with SUBROUTINES, manipulate memory in blocks, and even call ROM routines in other areas of memory.

MLBASIC revision 2.0 has incorporated all enhancements that were suggested by MLBASIC 1.0 users and more. Revision 2.0 did away with all the incompatibility problems that existed with revision 1.0.

MLBASIC allows for the first time user to quickly compile a program using default compiler settings. The advanced user has the capability of controlling over a dozen settings which control where the program is compiled, which medium to compile to (memory or disk), string space, compiler listings and more.

With all this going for MLBASIC, your might expect the cost to be a little out of your budget. After looking at prices of other BASIC compilers for the COCO 3 you might be correct. But look again at this ad; for only \$59.95, you can have a programming language that will spark your interest once again in the COCO.

Before you buy another BASIC compiler for the COCO, find out if it supports everything MLBASIC supports. Then look at the price tag. We feel that it won't be long before you place an order for MLBASIC.

"MLBASIC is a fine program for any serious programmer,"  
said David Gerald in the December 1987 RAINBOW.

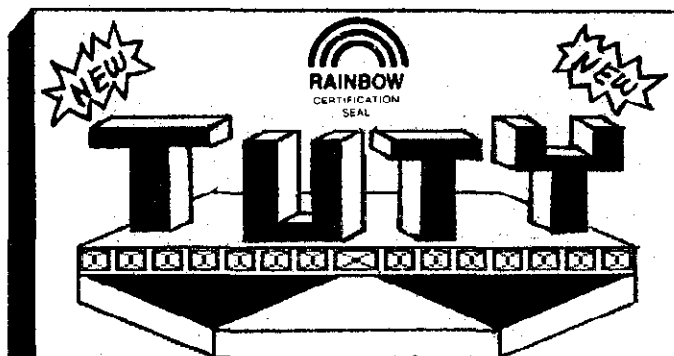
<<<<< **ONLY \$59<sup>95</sup>** >>>>>

COCO 3 WITH DISK REQUIRED -Add \$4.00 Postage.

Check, Money Order or COD accepted  
Foreign orders use U.S. MONEY ORDERS only.

### WASATCHWARE

7350 Nutree Drive  
Salt Lake City, Utah 84121  
Phone (801) 943-1546



When TUTY begins the fun never ends! Play against the computer or up to four players may compete against each other. TUTY was created with the family in mind and is enjoyed by both young and old. TUTY has a great combination of skill and chance that makes everyone a winner.

- \* Great graphics and sound effects.
- \* Requires CoCoII or III, Disk drive.
- \* Optional: Joystick, RGB monitor.
- \* Shipping and handling included.

TUTY.....\$24.95

Send check or money order to:



CB GAMES  
P.O. BOX 2496  
KALISPELL, Mt. 59901  
Phone (406) 257-3832

Now I will point out some things to take into consideration.

Make sure the product is for use on your particular CoCo. Determine the memory size and type of computer required. (Does it require OS-9 or 128K?) Create a Data Dictionary to determine the information you need to process the system. Check the database system specification to see whether the system works with records of that type

**Some systems use a data compression technique, which lets you put more information on a disk than is normally possible. This is important if you plan to use a single disk and have a lot of data.**

and size. Write the supplier for descriptive information and make sure you can get a refund if the product does not suit your needs. Estimate the largest number of records you have, multiply it by the number of characters in each record and see if the system can store this amount of information. Some systems use a data compression technique, which lets you put more information on a disk than is normally possible. This is important if you plan to use a single disk and have a lot of data. See if the system splits a database over several disks.

Draw up some sample reports and make sure the program can produce them. It is important to make sure the printer you plan to use is supported by the system. Try the system out or talk to someone else who uses it; some systems are easier to use than others. See if there is a number you can call if you have any problems. Most of these systems have been around for a while, so I don't think you'll have many problems.

#### End of the Road

My next project is to revise the database to keep track of my wife's videotapes. I know we have *Trouble With Tribbles* ... somewhere. □

```

9140 A$ = INKEY$:IF A$ <> "" GOT
0 9180 ELSE NEXT I
9160 GOTO 9060
9180 A = VAL(A$):IF A > 0 AND A
< NL+1 THEN RETURN
9200 GOTO 9060
9220 PRINT @SL,P$ 'PROMPT FOR VA
RIABLE
9240 PRINT @SL+32," " 'CLEAR LIN
E
9260 PRINT @SL+32,""; 'REPOSITIO
N CURSOR
9280 LINE INPUT "—> ";VA$ 'INPU
T THE VARIABLE
9300 LA= LEN(VA$):IF VT$ = "D" G
OTO 9460
9320 IF VT$ = "N" GOTO 9380
9340 IF LA > INT(HV) GOTO 9220
9360 RETURN 'VARIABLE IS IN RANG
E
9380 VV= VAL(VA$)
9400 IF VV < LV GOTO 9220
9420 IF VV > HV GOTO 9220
9440 GOTO 9360
9460 IF LA > 9 OR LA < 3 GOTO 92
20
9480 IF MID$(VA$,LA-2,1) <> "."
GOTO 9220
9500 GOTO 9380
9800 IF DD$ > "15" THEN DF$ = "1
5" ELSE DF$ = "01"
9820 SG$ = "M" + MM$ + "D" + DF$
+ "/CHK"
9840 CLOSE:OPEN "I",#1,SG$:RETUR
N
9860 'AD=1 LOCATE, 2 CHANGE, 3 D
ELETE
9880 'RA 1 ADDED,CHANGED,DELETED
0 NO ACTION
9900 IF EOF(1) = -1 GOTO 9990
9920 INPUT #1,LI$:IK$ = LEFT$(LI
$,9)
9940 IF IK$<MK$ THEN GOTO 9900
9960 IF IK$=MK$ THEN GE=1 ELSE G
E =2
9980 CLOSE:RETURN
9990 GE=2:CLOSE:RETURN
10000 IF IK$ < LK$ OR IK$ > HK$
GOTO 9900
10020 RC=RC+1:WRITE #2,LI$:GOTO
9900
10040 MV=VAL(MM$)
10060 IF MV = 12 AND DF$ = "15" T
HEN RETURN
10080 IF MV = 12 THEN DF$ = "15"
10100 IF DF$ = "01" THEN DF$ = "
15" ELSE MV=MV+1
10120 MM$ = RIGHT$(STR$(MV+100),
2):CLOSE #1
10140 SG$ = "M" + MM$ + "D" + DF
$ + "/CHK"
10160 OPEN "I",#1,SG$:GOTO 9900
10180 IF RV(2) = 1 THEN GOTO 102
00 ELSE MM=1:DD=1:GOTO 10220
10200 MM=VAL(LM$):IF LD$ < 16 TH
EN DD=1 ELSE DD=15
10220 SG$ = "M" + RIGHT$("0"+STR
$(MM),2) + "D" + RIGHT$("0"+STR$
(DD),2)+"/CHK"
10240 FOR I = 1 TO 6:IF MID$(SG$
,I,1) = " " THEN MID$(SG$,I,1)="0
"
10260 NEXT I:CLOSE #1:OPEN "I",#
1,SG$
10280 A$=INKEY$:IF A$=" " THEN R
I=2:RETURN 'FORCED RETURN
10282 IF EOF(1) = -1 GOTO 10680

```

```

'CHANGE FILES?
10300 INPUT #1,LI$:RI=0:RJ=0 '
EXAMINE RECORD
10310 ON RV(1) GOSUB 10380 'CHEC
K #
10312 ON RV(2) GOSUB 10430 'DATE
10313 IF RI=2 THEN RETURN
10314 ON RV(3) GOSUB 10440 'CLEA
RED
10316 ON RV(4) GOSUB 10480 'AMOU
NT
10318 ON RV(5) GOSUB 10560 'PAID
TO
10319 ON RV(6) GOSUB 10600 'PURP
OSE
10320 IN$=MID$(LI$,5,1)
10322 ON RV(8) GOSUB 10520,10530
,10540,10550,10556 'TYPE
10326 IF RJ <> 0 THEN GOTO 10280
10340 RI=1:RETURN
10380 IN$=MID$(LI$,6,4) 'NUMBER
10400 IF IN$ < LN$ OR IN$ > HN$
THEN RJ=1
10420 RETURN
10430 IN$=LEFT$(LI$,4)
10432 IF IN$ < LX$ THEN RJ=1:RET
URN
10434 IF IN$ > HX$ THEN RI=2:RET
URN
10436 RETURN 'HIT
10440 IN$=MID$(LI$,10,1) 'CLEARE
D INDICATOR
10460 IF IN$ <> CC$ THEN RJ=1
10470 RETURN
10480 I=INSTR(11,LI$,CHR$(127))
10490 IN = VAL(MID$(LI$,11,I-11)
)/100
10500 IF IN < LA OR IN > HA THEN
RJ=1
10510 RETURN
10520 IF IN$ <> "C" THEN RJ=1:RE
TURN ELSE RETURN
10530 IF IN$ <> "B" THEN RJ=1:RE
TURN ELSE RETURN
10540 IF IN$ <> "D" THEN RJ=1:RE
TURN ELSE RETURN
10550 IF IN$ = "B" THEN RJ=1:RE
TURN ELSE RETURN
10556 IF IN$ = "D" THEN RJ=1:RE
TURN ELSE RETURN
10560 J=1+INSTR(11,LI$,CHR$(127)
):K=INSTR(J+1,LI$,CHR$(127))
10570 IN$=MID$(LI$,J,K-J)
10580 IF IN$ < LT$ OR IN$ > HT$
THEN RJ=1
10590 RETURN
10600 J=1+INSTR(11,LI$,CHR$(127)
):K=INSTR(J+1,LI$,CHR$(127))
10620 J=LEN(LI$):IN$=RIGHT$(LI$,
J-K)
10640 IF IN$ < LF$ OR IN$ > HF$
THEN RJ=1
10660 RETURN
10680 IF LEFT$(SG$,6)="-M12D15" T
HEN RI=2:RETURN
10700 MM=VAL(MID$(SG$,2,2)):DD=V
AL(MID$(SG$,5,2))
10720 IF DD=1 THEN DD=15:GOTO 10
760
10740 IF DD=15 THEN DD=1:MM=MM+1
10760 MM=100+MM:DD=100 + DD
10770 RS$=RIGHT$(STR$(MM),2)
10780 MID$(SG$,2,2)=RS$
10790 RS$=RIGHT$(STR$(DD),2)
10800 MID$(SG$,5,2)=RS$
10820 CLOSE #1:OPEN "I",#1,SG$:G
OTO 10280

```



# BEST PUBLIC DOMAIN PROGRAMS !

FROM T&D SUBSCRIPTION SOFTWARE

"Great service and great software"  
Jim Garner  
Ft. Worth, Tx

T&D SUBSCRIPTION SOFTWARE HAS ACCUMULATED OVER  
1,000 PUBLIC DOMAIN PROGRAMS FOR THE COLOR COMPUTER.

WE ARE SELLING 630 OF THE BEST. JUST THE GOOD STUFF !

"Your programs  
are the greatest!"  
Christine Rapoza  
Tiverton, RI

## Music 1-7

- M1 - 8 Utilities & 8 Songs
- M2 - 17 Musica Files
- M3 - 16 Musica Files
- M4 - 16 Musica Files
- M5 - 25 Orchestra Files
- M6 - 23 .Bin Files Ready To Run
- M7 - 23 .Bin Files Ready To Run

Requires Musica



## ADVENTURES 1,2

Each Disk/Tape Contains  
9 Great Adventures  
Ready To Run

Order A1 Or A2



## TELECOMMUNICATIONS 1-3

- T1 - Haysae, Kermit, Mikeyterm, TeleTerm
- T2 - Cobbs BBs Terminal Package
- T3 - GETERM Communications



## EDUCATION 1-4

- E1 - 12 Programs For Young Kids
- E2 - 12 Programs For High School Kids
- E3 - 11 Programs Teaching The Coco'S Commands
- E4 - 5 Graphics Programs About Australia



## HOME MANAGEMENT 1-4

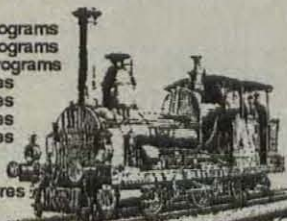
• 12 Programs Each Disk/Tape •

- H1 - Bargraph, Calendar, Financial Advice, +
- H2 - Charts, Last Will, Planets, +
- H3 - Finance, Stocks, Typing, +
- H4 - Spelling Fix, Spelling Checker, +



## GRAPHICS 1-14

- GR1 - 12 Basic Graphic Programs
- GR2 - 12 Basic Graphic Programs
- GR3 - 9 Coco 3 Graphic Programs
- GR4 - 22 Coco Max Pictures
- GR5 - 22 Coco Max Pictures
- GR6 - 22 Coco Max Pictures
- GR7 - 15 Coco Max Pictures
- GR8 - 22 .Bin Pictures
- GR9 - 22 .Bin Pictures
- GR10 - 14 Large .Bin Pictures
- GR11 - 8 Mge Pictures
- GR12 - Coco Max 3 Pictures
- GR13 - Macpaint Graphic Editor
- GR14 - 5 Macintosh Pictures

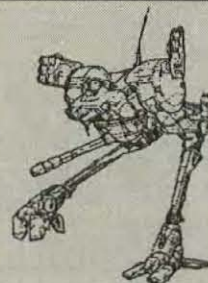


\*\* See Our Ad Containing 250 Graphic Pictures Elsewhere In This Magazine

## GAMES 1-11

• Each Disk/Tape Contains 12 Programs •

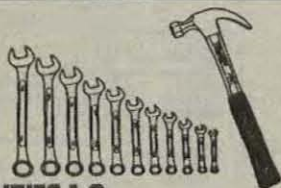
- GA1 - CarRace, Horses, RoBo Dice, StarTrak, +
- GA2 - BoBo, Chess, Rubic, Yahtzee, +
- GA3 - Backgammon, Gremlin, Python, Robots, +
- GA4 - Hawks, Saucer, Shootem, Trak, +
- GA5 - Battleship, Chicken, Raceway, Squash, +
- GA6 - Fly, Navy Guns, ShipSub, Tanks, +
- GA7 - Connect4, F-16, Pizza, Trek, +
- GA8 - Football, Leaky Tap, Poker, SubHunt, +
- GA9 - Battle, Chick, Flight, Prix, +
- GA10 - Blockade, Fly, Missile2, Pong, +
- GA11 - Bunker3, Guadal, Martians, Traders, +



## UTILITIES 1-8

• 12 Programs Each, 1-4 Require Disk •

- U1 - Dir32, DiskZapper, RomCopy, Snap Edit, +
- U2 - Backup, Diskfix, Labeler, Multback, +
- U3 - Convert ML, MLdata, PlayMac, SendDisk, +
- U4 - Bins-Bas, PixConv, Unarc, VuMaster, +
- U5 - Assemblr, Graph, McBase, Recover, +
- U6 - Clock, Llist 32, MiniDos, Pixcomp, +
- U7 - Head Print With 30 Mini Pictures
- U8 - Fig Forth Language With Tutorial



BUY ALL 53  
DISKS/TAPES FOR  
ONLY \$145.00 !

MAIL TO:

**T&D Subscription Software**  
2490 Miles Standish Drive  
Holland, Michigan 49424  
(616) 399-9648

Call or write for a FREE catalog !

## PRICES:

1- 5 disks/tapes....\$6.00 each  
6 or more.....\$5.00 each  
All 53 disks/tapes \$145.00

Name \_\_\_\_\_

Address \_\_\_\_\_

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

Credit Card # \_\_\_\_\_

Expires \_\_\_\_\_

TOTAL AMOUNT \$ \_\_\_\_\_

## CIRCLE ISSUES DESIRED

M1	GR1	E1	U1	GA1
M2	GR2	E2	U2	GA2
M3	GR3	E3	U3	GA3
M4	GR4	E4	U4	GA4
M5	GR5		U5	GA5
M6	GR6	H1	U6	GA6
M7	GR7	H2	U7	GA7
	GR8	H3	U8	GA8
A1	GR9	H4		GA9
A2	GR10			GA10
	GR11			GA11
T1	GR12			
T2	GR13			
T3	GR14			

PLEASE CIRCLE  
TAPE DISK



**ANDRONE (Radio Shack)**  
26,635 Wayne Roberts, Stillwater, OK  
20,820 Gary Budzak, Westerville, OH

**ASTRO BLAST (Mark Data)**  
49,356 Brian S. Brame, Lakeside, CA  
48,825 Tony Bacon, Mt. Vernon, IN  
24,990 Matthew Smith, Courtenay, British Columbia

**ATOM (Radio Shack)**  
Round 2  
Cobalt (#24) James Donegan, Saurteries, NY

**BASH (SFB Software)**  
1,342,800 David Ring, Lyman, NE  
744,900 Andy Carter, North Charleston, SC

**BEAM RIDER (D & D Software)**  
2,171,590 Robb Snyder, Cincinnati, OH  
1,846,540 James Snyder, Cincinnati, OH  
1,232,430 Beverly Rahn, Appleton, WI

**BEE ZAPPER (THE RAINBOW, 9/87)**  
28,275 William Currie, Bryans Road, MD  
15,785 David Hartmann, Osoyoos, British Columbia

12,825 Frederick Lajoie, Middleton, Nova Scotia

**BIOSPHERE (Radio Shack)**  
64,000 Ty Shocksale, Racine, WI

**BLITZ (THE RAINBOW, 6/88)**  
126,400 Jerry Anderson, Jacksonville, FL  
89,150 Ryan Schlecht, Gackle, ND  
86,975 Joel Klein, Indianapolis, IN

**BOUNCING BOULDERS (Dicom Products)**  
24,186 Dennis Zobel, Centereach, NY  
16,874 Michael Zobel, Centereach, NY  
10,590 Patrick Garneau, Ste-Croix, Quebec

**BREWMASTER (NOVASOFT)**  
158,275 Chris Donato, Euclid, OH  
133,025 Andy DeGroat, Saginaw, MI  
62,500 Chris Deierlein, Peekskill, NY

**BURZARD BAIT (Tom Mix)**  
230,100 Jason Sauer, Menominee, MI  
127,200 Jason Downs, Albany, NY  
70,000 Scott Waterlander, Benton Harbor, MI

**CASHMAN (MichTron)**  
11,910 Halder Santos, Montreal, Quebec  
9,870 Martin Parada, Arcadia, CA

**CAVEWALKER (Radio Shack)**  
209,870 Todd Von Natta, Isle of Palms, SC  
183,290 Robert Young, Midway, Ontario  
41,060 Russell Warren Bevers, Tucson, AZ

**CLOWNS & BALLOONS (Radio Shack)**  
639,960 Faye Keeler, Augusta, GA  
217,500 Frankie DiGiovanni, Olney, MD  
70,180 Charles Andrews, Delta Jct, AK

**COLOR BASEBALL (Radio Shack)**  
596-0 Frank C. D'Amato, Brooklyn, NY  
595-0 Tom Chervinski, Brooklyn, NY  
412-0 Brian S. Brame, Lakeside, CA

**COLOR CAR (NOVASOFT)**  
343,075 Duncan Cameron, Chippewa Falls, WI  
316,550 Alan Martin, Cornwall, Ontario

**THE CONTROLLERS (THE RAINBOW, 2/88)**  
365 Roger Rance, Charleston, SC  
308 Eric Carlton, Charleston, SC

**CRYSTAL CASTLES (Thunder Vision)**  
516,220 Jason Trammel, Murphyboro, IL

**DALLAS QUEST (Radio Shack)**  
81 Brad Wilson, Lithia Springs, GA  
85 Paul Sumner, Orange Park, FL  
85 David and Shirley Johnson, Leicester, NC

**DEF MOV (THE RAINBOW, 1/87)**  
60,666 Frankie DiGiovanni, Olney, MD  
43,806 Domingo Martinez, Miami, FL  
39,320 Matthew Smith, Courtenay, British Columbia

**DEMOLITION DERBY (Radio Shack)**  
113,200 Gary Budzak, Westerville, OH  
110,500 Jason Downs, Albany, OR  
100,500 Richard Winkelbauer, Bronx, NY

**DEMON ATTACK (Imagic)**  
279,435 Jon Hobson, Plainfield, NJ  
202,260 Tom Briggs, Hillsdale, NJ  
89,285 Upton Thomas, Arnold, MD

**DESERT PATROL (Arcade Animations)**  
1,099,899 Chris Turkett, Marlow, OK  
505,250 Ricky Turkett, Marlow, OK  
234,300 Steven Turcotte, Matane, Quebec

**DESERT RIDER (Radio Shack)**  
80,703 Thomas Payton, Anderson, SC  
69,353 Mike Alt, San Juan Capistrano, CA  
65,351 Jason Hackley, Clinton, CT

**DEVIL ASSAULT (Tom Mix)**  
1,866,100 Stephanie Martel, Laval, Quebec  
623,550 Dale Krueger, Maple Ridge, British Columbia

**DOWNHILL (THE RAINBOW, 1/89)**  
10 James Donegan, Saurteries, NY  
10 Amy Schiller, Denmark, WI  
10 Ryan Schlecht, Gackle, ND

**DOWNLAND (Radio Shack)**  
125,450 Pat Norris, O'Fallon, MO  
99,692 Eric Mellon, Newark, MD  
99,960 Danny Wemett, Rome, NY

**DRACONIAN (Tom Mix)**  
207,050 Roy Johnston, El Ebersburg, PA  
137,810 Chris Lucero, Denver, CO  
127,870 Michael Muller, Buffalo, NY

**DRAGON FIRE (Radio Shack)**  
160,835 Eric Olson, Wheaton, IL  
146,325 Stephanie Martel, Laval, Quebec

**ENCHANTER (Infocom)**  
400,361 David P. McCoy, Franklin, NC

**GALACTIC ATTACK (Radio Shack)**  
31,100 Upton Thomas, Arnold, MD  
29,030 David Czarnecki, Northampton, MA  
26,370 Jeff Remick, Warren, WI

**GALAGON (Spectral Associates)**  
751,020 Sofia Giorgi, Brasilia, Brazil  
337,850 Jason Clough, Houston, TX  
328,820 Bernard Burke, Lee's Summit, MO

**GANTELET (Dicom Products)**  
65,398,298 Phil Wooding, Reno, NV  
45,235,520 Ken Hubbard, Madison, WI  
23,643,720 Geran Stalker, Riverdale, GA

**GANTELET II (Dicom Products)**  
65,398,298 Corey Kepler, Reno, NV  
17,701,050 Bryan Bell, Massachus, VA  
441,450 Asher Martin, Woodridge, IL

**GFL CHAMPIONSHIP FOOTBALL II (Radio Shack)**  
1,046-0 Mark E. Warbrock, Tyler, TX  
857-0 James Robert McCarthy, DuBois, PA  
825-0 Ryan Grady, Newbury Park, GA

**GHANA BWANA (Radio Shack)**  
2,350,750 Michael Heitz, Chicago, IL  
702,520 Joseph Delany, Augusta, GA  
400,000 Tom Jones, Milan, IL

**GIN CHAMPION (Radio Shack)**  
2,224-0 Lee Doulet, Shell Rock, IA  
1,602-0 Jimmy Garner, Ft. Worth, TX  
1,626-0 Ken Johns, Port Crag, British Columbia

**GRANDPRIX CHALLENGE (Dicom Products)**  
67,710 H. Dingwell, Litchfield, CT

**GROBOT (Children's Computer Workshop)**  
9,665 Wendy Staub, Moundsville, WV  
8,050 Curt Lebel, Louisville, KY

**HELICOPTER HERO (THE RAINBOW, 3/88)**  
4,608 Jerry Anderson, Jacksonville, FL  
103 Phil Holsten, Moraga, CA  
76 Chris Nuwer, Lockport, NY

**HITCHHIKER'S GUIDE TO THE GALAXY (Infocom)**  
400,359 Roy Grant, Toledo, OH  
400,422 Jeff Holthorn, Waterloo, Ontario  
400,510 Brad Wilson, Lithia Springs, GA

**IRON FOREST (Dicom Products)**  
5,671,500 Douglas Paulson, Richfield, ID  
4,088,000 Gabriel Riley, Richfield, ID  
3,173,200 Robert Boyd, Amarillo, TX

**JOKER POKER (THE RAINBOW, 3/87)**  
62,097,906 Carole Ruesckert, Mansfield, OH  
47,505,822 Blain Jamieson, Kingston, Ontario  
21,733,284 Jon Fogarty, Yale, MI

**JUNIOR'S REVENGE (Computerware)**  
2,503,000 Stephen J. Martel, Laval, Quebec  
287,600 Keith Colton, Rocky Mount, NC

**JUNKFOOT (THE RAINBOW, 11/84)**  
535,760 Charlie Ginn, Augusta, GA  
356,850 Jon Hobson, Plainfield, NJ  
18,990 Joel Klein, Indianapolis, IN

**KING PEDER (T & D Software)**  
1,009,080 Michaela Keggans, Akron, OH  
145,035 Trisha Eckhoff, North Platte, NE  
83,855 Mike Snyder, Allen, OK

**KING'S QUEST III (Sierra On-Line)**  
210,210 David Ring, Lyman, NE

**KNOCK OUT (Dicom Products)**  
472,995 Frank D'Amato, Brooklyn, NY  
183,675 Rush Calley, Port Orchard, WA  
135,990 Chris Donato, Euclid, OH

**KORONIS RIFT (Epyx)**  
183,250 Mario Zuviera, McAllen, TX  
188,710 Tony Harbin, Cullman, AL

**KUNG-FU DUDE (Sundog Systems)**  
32,000 Tony Geitgey, University Park, PA  
16,130 Rod Miller, Sarasota, FL

**14,305 David Schulze, San Antonio, TX**

**THE LAIR (Fractalus Software)**  
12,840 James Walton, Pittsburg, PA

**LANDER (T & D Software)**  
790 Art Enkin, Neapen, Ontario

**LASER SURGEON: THE MICROSCOPIC MISSION (Activision)**  
42,767 Jon Schaefer, Harrisburg, IL

**LUNAR ROVER PATROL (Spectral Associates)**  
73,500 Aron Wuelting, Gladwin, MI  
66,200 Chuck Lehotsky, N. Jackson, OH  
59,250 Freddie Underwood, Harmony, ME

**LUNCHTIME (Tom Mix)**  
118,226 Jason Bauer, Menominee, MI

**MARBLE MAZE (Dicom Products)**  
353,220 David Boland, Dubuque, IA  
30,650 Amber Raynolds, White City, Saskatchewan

**A MAZING WAY OF MALCOLM MORTAR (Radio Shack)**  
10,510 Amy Carr, South Portland, ME  
8,125 Sharon Blower, New Cumberland, WV  
7,830 Robert Metford, Rockford, OH

**MEGA-BUG (Radio Shack)**  
12,000 Lisa Smith, Courtenay, British Columbia

**10,044 Douglas Bacon, Middletown, CT**

**9,309 Alan Kramer, Cookeville, TN**

**6,430 Freddie Underwood, Harmony, ME**

**MEMOCARDS (THE RAINBOW, 8/87)**  
3,120 Lisa Gagne, St-David, Quebec  
1,954 Scott Walodewicz, Two Rivers, WI  
1,840 Sara Mittelstaedt, Kiel, WI

**METEOR STORM 3 (THE RAINBOW, 10/89)**  
9,025 Mark Brisale, Nashville, TN

**MINE RESCUE (SFB Software)**  
670,200 Chuck Lehotsky, N. Jackson, OH

**MISSION: F-16 ASSAULT (Dicom Products)**  
565,395 Tony Bacon, Mt. Vernon, IN  
468,750 Karen Jessen, Cleveland, OH  
355,570 Stirling Dell, Dundalk, Ontario

**MISSION: RUIN AN ASSAULT (Dicom Products)**  
1,210,550 Robert Metford, Rockford, OH  
787,900 Tony Bacon, Mt. Vernon, IN  
361,750 Clay Jones, Wooster, OH

**-MONSTER MAZE (Radio Shack)**  
255,000 Joel W. Carmichael, Pine Bush, NY  
50,520 John Mordosky, Allentown, PA  
52,510 Chris Krems, Bethel, CT

**ONE-ON-ONE (Radio Shack)**  
1,310-0 Jon Breckel, Wilmington, OH  
1,302-0 Thomas Payton, Anderson, SC  
1,286-0 Randy Sunderland, Page, WV

**OUTHOUSE (MichTron)**  
534,060 Kay Foxe, Kansas City, MO  
59,641 Sam Zehel, Coal Center, PA  
38,640 Dave Staub, Moundsville, WV

**PAPER ROUTE (Dicom Products)**  
248,400 Cathy E. Kimble, Glendale, AZ  
150,660 Heather Hamblen, Bar Harbor, ME

**PITFALL II (Activision)**  
1,568,500 Sandy Baker, Martin City, MT  
1,519,500 Jim Hammons, Martin City, MT  
1,085,500 Tracey Lee Slack, Atwood, Ontario

**POOYAN (Dalssoft)**  
1,453,980 Lois Crowson, East Alton, IL  
1,286,050 Craig Schneider, North Platte, NB  
626,700 Charles Rene de Cotret, Saint-Laurent, Quebec

**POPCORN (Radio Shack)**  
150,500 Tom Cherubino, Brooklyn, NY  
105,560 Heather Condit, Grafton, ND  
28,889 Claude Jalbert, Matane, Quebec

**PROSPECTOR (THE RAINBOW, 12/88)**  
57,300 Andy DeGroat, Saginaw, MI  
56,150 Sara Mittelstaedt, Kiel, WI  
51,850 Joel Klein, Indianapolis, IN

**PYRAMID 2000 (Radio Shack)**  
220 Matt Chlapowski, Webster, MA  
220 Darren King, Yorkton, Saskatchewan  
220 Mike Snyder, Allen, OK

**PYRAMIX (Color Venture)**  
72,080 Teresa Grant, Groton, CT  
68,550 Andy Freeman, Turtle Lake, WI  
67,850 Richard Winkelbauer, Bronx, NY

**QUIX (Tom Mix)**  
8,407,772 John Haigens, Tempe, AZ  
76,180 Robert Lemcool, Denver, CO

**RAD WARRIOR (Epyx)**  
49,931 Brandon Foster, Cutler, OH  
23,152 Charles W. Carney, Johnstown, PA  
22,192 Norman Gibson, Aymer, Quebec

**RADIO BALL (Radio Shack)**  
1,780,670 Jocelyn Gagne, St-David, Quebec  
1,761,030 Eric Mellon, Newark, DE  
1,686,670 Lisa Gagne, St-David, Quebec

**RAMPAGE (Activision)**  
814,450 Mike Morrison, Battle Creek, MI

**REACTIDIO (Radio Shack)**  
8,055 Gary Budzak, Westerville, OH

**RED WARRIOR (Epyx)**  
5,488 Scott Godfrey, Nashua, NH  
4,164 Roger Jones, Lenoir, NC  
4,011 Erin Carlton, Charleston, SC

**RESCUE ON FRACALUS (Epyx)**  
2,070,881 Terry Johnson, Herrin, IL  
1,000,948 Steven Ujvary, Calgary, Alberta  
323,167 Kenneth Hill, Severna Park, MD

**RETURN OF JUNIOR'S REVENGE (Computerware)**  
2,053,100 Teresa Grant, Groton, CT  
1,792,800 Ched Presley, Luseland, Saskatchewan

**ROBOCOOP (Data East)**  
43,230 Chris Krems, Saline, MI

**ROGUE (Epyx)**  
1,000,145 David Ring, Lyman, NE  
71,833 Jon Fogarty, Yale, MI  
65,529 Joseph H. Campbell, Norfolk, VA

**SAILOR MAN (Tom Mix)**  
427,700 Marrie Schalm, Edison, Alberta  
386,700 Jason Downs, Albany, NY  
384,000 Scott Waterlander, Benton Harbor, MI

**SANDS OF EGYPT (Radio Shack)**  
67 Tristan Tekuc, Richmond, Ontario  
82 Edward Rocha, Cobleskill, NY

**SAUCER DEFENSE (THE RAINBOW, 4/87)**  
95,000 Shawn Hagen, Littleton, CO  
40,000 David Hartmann, Osoyoos, British Columbia

**SCRATCH GOLFER (THE RAINBOW, 3/89)**  
63 Leif Smedberg, Chubbuck, IN  
62 Frank Sadarack, Carmel, NY  
61 Jay Wood, Alexandria, MN

**SHAMUS (Radio Shack)**  
61,745 Scott Galvao, Tiverton, RI  
60,670 Chris Krems, Saline, MI  
20,870 Larry Fuhrmann, Jr., Lynnwood, WA

**SHOOTING GALLERY (Radio Shack)**  
40,210 John Mordosky, Allentown, PA  
27,840 John Mordosky, Allentown, PA  
27,270 Jocelyn Hellyer, Montgomery, IL

**SHOOT N' RAGE (THE RAINBOW, 8/87)**  
55,223 Paul Robbins, Piquette, MS  
14,750 Richard Winkelbauer, Bronx, NY  
15,994 Philip Holsten, Waterloo, CO

**SHOPPING SPREE (THE RAINBOW, 7/89)**  
52 Jason Bauer, Menominee, MI

**SILPHEDE (Game Arts)**  
107,577 Josh Encarnacion, Omaha, NE  
93,351 Shari Smith, York, PA  
88,128 James Robert McCarthy, DuBois, PA

**SINISTAR (Sundog Systems)**  
149,170 William Mullen, Buffalo, NY

**SLAY THE NERUIS (Radio Shack)**  
73,081 Jeff Penick, Warren, MI  
65,921 Chris Lucho, Denver, CO  
63,476 Chris Krems, Bethel, CT

**SNEAKY SNAKE (THE RAINBOW, 8/87)**  
137 Guy Greene, Bradenton, FL  
102 Mike Alt, San Juan Capistrano, CA  
91 Chris Nuwer, Lockport, NY

**SPACE ASSAULT (Radio Shack)**  
49,070 John Stokes, Osoyoos, British Columbia  
13,110 Jeff Romick, Warren, MI  
7,280 Jason Kopp, Downs, IL

**SPACE INVADERS (Spectral Associates)**  
3,920 Art Enkin, Neapen, Ontario

**SPEED RACER (MichTron)**  
103,120 Ricky Turkett, Marlow, OK  
87,400 Jeff Morrison, Marlow, OK  
96,420 Karen Rittler, Adams, NY

**SPEEDSTER (THE RAINBOW, 8/87)**  
250,500 Kevin Hilton, Conway, AZ  
211,300 Paul Robbins, Piquette, MS  
117,080 Bill Millington, Meriden, CT

**SPIDERGIDE (Radio Shack)**  
27,730 Mike LeBrun, Cornwall, Ontario

**SPRINGSTER (Radio Shack)**  
379,210 Wayne Roberts, Stillwater, OK  
303,520 Mavis Hartmann, Osoyoos, British Columbia

**200,670 Denise Root, Thorndale, PA**

**STAR BLAZE (Radio Shack)**  
9,150 Amy Schiller, Denmark, WI  
8,950 Richard Durken, Grunthal, Manitoba  
6,550 Flint Weller, Swarthmore, PA

**STOCK 3 (THE RAINBOW, 11/88)**  
578,070,475 James Walsh, Windsor, Ontario  
77,385,525 Guy Greene, Bradenton, FL

**STRATA (THE RAINBOW, 5/88)**  
4,395 William Astle, Caroline, Alberta  
4,380 Blain Jamieson, Kingston, Ontario  
4,040 Ryan Schlecht, Gackle, ND

**SUPER PITFALL (Radio Shack)**  
2,373,000 Danny Lee Fyfe, Independence, MO  
1,395,000 Joel W. Carmichael, Pine Bush, NY  
1,930,000 Phyllis Cross, Indianapolis, IN

**TEMPLE OF ROM (Radio Shack)**  
604,000 Troy Graham, Arnold, MD  
507,700 Adam Broughton, Morris, PA  
308,000 Tim Henyon, Highland, IN

**TETRIS (Radio Shack)**  
9,210 Jason Brian Snyder, Scottsdale, PA  
9,110 John Fredrick, Naurona Heights, PA  
9,013 Chris Krems, Saline, MI

**THE RIDER (On-Line)**  
5,367,800 Steve Hallin, Ft. Collins, MS  
4,829,900 Brandon Foster, Cutler, OH  
4,741,200 Robert Lemcool, Denver, CO

**TIME BANDIT (MichTron)**  
76,030 Brent Morgan, Centerville, OH  
59,020 Stephanie Martel, Centerville, OH

**TOADER (THE RAINBOW, 2/89)**  
7,047 Jessica Wilkins, Seymour, TN  
6,117 Jon Hobson, Plainfield, WI

**TREKBOER (Mark Data)**  
123 Roy Grant, Toledo, OH  
120 Matthew Fume, Munford, TN

**TRIG ATTACK (Sugar Software)**  
196,000 Cassandra Stewart, Sacramento, CA

**TUT'S TOMB (THE RAINBOW, 7/88)**  
54,944 Brian Brame, Lakeside, CA  
53,600 William Currie, Bryans Road, MD  
24,990 Keith H. Pansley, Montgomery, AL

**VARLOC (Radio Shack)**  
2,502 Frank D'Amato, Brooklyn, NY  
2,032 Tony Harbin, Cullman, AL

**WARRIOR KING (Sundog Systems)**  
95,000 Edward Rocha, Cobleskill, NY  
46,100 Asher Martin, Woodridge, IL  
39,050 Dan Deason, Reno, NV  
31,800 Jason Colting, Jackson, MS

**WILDWEST (Tom Mix)**  
52 Farrell Kenimer, Phoenix, AZ  
35 Paul Sumner, Orange Park, FL

**WISHGRINDER (Infocom)**  
400,201 Brad Wilson, Lithia Springs, GA

**WIZARD'S DEN (Tom Mix)**  
593,860 Richard Winkelbauer, Bronx, NY  
467,000 David Reash, Hadley, PA  
425,350 Leif Smedberg, Columbia City, IN

**WRESTLE MANIA (Radio Shack)**  
956,971 Marc Reiter, Cincinnati, OH  
546,315 Louis Bouchard, Galtneau, Quebec

**WIZARD (Dicom)**  
429,530 Chris Deierlein, Peekskill, NY  
159,190 Charles Rene de Cotret, Saint-Laurent, Quebec

**ZAKSUND (Elite Software)**  
557,900 Tom Chervinski, Brooklyn, NY  
357,550 Martin Parada, Arcadia, CA  
35,350 Tony Bacon, Mt. Vernon, IN

**ZAXXON (DataSoft)**  
2,061,000 Byron Aftord, Raytown, MO  
1,950,000 Blake Cadmus, Reading, PA

**ZONERUNNER (Radio Shack)**  
65,535 Scott Godfrey, Nashua, NH  
65,535 Mike Woycheshen, Coquitlam, British Columbia

**65,535 David Woodward, Toughkenamon, PA**

**ZORK (Infocom)**  
350/328 Konnie Grant, Toledo, OH

Give us your best! Make the ranks of these courageous CoCoists in showing the Color Computer world your high score at your favorite micro-division. We want to put your best effort on record in THE RAINBOW's bimonthly "Scoreboard" column. All entries must be received 60 days prior to publication. Entries should be printed — legibly — and 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.

For greater convenience, your high scores may also be sent to us through the MAIL section of our Delphi CoCo SIG. From the CoCo SIG>prompt, pick MAIL, then type SEND and address to: EDITORS.



# SCOREBOARD POINTERS

In conjunction with THE RAINBOW's Scoreboard, we offer this bi-monthly column of pointers for game-playing readers' benefit. If you have some interesting hints, tips or responses to questions, or want help yourself, we encourage you to write to the Scoreboard, c/o THE RAINBOW.

**I**n response to questions from:

● Amanda Russo: In *Dallas Quest* try waving the ring at the natives in front of the cave entrance. When at the cave use the torch to heat the eggs.

● Drax Felton: In *Dallas Quest* pull the curtain and get the light at the trading post. Bribe the monkey to open the secret door. Carry only the light down the ladder, then turn the light on and leave it. Next, go east back into the trading post, put everything into the sack, close it, take it and use the ladder again. This time take the light and go west.

Farrell Kenimer  
Phoenix

● Greg Dorsha: In *The Black Sanctum*, it sounds to me like your program is damaged. Mine allows me to enter the mirror. Does anyone know what to do after dropping the ashes in the circle? In *Vortex Factor*, search every bookcase you come upon — they all contain cartridges. In 1967 search the bookcase, get the pink cartridge, use it, and you'll be in the far future. Go south with the sandwich and give it to the mutant humanoid or else he'll kill you. He will eat the sandwich and give you a white cartridge. Use the white cartridge and you'll be in total darkness. Does anyone know what to do from here? I know I'm in ancient Egypt because when I moved in the dark, I died and saw my body in a mummy tomb.

In *Trekboer*, how do you get past the first grate?

Jason Kessler  
Staunton, Virginia

● Nathan King: To get past the second level of *Castle of Tharoggad*, there is a secret door that leads to a room with the passage. I have been through every level of the castle and have found no item that will reveal these passages. You just have to try until you find one. As for the magic match, keep it stowed in your backpack until you reach the eighth floor. It is on this level that you will find a magic torch. Once you have the magic torch in one hand and the magic match in the other, incant the magic match and the torch ignites. Then you have to find the good wizard, who is behind bars. He can only be seen with the magic torch. Be forewarned that in order to get him out you need the key from Level four. Incant the key and you'll see the good wizard behind the bars. Good luck, and always remember to go through a dead end or a side wall because there may be a secret door.

James McCarthy  
DuBois, Pennsylvania

● Tony Durst: In *Lansford Mansion*, to temporarily get rid of the guard, YELL FIRE.

In *Dungeons of Daggorth*, whenever returning to any level previously cleared of creatures, you will find new groups of beasts. A few (1-6) will be very strong. Bring lots of objects (18-20), drop them at your feet as all beasts except scorpions (the wizard's image and the wizard too) will pick them up before attacking. To see a goldrog, wraith or scorpion use at least a lunar torch. A blob, weak stone giant, etc. may be a pal — his attacks won't harm you. Lead your pal away from your pile of objects. Turn your light off, and wait in the dark for beasts to line-up down the hallways. When ready to start picking them off, turn around (T A), so that you begin an attack sequence with move

back (M B), and finish it with move (M). This allows time for an extra attack or two, and a quick return to the safety of a pal — repeat!

● Peter Menning: In *Hitchhikers Guide to the Galaxy* all four kinds of fluff must be put in the flowerpot (brought back from the whale's stomach with the thing). Wait and it will grow. Take it to the sauna, wait and it will blossom. You may have to upgrade the transporter with real tea before visiting the whale.

● Andrew Yarrows: In *Raakatu* the rug is a distraction. You can't cross it or use the door beyond.

In *Mr. Corey* near the end of the game, when we chase after him in a helicopter, we always crash. We've tried a number of things, but nothing works. In *Night of the Living Dead* we have timed the burning of the barn to attract the rescue helicopter, and climbed into it from the roof of the house. We have talked the pilot into taking us to safety — even different locations — but he always lands in the same place, and the zombies get us.

Lin & Nan Padgett  
Peachtree City, Georgia

To respond to other readers' inquiries and requests for assistance, reply to "Scoreboard Pointers" c/o THE RAINBOW, P.O. Box 385, Prospect, KY 40059. We will share your reply with all "Scoreboard" readers in an upcoming issue. For greater convenience, "Scoreboard Pointers" and requests for assistance may also be sent to us through the Mail section of our Delphi CoCo SIG. From the CoCo SIG> prompt, pick Mail, then type SEND and address to: EDITORS. Be sure to include your complete name and address.

# Loan Procedures for MVFinance

by Dale L. Puckett  
Contributing Editor

It's nice to be back online after my recent move from Maryland to Kansas. This month let's jump right in where we left off in my last article and deliver the remaining procedures for *MVFinance*.

I wrote *MVFinance* to demonstrate a few of the new features in the *gfx2* module that should be released as part of the new OS-9 package I mentioned in March. My sources tell me that Paul Ward, author of *Start OS-9*, is writing the documentation now. This means it should be easy to use and completed soon.

In the meantime I have convinced Kevin Darling, author of the new *gfx2* package, to release an IPatch file that lets you modify and use your original *gfx2* file while you're waiting for the new OS-9. It's being uploaded to both Delphi and CompuServe as I write this.

*MVFinance* is a BASIC09 tutorial, so I used several methods to open windows and perform the requested functions. All functions under the Investment and Depreciation menus are written as subroutines that run in overlay windows. Under the Loan menu I open a path to a new device window, define the window and then open a path to it. When you do this you must first save the standard input, output and error paths to your original window. Then you

can fork a new process running the requested program.

There are many ways to run the programs. You can leave the procedures you want to run in BASIC09 source code form and load them into the workspace you are using for the menu program that will drive them. When you do this you can run them with the standard BASIC09 RUN command. This month, however, I chose to let you enter the procedures and then pack them. Once you do this, you can run them from the OS-9 command line or fork a Shell to run them from within BASIC09.

Notice that I used the ampersand (&) each time I assigned a procedure name to the variable program name. This tells OS-9 to run the procedure as another task and gives you a way to start several iterations of the same procedure running in different

windows. To make it easy for you to test this theory, I put a REPEAT ... UNTIL loop in the procedure RegPay, which asks if you want to make any more calculations. You may answer Yes and do another calculation or you may press CLEAR to move back to the window containing the *MVFinance* main menu. If you return to the main menu, you may go to the Loan menu and ask to calculate Regular Payments again. *MVFinance* then opens another window with another iteration of the procedure RegPay running in it. This allows you to run a different set of loan terms in the new window and compare the result by pressing CLEAR to move between windows.

You could select any of the other menu items under the Loan menu, after which *MVFinance* opens a new window and runs the requested program for you. The other

OS-9 Level II 512K

## Listing1: Update1

```
0000 5000 (* Loan Programs
0013   programname:=""
001A   IF menu_item=1 THEN
0027     programname:="RegPay &" \(* Regular Payment Procedure
0052   ELSE IF menu_item=2 THEN
0062     programname:="LastPay &" \(* Last Payment
0081   ELSE IF menu_item=3 THEN
0091     programname:="TermPay &" \(* Calculate term of loan
00BA   ELSE IF menu_item=4 THEN
00CA     programname:="Balance &" \(* Compute Loan Balance
00F1   ELSE IF menu_item=5 THEN
0101     programname:="Cost &" \(* Calculate cost of loan
0127   ENDIF
0129   ENDIF
012B   ENDIF
012D   ENDIF
012F   ENDIF
0131
0132   IF programname<>"" THEN GOSUB 7000 \ ENDIF
0143   RETURN
0145
0146
```

Dale L. Puckett, a freelance writer and programmer, serves as director-at-large of the OS-9 Users Group and is a member of the Computer Press Association. His username on Delphi is DALEP; on packet-radio, KOHYD @ N4QQ; on GENie, D.PUCKETT2; and on CIS, 71446,736.



## Listing 2: Update2

```

0000 7000 (* Open a new window
0017 OPEN #newpath,"/w"
0022 RUN gfx2(newpath,"DWSet",7,1,2,60,16,1,0,2)
004C RUN gfx2(newpath,"WnSet",WT_DBox,Finwin)
0068 RUN gfx2(newpath,"Select")
007B
007C (* open a path to it and save paths to original window
0082 FOR path=0 TO 2
00C4   stack.a:=path
00D0   RUN syscall(I_Dup,stack)
00DF   oldpath(path)=stack.a
00EF   CLOSE #path
00F6   stack.a:=newpath
0102   RUN syscall(I_Dup,stack)
0111 NEXT path
011C
011D SHELL programname
0122 stack.x:=240
012E RUN syscall(F_Sleep,stack)
013D
013E (* Switch back to original window
015F FOR path:=0 TO 2
0171   CLOSE #path
0178   stack.a:=oldpath(path)
0188   RUN syscall(I_Dup,stack)
0197   CLOSE #oldpath(path)
01A2 NEXT path
01AD
01AE CLOSE #newpath
01B5 RUN gfx2(0,"Select")
01C6 RETURN
01C8

```

four procedures called from the Loan menu do not contain the query loop, but let you exit back to *MVFinance* by clicking the mouse button.

Another way to fork a new process and run another program from within BASIC09 involves the redirection of all three standard paths to a process. This method does not require you to save the same paths, but you do need the name of the next device window. This means you will need to use SysCall. I'll try to come up with an example for you in a future column.

To run this month's code add subroutine 5000, listed as Update1, and subroutine 7000, listed as Update2, to the *MVFinance* code published in April. Then enter the code for the five new procedures, save them and pack them into a BASIC09 I-code module in /dd/CMDS.

That's it for July. Next month our contribution to THE RAINBOW's OS-9 issue takes a close look at the OS-9 Level II windowing system on the CoCo 3. Till then, keep on hacking! □



**Borhe & Borhe**

P.O. Box 58342  
Renton, WA 98058

**U.S. ORDER DESK:**  
(800) 237-2409

**INT'L & TECHNICAL:**  
(206) 432-1814

### OS9 Software (\* = at least 256K required; \*\* = 512K required):

FILE SYSTEM REPACK -- Reverses hard and floppy disk fragmentation, speeds up disk access.	\$29.95
R. S. B.* -- Real Super Extended Disk BASIC for CoCo 3 level 2 systems. BASIC ROM required.	\$39.95
EZGEN 1.07 -- Powerful disk-based bootfile editor. A real timesaver!	\$19.95
PERTASCII* -- Multi-user scrambled letter word game. 15,000 word expandable dictionary.	\$19.95
WILD & MV -- Use wildcards with most OS9 commands. Move directory entries.	\$19.95

### BASIC Software (\* = at least 256K required; \*\* = 512K required):

HYPER-I/O -- Disk BASIC for hard disk, big floppies. Hard disk users specify B&B or DISTO.	\$29.95
HYPER-I/O HARD DISK UTILITIES -- K. Berner's wildcard copy, delete, search.	\$21.95
DISK DOCTOR -- K. Berner's FAT/GAT editor. Also locates and hides media defects.	\$17.95
BEST OF BERNER -- Get a deal on both HARD DISK UTILITIES and DISK DOCTOR.	\$39.90
HYPER-III -- RAM disk (512K only) and printer spooler for CoCo 3 and HYPER-I/O.	\$12.95
DUNGEONS OF DAGGORATH -- Dyna Micro's popular cartridge. While supplies last.	\$ 9.95
DAGGORPATCH -- Adds disk I/O, auto-repeat & more to Dungeons of Daggorath.	\$ 9.95
RGB-DOS FOR B&B -- Another excellent hard disk BASIC, now compatible with B&B hard drives!	\$34.95

### About HYPER-I/O and RGB-DOS . . .

Both HYPER-I/O and RGB-DOS are hard disk operating systems supplied on floppy disk. Each can be used as-is or burned into an EPROM for use with 64K software. HYPER-I/O requires a 16K EPROM and allows large floppy disks, hard disk directories as large as 3MB, and good machine-language compatibility. RGB-DOS requires an 8K EPROM and features superior compatibility with existing machine language software, but limits each hard disk directory to 160K. We recommend HYPER-I/O for BBS systems or BASIC programmers, and RGB-DOS for customers who mostly use commercial ML software.

### Affordable Color Computer Hardware:

COCO XT -- Adapts PC hard drives to CoCo. OS9 software included	\$69.95
COCO XT-RTC -- CoCo XT, with a battery powered real-time clock.	\$99.95
XT-ROM -- Boots OS9 from B&B hard disk automatically.	\$19.95
4' B&B HARD DISK CABLE SET -- Extra long -- not the usual 24".	\$17.50

WA RESIDENTS ADD 8.1% SALES TAX.  
U.S. COD's add \$3.30. Min. U.S. shipping \$3.00. Min. shipping to Canada \$4.00.  
Please allow 2 weeks for delivery.  
Overnight or 2-day delivery available for in-stock items.  
Software upgrades \$5.00 each with receipt, including U.S. shipping.

## OS-9 Spotlight — File System Repack

This month I spotlight another fine product from Chris Burke. *File System Repack* gives you eight new tools for optimizing the performance of your OS-9 disks. Repack, the most important program in the package, scans the file system on your OS-9 disks and rewrites any fragmented files or directories.

Once Repack optimizes a file, the file

... eight new tools  
for optimizing the  
performance of  
your OS-9 disks.

remains optimized until you edit or modify it. Repack preserves the general order of your disk files and does not change their order in your directory. Instead it sorts files in order of increasing file descriptor sector address.

Repack does not require any free space on your disk to operate. This means you can optimize disks that are completely full. It works on any OS-9 hard disk as well as all floppy disks. Additionally, it lets you reclaim lost sectors on your disk by using several command line options. In general, the more inefficiently the data is stored on your disk, the greater the improvement you'll notice after you run Repack.

The other seven utilities in Burke's *File System Repack* include BA, which lets you set bits in the allocation bitmap for a specified logical sector number or range of them; BD, which clears the allocation bitmap for any LSN; CCheck, which scans your disk for defective sectors and identifies any files stored in those sectors; HDB, a utility that lets you back up your hard or floppy disk to a number of smaller floppies with data compression; HDR, which restores files backed up with HDB; Stash, a tool for marking files or directories that shouldn't be repacked (OS9Boot for example); and Zap, a utility that erases a file's directory entry but does not deallocate the sectors used by the file.

Burke's package runs on either OS-9

### Listing 3: loanprocs

```

PROCEDURE cost
0000 DIM pay4,pay5,cost,rate1,rate2,costofborrowing:REAL
001B DIM principal,years,rate,pay:REAL
002E DIM numofpayments,months,payperyear,count:INTEGER
0041 DIM valid,fire,mx,my:INTEGER
0054
0055 PRINT CHR$(12) \ PRINT "Cost of borrowing" \ PRINT
0071 INPUT "How much are you borrowing? ",principal
0095 INPUT "What is the term of the loan (Years, Months)? ",years
      months
00CF INPUT "What is the annual interest rate? ",rate
00F9 INPUT "How many payments will you be making each year? ",payperyear
0131
0132 rate:=rate/payperyear/100
0143 years:=(years*12+months)/12
0158 pay3:=1/(1+rate)^(payperyear*years)
0171 pay4:=principal*rate/(1-pay3)
0185 pay5:=principal
018D cost:=0
0195 numofpayments:=payperyear*years
01A3
01A4 FOR count:=1 TO numofpayments
01B5   rate1:=INT(pay5*rate*100+.5)/100
01D1   rate2:=pay4-rate1
01DD   pay5:=pay5-rate2
01E9   cost:=cost+pay4
01F5 NEXT count
0200
0201 cost:=cost+pay5
020D costofborrowing:=cost-principal
0219
021A PRINT CHR$(12)
021F PRINT "Regular Payments: ";
0236 PRINT USING "T40,R12.2>",pay4
0249 PRINT "Total Payments: ";
025E PRINT USING "T40,R12.2>",cost
0271 PRINT "Cost of Borrowing: ";
0289 PRINT USING "T40,R12.2>",costofborrowing
029C PRINT "Click Mouse to continue!"
02B8
02B9 REPEAT
02BB   RUN gfx2("Mouse",valid,fire,mx,my)
02DC UNTIL fire=1
02E7 RUN gfx2("Owend")
02F4 END
02F6

PROCEDURE balance
0000 DIM principal,regularpay,rate,rate1,rate2:REAL
0017 DIM count,paymentsperyear,paymentsmade:INTEGER
0026 DIM valid,fire,mx,my:INTEGER
0039
003A PRINT CHR$(12) \ PRINT "Remaining balance on a loan" \ PRINT
0060 INPUT "Amount you borrowed? ",principal
007D INPUT "Annual interest rate? ",rate
009B INPUT "Number of payments per year? ",paymentsperyear
00C0 INPUT "Amount of regular payment? ",regularpay
00E3 INPUT "Number of payments made? ",paymentsmade
0104
0105 rate:=rate/paymentsperyear/100
0116
0117 FOR count:=1 TO paymentsmade
0128   rate1:=INT(principal*rate*100+.5)/100
0144   rate2:=regularpay-rate1
0150   principal:=principal-rate2
015C NEXT count
0167
0168 PRINT CHR$(12)
016D PRINT "Your remaining balance is: ";
018D PRINT USING "T40,R12.2>",principal \ PRINT
01A2 PRINT "Click Mouse to continue!"
01BE
01BF REPEAT
01C1   RUN gfx2("Mouse",valid,fire,mx,my)
01E2 UNTIL fire=1
01ED RUN gfx2("Owend")
01FA END
01FC

PROCEDURE TermPay
0000 DIM principal,regularpay,rate,term1,term2,term:REAL
001B DIM periods,months,years:INTEGER
002A DIM valid,fire,mx,my:INTEGER
003D
003E PRINT CHR$(12) \ PRINT "Term of a loan" \ PRINT
0057 INPUT "How much are you borrowing? ",principal
007B INPUT "How much is your regular payment? ",regularpay
00A5 INPUT "What is the annual interest rate? ",rate

```



```

00CF INPUT "How many payment will you make a year? ",periods
00FE
00FF rate:=rate/periods/100
0110 term1:=1-principal*rate/regularpay
0124 term2:=1+rate
0130 term:=(LOG(term1)/LOG(term2))/periods
0144 months:=INT(term*12)
0152 years:=INT(months/12)
015F months:=months-years*12
016E
016F PRINT CHR$(12) \ PRINT "The term of your loan would be: ";
0199 PRINT USING "i4>",years;
01A6 PRINT " years";
01B1 PRINT USING "i4>"; months;
01BE PRINT " months."
01CA PRINT \ PRINT "Click Mouse to continue!"
01E8
01E9 REPEAT
01EB RUN gfx2("Mouse".valid.fire,mx,my)
020C UNTIL fire=1
0217 RUN gfx2("Owend")
0224 END
0226

PROCEDURE LastPay
0000 DIM borrowed,years,rate,regularpay,interestpayment,payonprincipal
000F ,payholder:REAL
0032 DIM months,periods,numberpayments,count:INTEGER
0045 DIM valid,fire,mx,my:INTEGER
0046 PRINT CHR$(12) \ PRINT "Last Payment on a Loan" \ PRINT
0067 INPUT "Amount you are borrowing? ",borrowed
0089 INPUT "Length of loan (Years,Months)? ",years,months
00B4 INPUT "Annual interest rate? ",rate
00D2 INPUT "Number of payments per year? ",periods
00F7 INPUT "Amount of regular payment? ",regularpay
011A
011B rate:=rate/periods/100
012C years:=(years*12+months)/12
0141 numberpayments:=periods*years
014F
0150 FOR count:=1 TO numberpayments
0161 interestpayment:=INT(borrowed*rate*100+.5)/100

```

Level I or II as long as you have 42K of free memory. Make sure you are not running any other OS-9 programs when you use Repack. If another program accesses your disk while Repack is working, it could confuse Repack and cause you to lose data.

If you're running Repack on a hard disk, make sure you leave yourself plenty of time. For example, a heavily-fragmented, 20-megabyte hard disk that is half-full with 1500 files can take up to 12 hours to compress on a CoCo 3 running OS-9 Level II. When you're in a hurry, use the "-s" option on the Repack command line. This single pass option operates on a half-full, 20-megabyte hard disk with 1500 files in about 15 minutes. Each time you run a single pass on your hard disk you'll notice an incremental improvement in performance.

Chris Burke also delivers a bonus with Repack. The last chapter of the manual has a short but thorough explanation of how RBF and other parts of the OS-9 file system work.

If you've been working with heavily-fragmented disks and wondering why your system responds like molasses, give Burke & Burke's *File System Repack* a try. You'll be amazed how well your system operates after you run these utilities. □

## \* EXTENDED \* ADOS-3

### \* Built-in RAMdisk \* Point-and-pick file select menu \*

Not a new version of ADOS-3, but a new product that shares space with ADOS-3 in a 16K EPROM. Arrow-key selection of files to execute, LOAD, COPY, KILL or SCAN. The BACKUP command is doubled in speed for full disks, proportionately faster for partly full disks. (BACKUPS to or from the RAMdisk typically take 5 to 20 sec.) • BACKUP-with-format • Wild-card COPY and KILL, with optional prompting for individual files • Date (or date/time with hardware clock) displayed for files in the directory, printed on LISTSings • DATES function • Key repeat • Block move/copy of BASIC program lines • Text screen printer dump • Auto-reboot of a BASIC program or the DOS command • Parallel printing • Read/write/format 35/40 tracks on 80-track drives • Supports 3 double-sided drives plus 2 RAMdrives • Allows different numbers of tracks on different drives • Shares the original's excellent compatibility with commercial software. For 128K CoCo 3 with ADOS-3 (RAMdisk use requires 512K). Includes information on having an EPROM burned (cost is \$15) after configuring Extended ADOS-3. Disk, \$39.95. Extended ADOS-3 plus ADOS-3, \$64.95. Driver for Disto real-time clock, \$5. Adapter for controllers lacking 28-pin socket, \$10. SmartWatch real-time clock (Tandy 25-1033 equiv.), \$35 (Drivers for Ext. ADOS-3 and OS-9 included; usable in 28-pin socketed controllers or in Rompack, \$10).

"...will blow your socks off...impossible to give Extended ADOS-3 anything other than a rave review."

— Rainbow, October 1989.

"Flawless, compatible operation with just about everything under the sun...by far the most USEFUL product ever devised for the Color Computer."

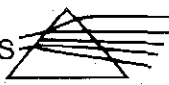
— CoCo Clipboard, Sept/Oct 1989.

### ADOS-3 (reviewed July 1987)

Customize default startup message, colors, screen width, baud rate, step rates, processor speed, number of tracks (35, 40, or 80). Disk I/O and printing are reliable at double CPU speed. Extra commands such as FAST, SLOW, AUTO, RUNM, SCAN, CAT, PRT ON/OFF. Keystroke macros, arrow-key scroll through BASIC programs, edit/repeat of last command, auto-edit of error line, ML monitor, lots more. Usable as a disk utility or in EPROM. 128K CoCo 3. EPROM-burning (cost is \$15-20) information provided. Disk, \$34.95. ADOS for CoCo 1 and 2 Disk, \$27.95.

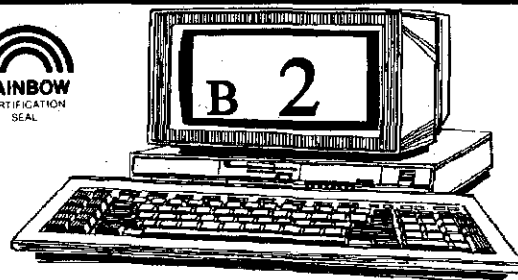
FOR OS-9: SmartWatch real-time clock with driver, \$30.00; in Rompack, \$40.00.

SPECTROSYSTEMS



11111 N. Kendall Dr.  
Suite A108  
Miami, FL 33176  
(305) 274-3899

PLEASE ADD \$2 SHIPPING • NO DELAY ON PERSONAL CHECKS  
WE CANNOT ACCEPT CREDIT CARDS



## HOME BINGO

Enjoy the thrill and enjoyment of playing computer bingo at home. Everything is furnished including 40 bingo cards, markers, checking chart, and program on a 5 1/4" diskette. Program is for the Color Computer 1, 2 or 3.

Total cost for this exciting game is only \$6.95 plus UPS shipping costs of only \$3

Please send check or money order payable to:

DICK WILLIAMS ENTERPRISES  
39 Hummingbird Drive  
Merrimack, NH 03054 (603)424-0517

# Protect and highlight your important magazine collection with sturdy RAINBOW binders



## Distinctive, Durable RAINBOW Binders

THE RAINBOW is a vital resource to be referred to again and again. Keep your copies of THE RAINBOW safe in our quality, distinctive binders that provide complete protection.

These attractive red vinyl binders showcase your collection and ensure your RAINBOWs are in mint condition for future use. Each binder is richly embossed with the magazine's name in gold on the front and spine. They make a handsome addition to any room.

## Put an End to Clutter

Organize your workspace with these tasteful binders. Spend more time with your CoCo and eliminate those frustrating searches for misplaced magazines.

A set of two binders, which holds a full 12 issues of THE RAINBOW, is only \$13.50 (plus \$2.50 shipping and handling).

## Special Discounts on Past Issues

To help you complete your collection of THE RAINBOW, we're offering a special discount on past issues of the magazine.

When you place an order for six or more back issues of THE RAINBOW at the same time you order binders, you are entitled to \$1 off the regular back issue price. To order, please see the "Back Issue Information" page in this issue.

## Know Where to Look

You may purchase the "Official And Compleat Index To THE RAINBOW" for \$1 when you purchase a set of binders. This comprehensive index of RAINBOW's first three years (July 1981 through July 1984) is usually priced at \$2.50.

For greater convenience, order RAINBOW Binders through the shopping area of the CoCo SIG of Delphi!

\_\_\_\_ YES. Please send me \_\_\_\_\_ set(s) of RAINBOW binders

**Take advantage of these special offers with your binder purchase:**

\_\_\_\_ Save \$1 off the single issue cover price for back issues. Minimum order of 6 magazines. Please enclose a back issue order form from a recent issue indicating magazines wanted.

\_\_\_\_ Purchase the "Official and Compleat Index to THE RAINBOW" for \$1. (Regular price \$2.50.)

(These offers good only with the purchase of a RAINBOW binder set)

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

☐ My check in the amount of \_\_\_\_\_ is enclosed. (In order to hold down costs, we do not bill.)

Charge to: ☐ VISA ☐ MasterCard ☐ American Express

Account Number \_\_\_\_\_ Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_

Mail to: **Rainbow Binders, The Falsoft Building, P.O. Box 385, Prospect, KY 40059.**

Binders are \$13.50 per two-binder set plus \$2.50 shipping and handling. If your order is to be sent via U.S. mail to a post office box or foreign country, please add \$2. Kentucky residents add 5% sales tax. U.S. currency only, please. In order to hold down non-editorial costs, we do not bill.

For credit card orders call (800) 847-0309, 8 a.m. to 5 p.m. EST

All other inquiries call (502) 228-4492.



```

00CF INPUT "How many payment will you make a year? ",periods
00FE
00FF rate:=rate/periods/100
0110 term1:=1-principal*rate/regularpay
0124 term2:=1+rate
0130 term:=(LOG(term1)/LOG(term2))/periods
0144 months:=INT(term*12)
0152 years:=INT(months/12)
015F months:=months-years*12
016E
016F PRINT CHR$(12) \ PRINT "The term of your loan would be: ";
0199 PRINT USING "i4>".years;
01A6 PRINT " years";
01B1 PRINT USING "i4>".months;
01BE PRINT " months."
01CA PRINT \ PRINT "Click Mouse to continue!"
01E8
01E9 REPEAT
01EB RUN gfx2("Mouse".valid,fire,mx,my)
020C UNTIL fire=1
0217 RUN gfx2("Owend")
0224 END
0226

PROCEDURE LastPay
0000 DIM borrowed,years,rate,regularpay,interestpayment,payonprincipal
000F .payholder:REAL
0032 DIM months,periods,numberpayments,count:INTEGER
0045 DIM valid,fire,mx,my:INTEGER
0046
0046 PRINT CHR$(12) \ PRINT "Last Payment on a Loan" \ PRINT
0067 INPUT "Amount you are borrowing? ",borrowed
0089 INPUT "Length of loan (Years,Months)? ".years,months
00B4 INPUT "Annual interest rate? ",rate
00D2 INPUT "Number of payments per year? ",periods
00F7 INPUT "Amount of regular payment? ",regularpay
011A
011B rate:=rate/periods/100
012C years:=(years*12+months)/12
0141 numberpayments:=periods*years
014F
0150 FOR count:=1 TO numberpayments
0161 interestpayment:=INT(borrowed*rate*100+.5)/100

```

Level I or II as long as you have 42K of free memory. Make sure you are not running any other OS-9 programs when you use Repack. If another program accesses your disk while Repack is working, it could confuse Repack and cause you to lose data.

If you're running Repack on a hard disk, make sure you leave yourself plenty of time. For example, a heavily-fragmented, 20-megabyte hard disk that is half-full with 1500 files can take up to 12 hours to compress on a CoCo 3 running OS-9 Level II. When you're in a hurry, use the "-s" option on the Repack command line. This single pass option operates on a half-full, 20-megabyte hard disk with 1500 files in about 15 minutes. Each time you run a single pass on your hard disk you'll notice an incremental improvement in performance.

Chris Burke also delivers a bonus with Repack. The last chapter of the manual has a short but thorough explanation of how RBF and other parts of the OS-9 file system work.

If you've been working with heavily-fragmented disks and wondering why your system responds like molasses, give Burke & Burke's *File System Repack* a try. You'll be amazed how well your system operates after you run these utilities. □

## \* EXTENDED \* ADOS-3

### \* Built-in RAMdisk \* Point-and-pick file select menu \*

Not a new version of ADOS-3, but a new product that shares space with ADOS-3 in a 10K EPROM. Arrow-key selection of files to execute. LOAD, COPY, KILL or SCAN. The BACKUP command is doubled in speed for full disks, proportionately faster for partly full disks. (BACKUPS to or from the RAMdisk typically take 5 to 20 sec.) • BACKUP-with-format • Wild-card COPY and KILL, with optional prompting for individual files • Date (or date/time with hardware clock) displayed for files in the directory, printed on LLISTings • DATES function • Key repeat • Block move/copy of BASIC program lines • Text screen printer dump • Auto-reboot of a BASIC program or the DOS command • Parallel printing • Read/write/format 35/40 tracks on 80-track drives • Supports 3 double-sided drives plus 2 RAMdrives • Allows different numbers of tracks on different drives • Shares the original's excellent compatibility with commercial software. For 128K CoCo 3 with ADOS-3 (RAMdisk use requires 512K). Includes information on having an EPROM burned (cost is \$15) after configuring Extended ADOS-3. Disk, \$39.95. Extended ADOS-3 plus ADOS-3, \$64.95. Driver for Disto real-time clock, \$5. Adapter for controllers lacking 28-pin socket, \$10. SmartWatch real-time clock (Tandy 25-1033 equiv.), \$35 (Drivers for Ext. ADOS-3 and OS-9 included; usable in 28-pin socketed controllers or in Rompack, \$10).

"...will blow your socks off...impossible to give Extended ADOS-3 anything other than a rave review." — Rainbow, October 1989.

"Flawless, compatible operation with just about everything under the sun...by far the most USEFUL product ever devised for the Color Computer." — CoCo Clipboard, Sept/Oct 1989.

### ADOS-3 (reviewed July 1987)

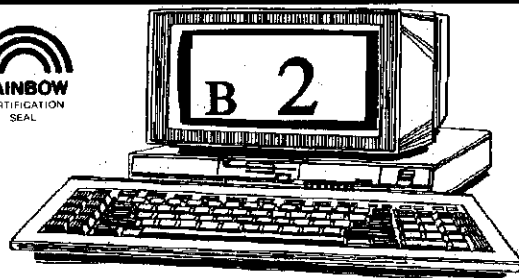
Customize default startup message, colors, screen width, baud rate, step rates, processor speed, number of tracks (35, 40, or 80). Disk I/O and printing are reliable at double CPU speed. Extra commands such as FAST, SLOW, AUTO, RUNM, SCAN, CAT, PRT ON/OFF. Keystroke macros, arrow-key scroll through BASIC programs, edit/repeat of last command, auto-edit of error line, ML monitor, lots more. Usable as a disk utility or in EPROM. 128K CoCo 3. EPROM-burning (cost is \$15-20) information provided. Disk, \$34.95. ADOS for CoCo 1 and 2 Disk, \$27.95.

FOROS-9: SmartWatch real-time clock with driver, \$30.00; in Rompack, \$40.00.

SPECTROSYSTEMS

11111 N. Kendall Dr.  
Suite A108  
Miami, FL 33176  
(305) 274-3899

PLEASE ADD \$2 SHIPPING • NO DELAY ON PERSONAL CHECKS  
WE CANNOT ACCEPT CREDIT CARDS



## HOME BINGO

Enjoy the thrill and enjoyment of playing computer bingo at home. Everything is furnished including 40 bingo cards, markers, checking chart, and program on a 5 1/4 " diskette. Program is for the Color Computer 1, 2 or 3.

Total cost for this exciting game is only \$6.95 plus UPS shipping costs of only \$3

Please send check or money order payable to:

DICK WILLIAMS ENTERPRISES  
39 Hummingbird Drive  
Merrimack, NH 03054 (603)424-0517

```

017D      payonprincipal:=regularpay-interestpayment
0189      borrowed:=borrowed-payonprincipal
0195      NEXT count
01A0
01A1      payholder:=regularpay+borrowed
01AD
01AE      PRINT CHR$(12)
01B3      PRINT "Your last payment will be: ";
01D3      PRINT USING "T40,R12.2>".payholder \ PRINT
01E8      PRINT "Click Mouse to continue!"
0204
0205      REPEAT
0207          RUN gfx2("Mouse",valld,fire,mx,my)
0228      UNTIL fire=1
0233      RUN gfx2("Owend")
0240      END
0242

PROCEDURE regpay
0000      DIM amount,years,rate,holder,payment:REAL
0017      DIM months,periods:INTEGER
0022      DIM response:STRING[1]
002E
002F      PRINT CHR$(12) \ PRINT "Regular Payment on a Loan" \ PRINT
0053      INPUT "Amount needed? ",amount
006A      INPUT "Length of loan (Years,Months)? ",years,months
0095      INPUT "Annual interest rate? ",rate
00B3      INPUT "Number of payments per year? ",periods
00D8
00D9      rate:=rate/periods/100
00EA      years:=(years*12+months)/12
00FF      holder:=1/(1+rate)^(periods*years)
0118      payment:=amount*rate/(1-holder)
012C
012D      PRINT CHR$(12)
0132      PRINT "Your regular payment will be: ";
0155      PRINT USING "T40,R12.2>".payment \ PRINT
016A
016B      INPUT "Another Calculation? ",response
0188      IF response="Y" OR response="y" THEN
019D          RUN regpay
01A1      ELSE
01A5          END

```

## Corrections

**"Wrapping the RAINBOW"**  
(May 1990, Page 92): Because of a production oversight, "Wrapping the RAINBOW" was incorrectly listed in the May 1990 Table of Contents as appearing on Page 124. The column actually appeared on Page 92 of that issue.

**"Gravity Studio"** (Advertisement, May 1990, Page 39): Many readers have called to enquire about the somewhat confusing address presented in the ad. Address any correspondence to Gravity Studio, P.O. Box 791, Belton, TX 76513.

## MVCanvas 2.0 - OS-9 Paint Program

Finally, a professional OS-9 Level II paint program is available for the Color Computer 3. MVCanvas not only supports true windows, MVCanvas is the ONLY Color Computer graphic editor that gives you more choices than just a 320 by 200 pixel, 16 color graphic resolution. \*

Now with MVCanvas, the graphic editing power found only under RSDOS based products is married with the benefits of a multitasking windowing environment to produce one of the most versatile and powerful graphic packages available to the Tandy Color Computer 3 user!

MVCanvas is a mouse/joystick/keyboard driven graphic editor for the OS-9 Level II, Multi-View windowing environment.

MVCanvas features include:

- o Multiple Screen resolutions: (Four different Resolutions) \*
  - 640 by 200 with 2 or 4 colors & 320 by 200 using 4 or 16 colors.
- o Mouse/joystick/keyboard controlled.
- o Select up to 16 colors out of a palette of 64.
- o IMG (Rascan) digitized picture importing
- o VEF Graphics format & VEF Squashing (Compression)
- o Palette animation and Remap
- o Instant grey scaling (in 640x200 mode)
- o Multiple font support
- o Clipboard includes Copy,Cut & Paste, Flips, Invert and Remap
- o Plain, inverse, transparent, bold, underline & proportional text
- o Drawing features include: Circle, Ellipse, Radiens, Lines, Pencil, Brush, Fill, Erase, Spray, Box, Bar and Stamps.
- o Printers supported: Epson, DMP (Tandy), IBM, Gemini, Star & Citoh

System Requires: CoCo3, OS-9 LVL II, Disk Drive, 512K

Only \$49.95!! + \$3.00 S/H Nev. Res. add 6.5% sales tax, C.O.D. Orders Add \$2.50

Send Check/Money order to:

Hyper-Tech Software / 4341 Gannet Cir #174 / Las Vegas, NV 89103

Phone: (702) 362-5346

## MATHEMATICS TEACHERS

### \* MATH STUDENTS 1-12 \*

C O Give your COCO a PERSONALITY with this A  
L versatile, interactive, multiple user T  
O and user friendly math facts practice: I  
R WHOLENUM practices + - \* ÷ column + or S  
\* assorted types in whole number facts F  
C Scoring, timing, reward game, scores A  
O printout. 8/16/32K \$ 8 Ppd C  
M

P Modified versions with on-screen clues I  
U for INTEGERS, LIKEFRACTIONS, Different O  
T FRACTIONS, MIXEDNUMBERS, N  
E and DECIMALS. 8/16/32K. \$ 8 Ppd \*

### \* Other COCOSOFT Programs

1 \* VOCABASE: THE vocabulary and spelling R  
2 core for YOUR words. Accepts extra A  
\* answers; repeats until right, quits N  
o when all correct; reward and result T  
r printout, 1-4 user. 16/32K \$ 8 Ppd E  
\*

3 CHEMTERM set of 3 for chemistry, based D  
\* on VOCABASE. 16/32K \$ 15 Set Ppd \*

D WRITEST Test-Writes SIX types of item, \*  
I alternate versions, keys, most printer C  
S features, symbols: 1 11 0 1 etc A  
K For: Tandy/Epson/Star/Panasonic/others S  
/ Req. 32KECB disk or tape. \$ 15 Ppd H  
T

A COCOSOFT deduct \$1/extra item A  
P ad printed by WRITEST C

E>Box 665, House NM 88121 (505)-279-6455<K



# Old Game, New Twist

by Fred B. Scerbo  
Contributing Editor

If you have an idea for the "Wishing Well," submit it to Fred c/o THE RAINBOW. Remember, keep your ideas specific, and don't forget this is BASIC. All programs resulting from your wishes are for your use, but remain the property of the author.

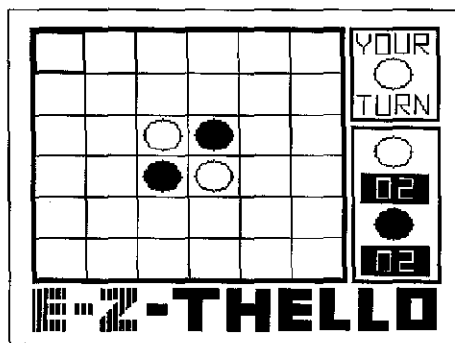
**G**ames are not the easiest programs to write, especially when you are starting from scratch. But after weeks of writing, I've come up with a brand new listing for a game familiar to many of you. I call the program *EZ-Thello*.

Many of you may already have CoCo programs similar to the classic game *Othello*. I have run across several, some of which have been listed right here in the pages of THE RAINBOW. I have always found the game fun, and even the very young can handle it.

In fact, many of my special needs students are able to play the game after only a few tries. I find the game helpful to them because it promotes the development of useful thought processes, which seems to be missing from chess and checkers.

However, one major drawback to clone games is that they take a long time to play. A standard *Othello*-style game is usually based on a 10-by-10 playing board. Since the game starts with four pieces on the board, it takes 96 moves to complete the game. This is entirely too long if the game

*Fred Scerbo is a special needs instructor for the North Adams Public Schools in North Adams, Massachusetts. He holds a master's in education and has published some of the first software available for the Color Computer through his software firm, Illustrated Memory Banks.*



is being used as a reward for students who complete their work early.

Thus the idea struck me to use a smaller game board. Instead of a 10-by-10 board with 100 squares, a smaller board of 6-by-6 with 36 squares only takes a fraction of the time to play. Also, the graphics are larger for the young to work with more easily.

With this concept in mind *EZ-Thello* was born. It is an easy-to-play version using only the arrow keys and the ENTER key. With 36 squares, only 32 moves are needed to complete a game. Even slow players usually finish in less than twenty minutes.

## Problems

The biggest problem I had writing *EZ-Thello* was making a listing that did not borrow from other authors who may have written similar versions. To do so, I had to start completely from scratch and not refer to anyone else's listing.

This was not that difficult to do. Once I got the initial screen drawn, coming up with a movement routine for the keys was simple. What did pose a problem was coming up with a routine to check corresponding boxes for flips and legal moves. You see, whenever a piece is placed, the computer must check eight directions after it determines whether or not a box has been used.

32K Extended

20	.....	90
45	.....	247
70	.....	118
100	.....	40
130	.....	84
175	.....	199
195	.....	107
225	.....	24
250	.....	32
260	.....	40
285	.....	115
335	.....	206
385	.....	2
445	.....	141
505	.....	206
565	.....	214
630	.....	97
690	.....	241
755	.....	36
820	.....	49
885	.....	190
945	.....	31
1005	.....	144
1055	.....	144
1095	.....	97
END	.....	89

## The Listing: EZTHELLO

```

1 REM*****
2 REM*      E-Z-THELLO      *
3 REM*      COPYRIGHT (C) 1990 *
4 REM*      ADAPTED        *
5 REM*      BY FRED B. SCERBO *
6 REM*      60 HARDING AVENUE *
7 REM*      NORTH ADAMS, MA 01247 *
8 REM*****
9 CLEAR500
10 CLS:PRINTSTRING$(32,220):STR
   ING$(32,204);
15 FORI=1TO160:READA:IFA<128THEN
   25
20 CLS:PRINT@96." GO BACK AND CH
   ECK YOUR DATA IN  LINES 30-50. I
   THINK YOU MADE  A TYPO !":PRIN
   T:PRINT:END
25 PRINTCHR$(A+128):NEXT
30 DATA31,31,31,26,31,31,31,31..
   47,47,47,47,42,47,42,37,47,37,47
   ,47,47,37,47,32,37,47,,37,47,47,

```

```

47
35 DATA31,26,16,...,23,30,...,37,47
,32,,47,42,37,47,37,47,32,...,37,47
,32,37,47,...,37,42,32,47
40 DATA31,31,26,28,24,23,30,16,2
8,24,37,47,32,...,47,47,47,37,47
,47,42,37,47,32,37,47,...,37,42,...,47
45 DATA31,26,...,21,31,16,...,37,47
,32,...,47,42,37,47,37,47,32,32,37,
47,32,37,47,...,37,42,...,47
50 DATA31,31,31,26,21,31,31,31,...
,37,47,32,...,47,42,37,47,37,47,47,
47,37,47,47,37,47,47,37,47,47,47
55 PRINTSTRING$(32,195);STRING$(
32,211);
60 PRINT@326," A SIMPLER VERSION
";:PRINT@358," OF A CLASSIC GA
ME ";
65 PRINT@390," ADAPTED
";
70 PRINT@422," BY FRED B.SCERBO
";:PRINT@454," COPYRIGHT (C) 1
990 ";
75 X$=INKEY$:IFX$<>CHR$(13)THEN7
5
80 CLS:PRINT@231,"PLEASE STAND B
Y !";
85 DIM SQ(6,6),A(6),B(6),N$(9)
90 REM WH=1:BL=2
95 SQ(3,3)=1:SQ(4,4)=1:SQ(3,4)=2
:SQ(4,3)=2
100 N$(0)=""U12R8D12NL8BR6":N$(1)
=""BR3R3U12NG3D12R3BR5":N$(2)=""NR
8U6R8U6NL8BD12BR6":N$(3)=""R8U6NL
8U6NL8D12BR6":N$(4)=""BU6NU6R8U6D
12BR6":N$(5)=""R8U6L8U6R8BD12BR6"
105 N$(6)=""R8U6L8D6U12R6BD12BR6"
:N$(7)=""BR8U12L8ND2R8D12BR6":N$(
8)=""NU12R8U6NL8U6NL8D12BR6":N$(9
)=""BR8U12L8D6R8D6BR6"
110 PMODE4,1:PCLS1:SCREEN0,0
115 LINE(0,0)-(196,160),PRESET,B
120 LINE(1,1)-(195,159),PRESET,B
125 FORI=2TO194STEP32
130 LINE(I,2)-(I,158),PRESET:NEX
T
135 FORI=2TO158STEP26:LINE(2,I)-
(194,I),PRESET:NEXT
140 B=1
145 FORY=15TO145STEP26
150 B(B)-Y:B=B+1:NEXT
155 A=1
160 FORI=18TO178STEP32
165 A(A)=I:A=A+1:NEXT
170 DRAW"BM0,190C0U26R20D6L12D4R
12D6L12D4R12D6NL20BU10BR6R12U6L1

```

It must check up, down, left, right and four ways diagonally.

I found that the quickest way to do this was to actually play the game twice in memory. One version is a two-dimensional array (6-by-6) that stores the values of the pieces and their colors. The second version is the graphics screen that mirrors what is actually happening in the array.

Keep in mind that your computer screen is actually only an output device that translates what is in the chips to something you can understand. The game board, in this case, is just the output version of the numerical array.

The actual checking of the array is done with a series of counting loops. With a little effort I could have probably done it with nested loops, but a deadline every four weeks makes such creativity rather difficult. Besides, the listing you have flows logically although it is long.

I did not include any sound in this version, but those of you with a little creativity

# Nine-Times

The first magazine devoted exclusively to OS-9!

Every other month you will receive a disk jam-packed with programs and articles all for OS-9.

Each issue contains: 9 helpful and useful programs to help build your OS-9 library \* Instructions, examples, and samples of Basic09 procedures and subroutines to help with your own programs and your understanding of Basic09 \* C programs and programming examples \* Program reviews, Hints, Help columns, and informative articles to advance your knowledge of OS-9 \* Supplied totally of 5.25" disk \* Bound manual sent to each new subscriber for help in getting Nine-Times up and running, as well as tips on using it with a ram disk or hard disk \* All graphic/joystick interface for ease of use.

**1-Year Subs, \$34.95** Canadian postage, add \$1.00  
Foreign postage, add \$7.00

**Back Issues:** Available for the May, July, Sept., and Nov. 1989, Jan., & March 1990 issues. Please write for information on Back Issue contents.

**Back Issue, ea. \$7.00** Foreign postage, add \$1.50 ea.

**Magazine Source:** Due to many inquiries, the source code for the magazine graphic shell is being provided as an informational tool. Included is the actual Basic09 source code and compiled modules on disk, as well as documentation and a printed copy of the source code.

**Source, \$24.95** Foreign postage, add \$1.50

To order, please send U.S. check or money order to:

JWT Enterprises  
5755 Lockwood Blvd.  
Youngstown, OH 44512

Technical Assistance:  
(216)-758-7694

Sorry, no C.O.D.'s or credit cards; Foreign & Canadian orders, please use U.S. money orders. U.S. checks, allow 3-4 weeks for receipt of first issue/back issue.

Copyright (c) 1989

OS-9 is a trademark of Microvare Systems Corp. and Motorola, Inc.

## SPECIAL DEAL ON 500 PROGRAMS IS BACK!

**BACK BY POPULAR DEMAND! GET OUR LATEST 50 DISKS OR TAPES FULL OF OVER 500 PROGRAMS! HERE IS WHAT YOU'LL RECEIVE:**

- Over 250 Utility/Home application Programs including a Word Processor, DataBase, Spreadsheet, Disk Utilities, Business Software, Electronics Series, Educational Programs for Kids, plus much more!
- Over 200 Exciting Games (15 From Tom Mix), Including P51 Flight Simulator, SailorMan, The King, Family Feud, Air Attack, Moneyopoly, plus much more!
- Over 30 Adventures, Including Martian Crypt, Rambo, Dracula, Plus 32K Graphic Adventures!

Individual issues sell for \$9.00 each or \$450.00 for all 50. We **SLASHED** the price to only \$150.00!

**REG. \$450** **NOW ONLY \$150.00**

TURN TO  
PAGE 93  
FOR A LISTING  
OF OUR BACK  
ISSUES

**.. THIS MONTH ONLY ..**

Buy this package of 500 programs and receive a FREE 6 month subscription.



**T&D SOFTWARE • 2490 MILES STANDISH •**  
**• HOLLAND MI 49424 • (616) 399-9648 •**



could add the SOUND or PLAY command in various locations to spice up the program. Keep in mind, however, that sound slows down the game's execution.

Once the listing is bug-free, you may want to save a copy with the high-speed poke included. Do this only if you have the program already saved without it. CoCo 3 owners can add 0 POKE 65497,0 as the first line, while CoCo 1 and 2 users can add 0 POKE 65495,0. Always be sure to power down before trying anything else with your CoCo after playing this game.

## Playing the Game

I include a set of instructions at the start

of the game for those who do not know how to play the game or do not have this article with them when they play it.

Pressing P for Pass allows players to switch turns or skip turns, say, if black wants to go first. Also, pressing E for End lets you end the game early, which is nice if neither side can make a legal move. The game is designed for two players. In time I will develop a version that lets you play against the computer.

In a nutshell, your object is to trap one or more of your opponent's colored pieces between two of yours. When you do, your opponent's pieces flip over to your color.

The nice part about using the computer

is that no legal flips are missed as can happen on a board game. Also, you cannot make an illegal move. If no legal move is available, use P to pass the turn to your opponent. When the board is full or you press E, the game is over. Pressing ENTER restarts the game.

## Conclusion

*EZ-Thello* should provide hours of fun for both young and old. In time, it should provide opportunity for even two siblings to work together on the CoCo without fighting. Judging from reader mail, that's the kind of program you like most. □

```

206BD10BR16U6E14L14U6R24D6G14R14
D6NL24BU10BR6R12U6L12D6BU16BR16R
28D6L10D20L8U20L10U6BR34"
175 DRAW"D26R8U10R10D10R8U26L8D1
0L10U10L8BR32BD26U26R20D6L12D4R1
2D6L12D4R12D6NL20BR6U26R8D20R10D
6NL18BR6U26R8D20R10D6NL18BR6U26R
24D26L24BE6BR2R8U14L8D14"
180 PAINT(4,188),0,0:PAINT(28,17
8),0,0:PAINT(44,188),0,0
185 COLOR1,0:FORI=2TO72STEP4:LIN
E(I,190)-(I,162),PSET:NEXT
190 PAINT(82,178),0,0:PAINT(100,
178),0,0:PAINT(130,178),0,0:PAI
NT(160,178),0,0:PAINT(184,178),0,
0
195 PAINT(206,178),0,0:PAINT(248
,178),0,0
200 CIRCLE(82,67),12,0,.9:CIRCLE
(82,93),12,0,.9
205 CIRCLE(114,67),12,0,.9:CIRCL
E(114,93),12,0,.9
210 LINE(200,0)-(256,58),PRESET,
B
215 LINE(201,1)-(254,57),PRESET,
B
220 DRAW"BM204,4C0D4F4ND4E4U4BR4
D12R8U12NL8BR4D12R8U12BR4ND12R8D
6L8R2F6"
225 DRAW"BM204,42R4ND12R4BR4D12R
8U12BR4ND12R8D6L8R2F6BR4U12M+8,+
12U12"
230 LINE(200,62)-(256,160),PRESE
T,B:LINE(201,63)-(254,159),PRESE
T,B
235 CIRCLE(226,78),12,0,.9:CIRCL
E(226,124),12,0,.9:PAINT(226,124
),0,0
240 PAINT(80,91),0,0:PAINT(112,6
5),0,0
245 BD$="C0BU12L15D24R30U24L15BD
12"
250 BU$="C1BU12L15D24R30U24L15BD
12"
255 CLS:PRINT@32," E-Z-THELLO IS
A SIMPLIFIED & QUICK PLAYING
VERSION OF THE CLASSIC STRAT
EGY GAME. TWO PLAYERS ARE N
EEDED. ONE TAKES WHITE AND THE
OTHER TAKES THE BLACK. YOU MU
ST PLACE A PIECE"
260 PRINT" SO IT TRAPS YOUR OPPO
NENT'S PIECES BETWEEN YOURS.
THEY WILL THEN SWITCH TO YOUR C
OLOR. IF YOU CANNOT MAKE A LEG

```

```

AL MOVE PRESS <P> TO PASS ON
THAT TURN.";
265 PRINT" IF NO ONE CAN MAKE A
LEGAL MOVE THEN PRESS <E> TO END
THE GAME. PRESS <ENTER> TO PLAY
.";
270 X$=INKEY$:IFX$<>CHR$(13)THEN
270
275 CLS0:X=1:Y=1
280 SW=1:CC=2:GOTO290
285 SW=2:CC=1
290 TT=0:CIRCLE(226,29),12,0,.9:
PAINT(226,29),SW,SW:CIRCLE(226,2
9),12,0,.9:GOSUB1010
295 IF BL+WH=36THEN1080
300 C$="BM"+STR$(A(X))+", "+STR$(
B(Y))
305 DRAW C$:DRAW BDS
310 A$=INKEY$:SCREEN1,0
315 DRAW BU$:DRAW BD$:DRAW BU$
320 IFA$="P"THEN1000
325 IFA$="E"THEN1080
330 IFA$=" "THEN310ELSESET=ASC(A$)
335 IFT=8THENX=X-1:IFX<1THENX=1:
GOTO360
340 IFT=9THENX=X+1:IFX>6THENX=6:
GOTO360
345 IFT=94THENY=Y-1:IFY<1THENY=1
:GOTO360
350 IFT=10THENY=Y+1:IFY>6THENY=6
:GOTO360
355 IFT=13THEN365
360 GOTO300
365 IF SQ(X,Y)=0THEN370 ELSE300
370 EX=0
375 IFY=1THEN440
380 FORQ=Y-1TO1STEP-1
385 IFSQ(X,Q)=0THEN405
390 IFSQ(X,Q)=SW THEN410
395 IFSQ(X,Q)=CC THEN EX=1
400 NEXT
405 IF EX=1THEN440
410 IF EX=0THEN440
415 FORK=Y TO Q STEP-1
420 CIRCLE(A(X),B(K)),12,0,.9:PA
INT(A(X),B(K)),SW,SW:CIRCLE(A(X)
,B(K)),12,0,.9
425 TT=1
430 SQ(X,K)=SW
435 NEXT
440 EX=0
445 IFY=6THEN510
450 FORQ=Y+1TO6
455 IFSQ(X,Q)=0THEN475
460 IFSQ(X,Q)=SW THEN480

```

```

465 IFSQ(X,Q)=CC THEN EX=1
470 NEXT
475 IF EX=1THEN510
480 IF EX=0THEN510
485 FORK=Y TO Q
490 CIRCLE(A(X),B(K)),12,0,.9:PA
INT(A(X),B(K)),SW,SW:CIRCLE(A(X)
,B(K)),12,0,.9
495 TT=1
500 SQ(X,K)=SW
505 NEXT
510 EX=0
515 IFX=6THEN580
520 FORQ=X+1TO6
525 IFSQ(Q,Y)=0THEN545
530 IFSQ(Q,Y)=SW THEN550
535 IFSQ(Q,Y)=CC THEN EX=1
540 NEXT
545 IF EX=1THEN580
550 IF EX=0THEN580
555 FORK=X TO Q
560 CIRCLE(A(K),B(Y)),12,0,.9:PA
INT(A(K),B(Y)),SW,SW:CIRCLE(A(K)
,B(Y)),12,0,.9
565 TT=1
570 SQ(K,Y)=SW
575 NEXT
580 EX=0
585 IFX=1THEN650
590 FORQ=X-1TO1STEP-1
595 IFSQ(Q,Y)=0THEN615
600 IFSQ(Q,Y)=SW THEN620
605 IFSQ(Q,Y)=CC THEN EX=1
610 NEXT
615 IF EX=1THEN650
620 IF EX=0THEN650
625 FORK=X TO Q STEP-1
630 CIRCLE(A(K),B(Y)),12,0,.9:PA
INT(A(K),B(Y)),SW,SW:CIRCLE(A(K)
,B(Y)),12,0,.9
635 TT=1
640 SQ(K,Y)=SW
645 NEXT
650 PP=0:EX=0
655 IFY=1THEN735
660 FORQ=Y-1TO1STEP-1
665 PP=PP+1:IF X+PP>6THEN735
670 IFSQ(X+PP,Q)=0THEN690
675 IFSQ(X+PP,Q)=SW THEN695
680 IFSQ(X+PP,Q)=CC THEN EX=1
685 NEXT
690 IF EX=1THEN735
695 IF EX=0THEN735
700 PP=-1
705 FORK=Y TO Q STEP-1

```

```

710 PP=PP+1
715 CIRCLE(A(X+PP),B(K)),12,0,.9
:PAINT(A(X+PP),B(K)),SW,SW:CIRCL
E(A(X+PP),B(K)),12,0,.9
720 TT=1
725 SQ(X+PP,K)=SW
730 NEXT
735 PP=0:EX=0
740 IFY=1THEN820
745 FORQ=Y-1TO1STEP-1
750 PP=PP-1:IF X+PP<1THEN820
755 IFSQ(X+PP,Q)=0THEN775
760 IFSQ(X+PP,Q)=SW THEN780
765 IFSQ(X+PP,Q)=CC THEN EX=1
770 NEXT
775 IF EX=1THEN820
780 IF EX=0THEN820
785 PP=1
790 FORK=Y TO Q STEP-1
795 PP=PP-1
800 CIRCLE(A(X+PP),B(K)),12,0,.9
:PAINT(A(X+PP),B(K)),SW,SW:CIRCL
E(A(X+PP),B(K)),12,0,.9
805 TT=1
810 SQ(X+PP,K)=SW
815 NEXT
820 PP=0:EX=0
825 IFY=6THEN905
830 FORQ=Y+1TO6
835 PP=PP+1:IF X+PP>6THEN905
840 IFSQ(X+PP,Q)=0THEN860
845 IFSQ(X+PP,Q)=SW THEN865
850 IFSQ(X+PP,Q)=CC THEN EX=1
855 NEXT
860 IF EX=1THEN905
865 IF EX=0THEN905

```

```

870 PP=-1
875 FORK=Y TO Q
880 PP=PP+1
885 CIRCLE(A(X+PP),B(K)),12,0,.9
:PAINT(A(X+PP),B(K)),SW,SW:CIRCL
E(A(X+PP),B(K)),12,0,.9
890 TT=1
895 SQ(X+PP,K)=SW
900 NEXT
905 PP=0:EX=0
910 IFY=6THEN990
915 FORQ=Y+1TO6
920 PP=PP-1:IF X+PP<1THEN990
925 IFSQ(X+PP,Q)=0THEN945
930 IFSQ(X+PP,Q)=SW THEN950
935 IFSQ(X+PP,Q)=CC THEN EX=1
940 NEXT
945 IF EX=1THEN990
950 IF EX=0THEN990
955 PP=1
960 FORK=Y TO Q
965 PP=PP-1
970 CIRCLE(A(X+PP),B(K)),12,0,.9
:PAINT(A(X+PP),B(K)),SW,SW:CIRCL
E(A(X+PP),B(K)),12,0,.9
975 TT=1
980 SQ(X+PP,K)=SW
985 NEXT
990 REM END OF ROUTINE
995 IFTT=0THEN300
1000 IFSW=1THEN285ELSEIFSW=2THEN
280
1005 GOTO1005
1010 REM SCORE ROUTINE
1015 BL=0:WH=0:FORQ=1TO6:FORK=1T
06

```

```

1020 IFSQ(Q,K)=1THEN WH=WH+1
1025 IFSQ(Q,K)=2THEN BL=BL+1
1030 NEXTK,Q
1035 LINE(206,92)-(248,110),PRES
ET,BF
1040 DRAW"BM216,107C1"
1045 Q$=STR$(WH):IF WH>9THEN Q$=
RIGHT$(Q$,2)
1050 FOR Q=1TO2:P$=MID$(Q$,Q,1):
P=VAL(P$):DRAW N$(P):NEXTQ
1055 LINE(206,138)-(248,156),PRE
SET,BF
1060 DRAW"BM216,153C1"
1065 Q$=STR$(BL):IF BL>9THEN Q$=
RIGHT$(Q$,2)
1070 FOR Q=1TO2:P$=MID$(Q$,Q,1):
P=VAL(P$):DRAW N$(P):NEXTQ
1075 RETURN
1080 LINE(200,0)-(256,58),PRESET
,BF
1085 IF BL>WH THEN CIRCLE(226,20
),12,1,.9
1090 IF WH>BL THEN CIRCLE(226,20
),12,1,.9:PAINT(226,20),1,1
1095 IF WH=BL THEN 1110
1100 DRAW"BM206,40C1D12R6NU12R6N
U12BR6NU12BR6U12M+8,+12NU12BR4R6
U6L6U6R6"
1105 GOTO1115
1110 DRAW"BM209,24C1R6ND12R6BR6N
D12BR6NR8D6NR8D6R8"
1115 LINE(203,3)-(251,55),PSET,B
1120 X$=INKEY$:IFX$=CHR$(13)THEN
RUNELSE1120

```



### Programs for Home or Classroom

#### Educational Programs for Students Grade K-12 and Adult Self Studies

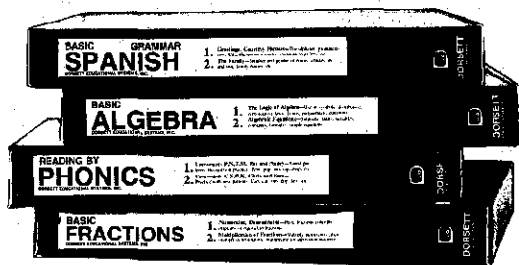
More than 500 programs on cassette for any Color Computer! At every level from kindergarten through adult. All have full-time narration!

Dorsett has over 1,000 educational programs for the Atari, Apple and Color Computers.

**16 PROGRAMS** IN EACH OF THE FOLLOWING  
READING--PHONICS--SPELLING--ALGEBRA--FRACTIONS--GEOMETRY  
CHILDREN TALES--AND MUCH MORE

A complete course containing 8 cassettes consisting of 16 programs costs \$74.95. A two program cassette is \$12.95.

#### NOW AVAILABLE INNER ACTIVE VIDEO TUTORIALS



CALL FOR FREE CATALOG 1-800-654-3871

Educational Systems, Inc.

**DORSETT**

The Talking Tapes That Teach  
Route 1 Box 110  
Newman, OK 73072  
1-800-654-3871

### Now Available **WPShel**

#### from ColorSystems

A New Word Processing Oriented Graphics Shell  
for your Color Computer 3 and OS9 Level 2

FEATURES: "Pull-Down" Menus  
User Customizable  
Extensive use of Overlay Windows  
Use with your favorite Text Editor,  
Text Formatter & Spelling Checker  
(not included)

Requires a minimum of 256K of RAM  
and the Windint Module from your Multi-Vue Disk  
Complete with Full Documentation & Support

for only **\$22.00**  
(\$25 CDN)

NC Residents Please Add 5% Sales Tax  
Send Check or Money Order to

**ColorSystems**  
**P.O. Box 540**  
**Castle Hayne, NC 28429**  
**(919) 675-2426**

Ask for our FREE catalog  
of OS9 Games & Utilities!



# Bridge the 68000 Gap

by Marty Goodman  
Contributing Editor

*How can I modify a CoCo 3 to use a 68008 processor? Motorola says that the 68008 uses the same support chips as the 6809. What about rumors of a new computer that is to act as a bridge from the CoCo to the 68000 series of processors?*

Norman E. Wagner  
Harrisburg, Pennsylvania

I'm sorry but what you want is impossible. Although the 68008 works nicely with the same 68B21 chips used to handle I/O on the CoCo 3, the compatibility ends there. The video and memory circuitry (GIME chip) of the CoCo does not work with a 68008. You would have to design a machine from the ground up to use the 68008. There is no way to just drop it in and make a few minor changes. As I write this, however, it has been two weeks since Frank Hogg Labs and Kenneth Leigh Enterprises introduced new 68000-based machines at RAINBOWfest Chicago. Both of these are OS-9/68K machines and are projected to start selling in August. RAINBOW will be carrying more news of them.

## Great Buy

Greg Law, SIGOP of the OS-9 SIG on Delphi and Technical Editor for RAINBOW, comments, "I recently had occasion to buy a new GIME chip from National Parts. The

new part number for it is MX-0992 and the current price is \$21.92, down from \$50 a year ago."

## Setting the Clock

*A while ago my serial-to-parallel converter from Dayton Associates stopped working. I called Dayton and they gave me a simple program to adjust its clock. I set the baud rate to 600 on the converter, then ran this program:*

```
10 FOR X=88 TO 80 STEP -1
20 POKE 150,X
30 PRINT #2,"ABCDEX"
40 NEXT X
```

*I was told to adjust a little internal potentiometer until ABCDEX was clearly visible in most of the printouts. I did this and now the converter works again. I am most pleased with the careful help I received from the folks at Dayton.*

Dee Friedlander (STREETHEART)  
Scotch Plains, New Jersey

That approach also works with Metric Industries converters and probably with the Blue Streak variety as well. These converters use a capacitor and resistor to generate their clock, and the time base occasionally drifts with age, temperature, humidity or vibration, and requires readjustment. The converter I designed for Microcom uses a quartz crystal for its time base and is considerably less likely to drift.

## Keyboard Conversion

*I recently had occasion to convert an HJL keyboard for use with a CoCo 3. It was surprisingly easy. It takes about 30 seconds to make the one latching function key on the HJL keyboard cease to latch. You just remove a little nylon spring from the latching key, and it becomes a normal non-latching key. The key caps just pull off, so you can*

*exchange F1 and F2 with F3 and F4 to get F1 and F2 properly labelled. You do need to relabel F3 and F4 as CONTROL and ALT after this.*

George McCashin (GMCC)  
Chattanooga

## Composite Negative Sync

*I want to hook up a monitor that requires a composite, negative sync to my CoCo. How do I generate a composite negative sync from the separate positive H and V sync the CoCo 3 produces?*

Carl J. Boll (CBI)  
Chicago

Feed H and V sync into the two inputs of a single NOR gate on a 74LS02 (quad NOR gate chip). The output of the gate is the composite negative sync of the kind you seek. This works with many Sony, Amiga and other brands of monitors that require composite negative sync with their analog RGB information.

A slick trick is to mount a 74LS02 piggyback on top of the 74LS04 in your CoCo 3. Hook the 74LS02 to the 74LS04 as follows: Pin 7, 11, 12 and 14 of the 74LS02 get soldered to pins 7, 10, 12 and 14 of the 74LS04, respectively. All other pins on the 74LS02 are bent up. Pins 1, 4 and 10 of the 74LS02 are not connected. Pins 2, 3, 5, 6, 8 and 9 are all connected to each other and to Pin 14 of both chips. Then cut resistors R61 and R62 that lie next to the 68B21 chip and run a wire from Pin 13 of the 74LS02 to Pin 10 of the RGB video connector. This provides a source of composite negative sync on Pin 10 of the RGB connector. By clipping those two resistors, you disconnect Pin 10 from the PIA chip — a connection not used by any existing CoCo 3 hardware or software. Now you can use your CoCo 3 with all separate sync monitors (with an appropriate cable) and with monitors that need composite negative sync.

*Martin H. Goodman, M.D., a physician trained in anesthesiology, is a longtime electronics tinkerer and outspoken commentator — sort of the Howard Cosell of the CoCo world. On Delphi, Marty is the SIGOP of RAINBOW's CoCo SIG and database manager of OS-9 Online. His non-computer passions include running, mountaineering and outdoor photography. Marty lives in San Pablo, California.*

### Power Adjustment in Germany

*I am moving to Germany in May and would like to know what is involved in making the CoCo, a DMP-132, an FD-502 drive and a Magnavox 8CM515 monitor work on the 220-volt 50Hz power they have there.*

*Ruben V. Urcuyo  
Phoenix*

I recommend a 5-amp or greater step down (220- to 110-volt) transformer. Although relatively heavy, it is the best way to go. It brings the voltage to 110 volts. The 50Hz frequency shouldn't be a problem because none of the devices you mentioned derives timing from the line frequency. The only possible problem is that transformers inside the CoCo, printer, drive and monitor could operate less efficiently at the lower line frequency. If the power supply of those

devices is marginally constructed, there might be some overheating. You can design circuitry to change the line frequency back to 60Hz, but such circuitry is much more elaborate and expensive than the transformer required to correct the voltage. I don't think it's needed.

### FAX ala CoCo?

*Is there any way to send and receive FAX messages using a CoCo?*

*Marvin E. Logan  
Ft. Carson, Colorado*

Because it is such a low-priced computer, the expensive FAX boards used in other computers have not been devised and offered for the CoCo. I doubt they will be. In 1985, RAINBOW published a program by N6LQV and KB6IRQ that allowed the CoCo to receive Weather FAX without any special

hardware other than a couple of LEDs and resistors. I still distribute an updated version of the program and N6LQV's RTTY program as well. But Weather FAX (WEFAX) is quite different from the complex CCITT Group 3 Fax in common use in business today.

### Wiring a monitor to CoCo 2

*How do I wire a composite video monitor to my CoCo 2?*

*Stephen Geissinger  
Sauk Rapids, Minnesota*

While the CoCo 2 was being sold, numerous vendors in RAINBOW offered small circuit boards you clipped or soldered into the CoCo 2 that generated both monochrome and color composite video signals. Designing a circuit to successfully get color composite video out of a CoCo 2 can be

## METRIC INDUSTRIES, INC.

### Model 101 Serial to Parallel Printer Interface

- ★ Works with any COCO
- ★ Compatible with "Centronics" Parallel Input Printers
- ★ Just turn the knob to select any one of 6 baud rates 300-9600
- ★ Comes complete with cables to connect to your printer and computer
- ★ Can be powered by most printers

### Model 104 Deluxe Interface with "Modem Switch"

- ★ Same Features as 101 Plus
- ★ Built in Serial Port for your Modem or other serial device
- ★ Switch between Serial Output and Parallel Output
- ★ Comes with cables to connect to your computer and printer
- ★ Can be powered by most printers

### Model 105 Serial Switch

- ★ Connects to your COCO to give you 2 switch selectable Serial Ports
- ★ Comes with a 3 foot cable to connect to your computer
- ★ Now you can connect your Printer (or printer interface) and your Modem (or other serial device) to your COCO and flip the switch to use either device
- ★ Does not require power

### Cassette Label Printing Program

- ★ New Version 2.1 prints 7 lines of information on Cassette labels
- ★ Comes on Tape with instructions to transfer to disk
- ★ Menu driven, very easy to use
- ★ Save and Load Labels from Tape and Disk
- ★ Uses the features of your printer to print standard, expanded, and condensed characters
- ★ Automatically Centers Each Line of Text
- ★ Allows editing of label before printing
- ★ Program comes with 24 labels to get you started
- ★ 16K ECB required

#### Some of the Printers

**That Can –**  
Supply power for the 101 and 104 are Radio Shack, Star, Okidata, Brother, Juki, and Smith Corona.

#### Some of the Printers

**That Cannot –**  
Supply power for the interfaces are Epson, Seikosha, Panasonic, Silver Reed and NEC. If your printer cannot supply power to the interface you can order your interface with the "P" option or you can supply your own AC adapter. We recommend the Radio Shack 273-1431 AC adapter with a 274-328 connector adapter.

**Write or call for more information or for technical assistance.**

### Price List

<b>Model 101</b>	<b>35.95</b>
Model 101P	41.95
Model 104	44.95
Model 104P	51.95
Model 105	14.95
Cassette Label Program	6.95
Pin Feed Cassette Labels:	
White	3.00/100

#### 4 Pin Din Serial COCO Cables:

Male/Male 6 foot	4.49
Male/Female 6 foot	4.49
Female/Female 6 foot	4.49
Other Lengths Available.	

**All items covered by a  
1 year warranty**

### Ordering Info

- ★ **Free Shipping** in the U.S.A. (except AK and HI) on all orders over \$50
- ★ On orders under \$50 please add \$2.50 for shipping and handling
- ★ On orders outside the U.S.A. please write or call for shipping charges

**You Can Pay By:**  
★ VISA or MasterCard  
★ Or send check or money order payable in U.S. funds

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

**(513) 677-0796**



difficult. Getting clean monochrome for an amber, green or black-and-white monitor is easy by comparison.

A circuit for monochrome video involves three common transistors and a few resistors and capacitors used as simple inverting amplifiers and emitter followers. Color-capable video adaptors are no longer on the market. You may check with Howard Medical or Microcom for adaptors still in stock. If you just want composite monochrome video, write to me in care of THE RAINBOW and send me a stamped, self-addressed envelope. I can send you a circuit for such an adaptor. I may even have a few kits left for such monochrome drivers.

#### Cheap Patch Search

*Is there a patch that allows CoCo 2 programs to run on the CoCo 3? I'd like to use CoCo Max II on the CoCo 3 and prefer to spend no more than \$20.*

Andrew Yarrows  
East Hampton, Massachusetts

No such patch is available commercially. Various programs have various compatibility problems with the CoCo 3. Microcom sells an RGB patch that fixes many CoCo 2 games that appear in black-and-white on an RGB monitor on a CoCo 3.

There have been patches for *CoCo Max II* posted on Delphi. For about \$45 you can buy a copy of *CoCo Max 3*, which not only runs on the CoCo 3, but takes full advantage of its greater screen resolution, speed and color capability.

#### Serial-to-Parallel Converter

*Where can I find a serial-to-parallel converter that will allow me to hook my Epson printer to my Color Computer 2?*

Ron Hall  
Jacksonville, Alabama

Metric Industries sells one such converter. Dayton Associates sells another. Microcom sells yet another. Any one of these allows you to use a printer with a parallel input with the serial output of the Color Computer 1, 2 or 3.

#### Digital Monitor Blues

*How can I get my Magnavox 8CM562 monitor in RGB mode to display all 64 colors when used with a CoCo 3?*

Ray McQueen  
Eastman, Georgia

You can't without significant internal modification of the monitor because it lacks an analog RGB input. Its existing RGB digi-

tal input allows for display of no more than six colors and black-and-white with the CoCo's RGB signal. With a service manual for that monitor and knowledge of analog video and basic electronics, you could interrupt the R, G and B video lines where they enter the base of the first stage of the video amplifiers for each of the three colors. If you feed the CoCo video in there (through a 10- to 50uf capacitor) you should get a decent analog RGB video and display of all 64 colors.

Your technical questions are welcomed. Please address them to CoCo Consultations, THE RAINBOW, P. O. Box 385, Prospect, KY 40059.

We reserve the right to publish only questions of general interest and to edit for brevity and clarity. Due to the large volume of mail we receive, we are unable to answer letters individually.

Questions can also be sent to Marty through the Delphi CoCo SIG. From the CoCo SIG> prompt, pick Rainbow Magazine Services. Then at the RAINBOW> prompt, type ASK (for Ask the Experts) to arrive at the EXPERTS> prompt, where you can select the "CoCo Consultations" online form, which has complete instructions.

Looking for the **BEST SERVICE, BEST SELECTION,**  
and **BEST PRICES** on your CoCo shopping needs?

## COCO PRO!

At CoCoPRO!, we bring you the best **VALUE** for your CoCo shopping dollar. We carry a wide variety of **NEW** hardware products at prices *too low* to advertise, gently **USED** hardware products (with full 30-day warranty), as well as something you will find *nowhere* else. . . gently **USED SOFTWARE** at **INCREDIBLE** savings (30-80%) over full retail (easy on the *wallet*, easy on the *conscience*)!! Our inventory changes **daily**, and contains at least 120 of your favorite CoCo software titles at all times!! All legitimate copies, with full documentation!!

**HOW** can you find out what bargains await you in our current inventory?

Send \$3 (refundable with \$20 purchase) for our Catalog on Disk, or \$10 for 12 monthly issues.

\* OR \*

If you have a modem, call our BBS for the latest listing of inventory, with **ONLINE ORDERING** via VISA/MC!! BBS no. is (313)663-6207 (5 lines, 7-E-1, 3-1200. Type "coco" at login prompt).

**Call or write TODAY. . . before someone else gets that item you've been looking for!!**

## COCO PRO!

1334 Byron  
Ypsilanti, MI 48198  
(313)481-DAVE(3283)

We accept VISA, MASTERCARD, Checks, and Money Orders. Credit Card orders, please add 5% to total. All orders shipped same day via UPS Ground. C.O.D. orders add \$4.00.

### TAKE CONTROL OF YOUR OS9 LvlII COLOR COMPUTER

< < INTRODUCING > >

#### Pt - FILE MANAGER - 19.95

Pt is a complete file management utility. Pt consists of 13 utilities for file management and 7 utilities for directory manipulation. All operate from within a point and shoot environment. Pt allows you to add point and shoot file selection to all your command line based programs. When started Pt displays a directory of the current data directory, with a cursor highlighting a file name. The cursor moves by using the arrow keys. Simply highlight a filename and press F to display the file manipulation menu or D to display the directory menu. A command can be entered and the highlighted file used as a parameter by pressing enter. Adds many new capabilities not realized in current OS9 utilities. Ideal for both hard-disk and floppy based systems.

#### S-SCREEN CONTROL UTILITY - 19.95

Gives complete control of your text screen in only 510 bytes. 34 built in mnemonic commands give simple command line control of your screen. Merge S into your shell and forget display codes forever.

#### M-MENUING UTILITY - 19.99

Create complete menuing systems for your OS9 LvlII color computer using simple ascii text files. M merges into your shell for a memory resident menuing system.

**ALL PROGRAMS 100 % MACHINE LANGUAGE  
MULTI-VUE NOT REQUIRED.**

r3 Systems Consultants (602) 745-2327  
4072 E 22nd Suite #178  
Tucson, Az 85711

Az Residents add 7% sales tax.  
Please add \$3.00 shipping and handling.  
Checks, Money Orders or C.O.D. orders accepted.

# Programming Quick Tips

Everyone has different ideas about programming. And some are just common sense. Here are five things that help me. Maybe they'll help you, too.

- Use a word processor — nothing against the EDIT command, but a full-screen editor dramatically speeds up the debugging process. Lengthy data tables and lists are much easier to type using a word processor. And features such as *global search and replace* make tedious tasks easy. Try changing 200 PRINT#-2 commands to PRINT manually!
- RENUM — if you become confused during editing because of multiple GOTO and GOSUB commands, try using RENUM 1,1,1. Renumbering in this manner quickly exposes

any GOTOS and GOSUBS that may be branching to non-existent lines. After cleaning up unresolved lines, use RENUM again to divide the program into clearly numbered sections.

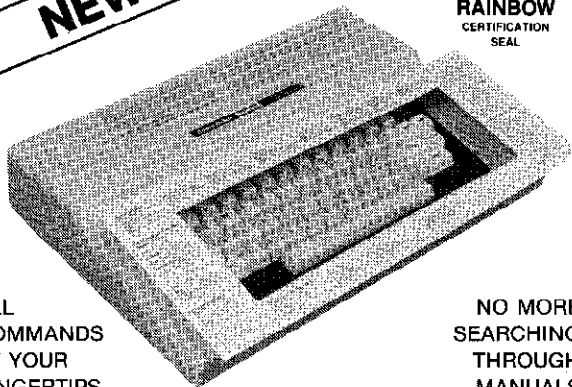
- Use remarks — the smartest programmers make liberal use of the REM statement. Debugging can be a nightmare when you return to work on a program after several months and you can't remember what specific parts are supposed to do. Put *entry* and *exit* conditions in REM lines at the beginning of each subroutine.
- Write in modules — even if you're not using BASIC09, it helps to think of programs in their component sections rather than as one big hunk of code. Write a well-com-

mented subroutine for each function in your program. Save these and use them in other programs. Any job is easier when broken down into its component tasks. And you'll save time on future programs. As a rule, if it's longer than one page, try to break it down.

- Right mental attitude — don't be afraid to write a program. It can be challenging and quite enjoyable. If you think modular, you'll never be working on too much at one time. Remember, the English language has over 100,000 words. BASIC has only about 130, and you need to know only half of them to write excellent programs.

— Ernest F. Zore  
Cleveland, Ohio

**NEW!!!**



ALL  
COMMANDS  
AT YOUR  
FINGERTIPS

NO MORE  
SEARCHING  
THROUGH  
MANUALS

## KEYBOARD TEMPLATES FOR YOUR COCO

ALL Commands for CoCo 1-2-3  
on ONE Template ..... \$6.95  
Teletwriter 64 Template ..... 5.95  
Teletwriter 128 Template ..... 5.95

Please add \$2.00 Shipping & Handling for each Template

(NC Residents Add 5% Sales Tax)

PLEASE SEND CHECK OR MONEY ORDER ONLY

### P&M PRODUCTS

1003 Shalimar Drive  
High Point, North Carolina 27262  
(919) 887-2236

## COLOR RIBBONS & PAPER

COLOR RIBBONS				COLOR PAPER	
RED, BLUE, GREEN, BROWN, PURPLE, YELLOW				BRIGHT PACK —	
Ribbons	Price Each	Black	Color	Heat Transfer	200 Sheets/50 ea. color: Red, Blue, Green, Yellow. 9 1/2 x 11 — \$11.90/pk.
Radio Shack —					
— DMP 130	6.50	8.00	—	—	PASTEL PACK —
— DMP 110	4.50	5.25	5.75	—	200 Sheets/50 ea. color: Pink, Yellow, Blue, Ivory. 9 1/2 x 11 — \$11.90/pk.
— DMP 120	6.75	7.75	—	—	COLOR BANNER, PARTY BANNER, CHRISTMAS BANNER, HAPPY B-DAY BANNER, CONGRAT'S BANNER — 45'/Roll — \$9.95/Ea. Roll
— DMP 130/132	5.25	6.50	7.95	—	
— DMP 200	6.75	7.75	—	—	
— DMP 230/520	4.00	5.25	—	—	
— DMP 410/510	5.00	7.00	—	—	COLOR CERTIFICATE PAPER — 100 Shts./Pk. — \$9.95/Pk.
— DMP 430	12.00	—	—	—	
Apple Image I/II	3.75	4.50	6.50	—	GREETING CARDS — 50 Cards & 40 Env./Pk. — \$11.95/Pk.
Citizen 120/180D	5.00	6.00	7.95	—	
Epson MX80/LX800	3.75	4.25	6.75	—	T-SHIRT RIBBONS (Heat Transfer) — Call For Price & Avail. COLORS: Red, Blue, Green, Brown, Purple, Yellow, Black
Okidata 180/192	6.50	7.50	6.00	—	
Panasonic K-XP 1080	6.75	7.75	—	—	
Seikosha SP 800/1000	5.25	6.50	7.95	—	
Star NX 10/NL 10	5.00	6.00	7.95	—	COLOR DISKETTES 5 1/4" DS/DD Rainbow Pack. 10/pack — \$12.50
Star NX 1000	4.50	5.50	6.75	—	
Star NX 1000 — 4-Color	—	8.75	—	—	For ribbons & paper not listed above, call for price. Price & spec. subject to change w/o notice. Min. order \$25.00. S & H \$3.50 minimum. Visa, M.C., C.O.D.

T-SHIRT RIBBONS (Heat Transfer) — Call For Price & Avail.  
COLORS: Red, Blue, Green, Brown, Purple, Yellow, Black

### COLOR DISKETTES

5 1/4" DS/DD Rainbow Pack. 10/pack — \$12.50

For ribbons & paper not listed above, call for price. Price & spec. subject to change w/o notice. Min. order \$25.00. S & H \$3.50 minimum. Visa, M.C., C.O.D.

### RAMCO COMPUTER SUPPLIES

P.O. Box 475, Manteno, IL 60950 U.S.A.  
(U.S.A.) 800-522-6922 • (Canada) 800-621-6444  
815-468-8081



# Binary Potpourri

by **Eddie Kuns**  
CoCo SIG Database Assistant

**G**eneral Information (in the OS-9 SIG): **Mike Haaland** (MIKEHAAL-AND) explains how he put his CoCo system into an IBM AT-type case and powered the system from the PC power supply. **Brian Wright** (POLTERGEIST) uploaded several Star Trek parodies. **Mike Knudsen** (RAGTIMER) released the format of *UltiMusE* scores including suggestions for conversion to and from the *Lyra* file format.

**Applications:** **Rick Moutoux** (RICKMOU) posted a database program to keep track of information like birthdays and phone numbers. **Phillip Brown** (THEF-ERRET) sent us a pop-up calculator.

**Utilities:** **Chuck Owens** (CZO) uploaded a utility to select fonts for the Star SG-10 printer. **Will Wright** (WILLWRIGHT) submitted a set of utility demos from r3 Systems to help you set up a point-n-click menuing environment. **Ken Lindsay** (KLINDSAY) contributed a replacement for Microware's copy command, which can copy multiple files. **Jim McDowell** (JMLSOFT) posted a program that generates a shell script to copy an entire DECB formatted disk to an OS-9 formatted disk using Bob Santy's *RS-DOS* utility. **Roger Krupski** (HARDWAREHACK) uploaded the newest version of dEd (a disk editor/zapper), a filter to translate ASCII text to audio Morse code, and a utility to toggle OS-9's automatic

CRC checking. **Kevin Leger** (KEVINLEGER) contributed a cross between echo and list. **Bruce Isted** (BRUCEISTED) uploaded *MegaRead*, which reads one megabyte from standard input, which is useful for benchmarking hard drive systems. **Brian Wright** ported several utilities from UNIX to OS-9. **Donald Thrash** (DONTTHRASH) submitted a program that allows you to print on both sides of your printer paper. **Cliff Redding** (CLIFFORD) contributed a PRINT@utility for BASIC09 users. **Tim Koonce** (TIMKOONCE) released the latest version of the *CUTS* encoder/decoder. Tim also posted a file describing the Color Computer mailing list on InterNet and BitNet. **Bill Turbett** (WBT) uploaded a filter to remove extra carriage returns from a text file. **Guy Loucks** (GUYLOUCKS) released *TSUtil*, a utility package he wrote with Bruce Isted.

**Telcommunications:** **Ken Lindsay** ported the WizAcia driver so it will work with the Eliminator. **Brad Neuberg** (FIDGET) submitted *Chomp*, a game that supports ANSI and OS-9 screen escape sequences.

**Graphics & Music:** **Mike Haaland** released *IMGshow* Version 1.1 to display IMG pictures. **Jason Forbes** (COCO3KID) gave us *GLife* Version 2.0, an implementation of the popular Life simulation. **Bert Schneider** (OS9BERT) uploaded "Flight of the Bumble Bee" for *UltiMusE*.

**Programmers Den:** **Mike Shook** (MIS-HOO) helps us call the National Bureau of Standards to set our clocks to NTC.

**68K-OS9:** **Daniel Boulanger** (SMART-COCO) submitted *ATerm* Version 2.6, an OS9/68000 terminal program written in 68000 assembly language.

**Tutorials & Education:** **Mike Stute** (GRIDBUG) released *Hitchiker's Guide to*

*C*, a 10-chapter book designed to teach the C programming language.

## CoCo SIG:

**General Information:** If you're having trouble uploading to the CoCo SIG databases, then you'll want to read some of the help files posted by **Don Hutchison** (DONH-UTCHISON), which include example submission sessions.

**CoCo 3 Graphics:** This starts off with a bundle of adult pictures in the IMG format from **Richard Trasborg** (TRAS), some in 16-level gray scale and others in 4096 colors. **Kader** (KADER) uploaded a digitized picture by Nagel. **Pete Ellison** (PETEEL-LISON) submitted an IMG picture of the Duke. **Tommie Taylor** (TOMMIETAYLOR) contributed a CGP-200 printer screen-dump program and a BASIC graphics editor.

**Utilities and Applications:** **Randy Cassel** (BBTROLL) posted a program to help you keep softball statistics. **Eric Parish** (ERICPAR) submitted a program for planetary orbits.

**Hardware Hacking:** **Marty Goodman** (MARTYGOODMAN) uploaded two dissertations this month, the first explaining how the Multi-Pak works and comparing the Howard Medical Slot Pak II to it. The second one explains how the 64K and 128K banked ROM packs function.

**Music & Sound:** **Rob Heil** (ROBHEIL) contributed several Yes songs, including "Cord," "Eclipse" and "Apocalypse."

**Product Reviews & Announcements:** **Marty Goodman** posted a product review of the Howard Medical Slot Pak II, a Multi-Pak Interface replacement.

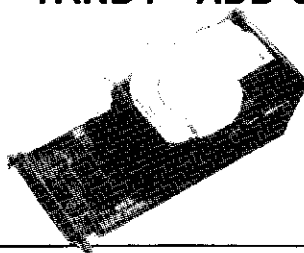
**Telecommunications:** **Dennis Gray** (DENNISGRAY) uploaded a program to autoboot *Autoterm*. ☺

*Eddie Kuns is pursuing a PhD in physics at Rutgers University. He lives in Aurora, Illinois and works as a programmer and researcher at Fermilab. Eddie is co-manager of the CoCo SIG; his user-name is EDDIEKUNS.*

**SPECIAL  
OF THE MONTH  
DRIVE CARDS**

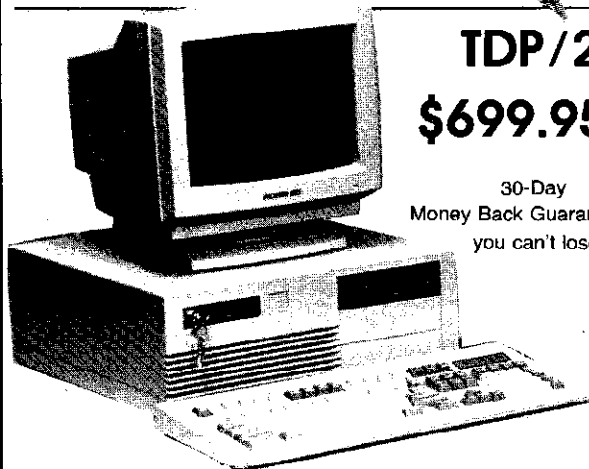
For model 1000, SX, TX, SL, TL, 3000, 3000NL

**TANDY® ADD-ONS**



20 Meg Drive Card	65 MS	\$269.95
20 Meg Drive Card	45 MS	\$289.95
32 Meg Drive Card	45 MS	\$299.95
40 Meg Drive Card	60 MS	\$339.95
49 Meg Drive Card	32 MS	\$399.95
64 Meg Drive Card	23 MS	\$539.95

Call for current pricing



**TDP/2  
\$699.95**

30-Day  
Money Back Guarantee -  
you can't lose!

**TDP/2**

- 12 MHz 68000 Processor
- Built in hard drive controller IDE interface supports up to 2 hard drives
- Built in floppy drive controller supports 1.2 Meg, 1.44 Meg, 720K, 360K floppies
- Built in printer port
- Built in 2 serial (RS232) ports, COM1, COM2
- Joystick port
- 615K memory expandable to 8 Meg
- 1.44 Meg floppy drive
- Video supports Hercules® monochrome graphics and CGA color graphics
- 7 slots, 6 - 16 bit, 1 - 8 bit
- 300 Watt power supply
- Real time clock
- 101 enhanced keyboard (ships)
- Math coprocessor socket
- 3 1/4" 5 1/4" drive bays
- Software - PC Word, PC Calc, PC File
- E2 DDB

**TDP/2 versus Tandy® TL/2**  
(Comparison Chart)

**Tandy® TL/2**

- 8 MHz 68000 Processor
- Built in hard drive controller IDE interface
- Built in floppy drive controller supports 720K, 360K floppies
- Built in printer port
- Built in serial port COM1
- 2 joystick ports
- 615K memory expandable to 768K
- 720K floppy drive
- Video supports Hercules® monochrome graphics and CGA color graphics
- 6 slot case
- 87 watt power supply
- Real time clock
- 101 enhanced keyboard
- Math co-processor socket
- 3 drive bays
- Software - DiskMaster® 3.0 Productivity
- MS DOS

**TDP/2 Options:**

• 12" monochrome monitor	\$89.95	• 1.44 Meg floppy	\$119.95
• 14" CGA monitor	\$279.95	• 720K floppy	\$99.95
• 14" EGA monitor & card	\$499.95	• 360K floppy	\$99.95
• 14" VGA monitor card	\$599.95	• 20 Meg drive	\$279.95
• 1.2 Meg floppy	\$119.95	• 40 Meg drive	\$349.95

**External Hard Drives for Tandy® EX, HX Computers**

Complete System - just plug in (requires 384K min.)

20 Meg	\$389.95	30 Meg.	\$429.95
40 Meg	\$499.95		

**Now we carry IDE Drives for new Tandy®s**

**20 Meg - CALL 40 Meg - CALL**

100, SX, TX, SL, TL, 3000, 4000	
<b>2nd Floppy</b>	
360K TEAC	\$119.95
720K Mitsubishi	\$99.95
3 1/2" Mitsubishi	\$119.95

1000, SX, TX, SL, TL	
<b>Hard Drive Controller</b>	
Will run 1 or 2 Hard Drives	
Supports drives up to 120 megabytes	
<b>\$99.95</b>	

1000, 1000A	
<b>Memory Board with 512K</b>	
Expands memory to 640K	
<b>\$199.95</b>	

1000, SX, TX, SL, TL, 3000, 4000	
<b>Memory Upgrades</b>	
From	
<b>\$50</b>	

Tandy® EX, HX	
<b>360K or 720K External Floppy</b>	
For EX or HX	
<b>\$139.95</b>	

Tandy® EX, HX	
<b>External Hard Drive</b>	
10 Meg	\$299.95
20 Meg	\$389.95
30 Meg	\$429.95
40 Meg	\$499.95

Tandy® EX, HX	
<b>384K Memory Expansion Card</b>	
Includes 384K	
<b>\$189.95</b>	

Color Computer	
<b>Drive O</b>	
Includes floppy drive, case & power supply, controller & software	
<b>\$179.95</b>	

Tandy® 1400 LT	
<b>360K External Floppy</b>	
<b>\$199.95</b>	

Tandy® 1400 LT	
<b>720K External Floppy Drive</b>	
<b>\$199.95</b>	

Tandy® 1400 LT	
<b>20 Meg Internal Hard Disk Drive</b>	
<b>\$699.95</b>	

Color Computer	
<b>Drive O + 1</b>	
Includes 2 floppy drives, case & power supply, controller & software	
<b>\$269.95</b>	

Tandy® is a registered trademark of Tandy Corporation



1ST QUALITY  
MERCHANDISE  
QUALITY  
CUSTOMER SERVICE  
508-278-6555  
TECHNICAL ASSISTANCE  
508-278-6556  
FOR YOUR PROTECTION  
WE CHECK FOR  
STOLEN CREDIT CARDS.

**TRUE DATA PRODUCTS**

P.O. Box 347, 115 So. Main Street  
Uxbridge, MA 01569

**Tel. 508-278-6555  
1-800-635-0300**

Hours: 9 a.m.-6 p.m., Sat. 10 a.m.-4 p.m.

CORPORATE P.O.'s WELCOMED.

ALL PACKAGES SHIPPED UPS EXCEPT CANADA  
AND A.P.O.'s. C.O.D.'s ADD \$3.30. MASTERCARD/  
VISA ADD 2%

ALL RETURNS MUST HAVE RMA# (CALL 508-278-  
6555). YOU MAY BE SUBJECT TO A RESTOCK-  
ING FEE. SHIPPING/HANDLING CHARGES  
NON-REFUNDABLE.

1 YEAR WARRANTY UNLESS OTHERWISE NOTED.  
PRICES/TERMS/CONDITIONS SUBJECT TO  
CHANGE WITHOUT NOTICE.

# The Ninth Year of Rainbow

An index to the articles, programs, reviews and authors appearing in THE RAINBOW from July 1989 through June 1990.

Compiled by Kelly Goff

This is the seventh index to THE RAINBOW. Previous indices appear each July starting with the July 1984 issue. The breakdown of articles appearing over the past year is shown below:

Topic	No. of Articles
Business	6
Communications	12
Editorial Comment	18
Education	24
Games	18
General	10
Graphics	17
Hardware	22
Home Applications	12
Music	3
Novices Niche	59
OS-9	32
Programming	13
Question & Answer	17
Reviews	110
Tutorial	8
Utility	10

Complete your library! For more information on how to get back issues with your favorite programs and articles, refer to Page 42 of this issue of THE RAINBOW.

## BUSINESS

Brunotte, Benjamin. "Another Form"; CoCo3; April 1990, p.64. Create custom forms. FORMAKER.  
Fouts, Gordon E. "The Price is Right"; CoCo3; April 1990, p.116. An aid for finding mark-up/down percentages. MARKUP.  
Macias, David. "Predicting Profits"; CoCo3; April 1990, p.44. Perform break-even analysis. COST.PAS.  
Messer, Shane. "The Golden Retriever"; CoCo3; April 1990, p.24. Roll your own database program. COLRBASE.  
Stephens, Bryan. "Show the Facts"; CoCo3; April 1990, p.67. 3-D bar-graph program. 3DGRAPH.  
Stuart, John. "The Total Figure"; CoCo1/CoCo2/CoCo3; February 1990, p.26. A full-featured spreadsheet. COCOCALC.

## COMMUNICATIONS

Ford, Steven. "CoCo and Amateur Radio"; November 1989, p.44. Discussion of ham radio as a hobby.  
Ford, Steven. "Plug Into Packet"; February 1990, p.22. Exploration of packet radio.  
Hutchison, Don. "Delphi Bureau"; July 1989, p.87. GameTerm and other shareware terminal programs.  
Hutchison, Don. "Delphi Bureau"; September 1989, p.42. "New Horizons".  
Hutchison, Don. "Delphi Bureau"; October 1989, p.54. "Tokenized BASIC".  
Hutchison, Don. "Delphi Bureau"; November 1989, p.36. "KEY-SUB and WEFAH and Guide - Oh, My!".  
Hutchison, Don. "Delphi Bureau"; December 1989, p.35. "The World's First".  
Koonce, Tim. "Observing the Social Graces"; November 1989, p.72. Introduction to file-transfer protocols.  
Kuns, Eddie. "Database Report"; April 1990, p.62. "Name That Tune With UltiMusE".  
Kuns, Eddie. "Database Report"; June 1990, p.92. "OS-9 Uploads Growing".  
Law, Greg. "Database Report"; March 1990, p.72. "New Uploads".  
Onley, Ray. "An Old Code in a New Mode"; CoCo1/CoCo2/CoCo3; November 1989, p.12. Morse code training program for CoCo. CODEMSTR.

## EDITORIAL COMMENT

Augsburg, Gray. "Wrapping The Rainbow"; October 1989, p.14. "An Electronic Evolution".  
Augsburg, Gray. "Wrapping The Rainbow"; November 1989, p.123. "Join the Chorus".  
Augsburg, Gray. "Wrapping The Rainbow"; December 1989, p.124. "OS-9: Room for Growth".  
Augsburg, Gray. "Wrapping The Rainbow"; January 1990, p.124. "From Reader to Writer".  
Augsburg, Gray. "Wrapping The Rainbow"; February 1990, p.10. "The Show Must Go On".  
Augsburg, Gray. "Wrapping The Rainbow"; March 1990, p.124. "What's in Store?".  
Augsburg, Gray. "Wrapping The Rainbow"; April 1990, p.124. "How Many Colors in a Rainbow?".  
Augsburg, Gray. "Wrapping The Rainbow"; May 1990, p.124. "Rainbow Illusions".  
Falk, Lonnie. "Print#-2"; July 1989, p.12. "Fun at the 'Fest'".  
Falk, Lonnie. "Print#-2"; August 1989, p.10. "Eight Years Strong".  
Falk, Lonnie. "Print#-2"; September 1989, p.10. "A New Site for RAINBOWfest".  
Falk, Lonnie. "Print#-2"; October 1989, p.10. "A Transition at The Rainbow".  
Falk, Lonnie. "Print#-2"; November 1989, p.10. "Spread the Word!".  
Falk, Lonnie. "Print#-2"; December 1989, p.10. "Canadian Future II".  
Falk, Lonnie. "Print#-2"; January 1990, p.10. "History in the Making".  
Falk, Lonnie. "Print#-2"; March 1990, p.10. "New Life for CoCo".  
Falk, Lonnie. "Print#-2"; April 1990, p.10. "A Helping Hand".  
Falk, Lonnie. "Print#-2"; May 1990, p.10. "Spring Forward, Look Back".

## EDUCATION

Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; August 1989, p.64. "Building Reading Skills". FOLLOW.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; September 1989, p.54. "Learning About Ratios". RATIOS.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; October 1989, p.52. "Cracking Codes". CODEWORD.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; November 1989, p.24. "Probability". PROBABLE.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; December 1989, p.32. "To Rhyme or Not to Rhyme". POETRY.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; February 1990, p.94. "One-On-One Math Drills". BASKET.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; March 1990, p.112. "Toronto, Ontario for a Basket". BASKETBL.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; April 1990, p.85. "a,e,i,o,u". VOWELS.  
Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; May 1990, p.88. "Cooking With Metric Measures". METRIC.

Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; June 1990, p.18. "Integers in Order". CONSEC.  
Collicott, John. "Bookworm"; CoCo1/CoCo2/CoCo3; September 1989, p.32. Helps develop problem-solving skills in math. BOOKWORM.  
Crooks, Mary. "Time Test"; CoCo1/CoCo2/CoCo3; August 1989, p.56. Timed drills in multiplication and division. TIMETEST.  
Falge, Linda. "KinderFun"; CoCo1/CoCo2/CoCo3; September 1989, p.84. Children's program to learn colors, letters, numbers, music. KINDRFUN.  
Giles, Douglas. "Super Quiz"; CoCo1/CoCo2/CoCo3; October 1989, p.40. Helps develop memorization skills. SUPROQUIZ.  
Johnson, Samuel. "EduSpell, Part II: The Dictionary"; CoCo1/CoCo2/CoCo3; July 1989, p.50. Part II in the development of a talking spelling tutor. MAINMENU.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; July 1989, p.91. "Getting the Whole Picture on Fractions". FRACTION.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; September 1989, p.66. "CoCo Teaches Kids to Just Say No". NODRUGS.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; December 1989, p.60. "Learning Letters". UPLCOCASE.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; January 1990, p.42. "Learn to Give and Take". DRILLER3.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; February 1990, p.62. "Music Class 101". MUSIC101.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; March 1990, p.12. "Right on Time". WATCH.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; April 1990, p.116. "It Strikes a Chord". MUSIC102.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; May 1990, p.36. "A Real Clef Hanger". MUSIC103.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; June 1990, p.22. "Learning Letter Sequence". BETWEEN.

## GAMES

Bradbury, Nick. "Icarus in Search of Wings"; CoCo3; April 1990, p.12. Do an arcade penguin dance. PENGUIN.  
Bradbury, Nick. "One Tile at a Time"; CoCo3; January 1990, p.72. Fast action tile game. FRUSTRAT.  
Britton, Steve. "Samurai"; CoCo1/CoCo2/CoCo3; March 1990, p.114. Oriental battle-type game. SAMURAI.  
Campbell, Marc. "The Checkers Champ"; CoCo3; November 1989, p.82. Computerized checker game. CHECKERS.  
Coty, Curt. "Shopping Spree"; CoCo3; July 1989, p.34. Action game - player goes shopping in a department store. SPREE.  
Cuadra, Hector. "What Goes Up..."; CoCo1/CoCo2/CoCo3; January 1990, p.112. Physics game. GRAVITY.  
George, Thomas. "The Tholean Web"; CoCo1/CoCo2/CoCo3; July 1989, p.42. Maze game where player must neutralize a force field. WEBBAS.  
Hegberg, Joel. "A Mazing Adventure"; CoCo1/CoCo2/CoCo3; December 1989, p.46. Maze Adventure, quest for evil dragon. THEQUEST.  
Messer, Shane. "CoCo Jumble"; CoCo1/CoCo2/CoCo3; June 1990, p.50. A scrambled-word game for two players. JUMBLE2.  
Mosley, John. "Vegas at Your Fingertips"; CoCo3; June 1990, p.12. A slot machine for the CoCo 3. SLOTS.  
Ostrom, Steve. "A Newfangled Maze"; CoCo1/CoCo2/CoCo3; February 1990, p.50. A maze that uses numbers for directional clues. MAZEWAY.  
Quellhorst, George. "Peg Mel"; CoCo3; December 1989, p.26. CoCo version of Hi-Q. COCO-Q.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; October 1989, p.48. "Meteor Storm 3". METEOR3.  
Scherbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; November 1989, p.54. Machine Language Tricks from a BASIC Game: Star Siege II. SIEGE2.  
Veal, Evan. "The Black Box"; CoCo1/CoCo2/CoCo3; August 1989, p.26. Computer hides five balls in a box and you must find them. BLACKBOX.  
Webb, Mark. "The Guessing Game"; CoCo3; May 1990, p.50. A one-player game of choosing colors. MINDSTIM.  
Wolf, Eric. "Where's the Matching Box?"; CoCo3; February 1990, p.88. A two-player game of concentration. CCTRATE.  
Wolf, Eric. "Worm Invaders from Space"; CoCo3; March 1990, p.18. An arcade-action game. WORMINVD.

## GENERAL

Foster, Leslie. "The Eighth Year of Rainbow"; July 1989, p.147. Index - July 1988 to June 1989.  
Goodell, Kirk. "Patchwork on the CoCo 3"; CoCo3; November 1989, p.26. Patch disk programs. BLASTER.  
Murphy, Stephen. "The Price of Wisdom"; February 1990, p.14. A humorous admonishment to use your manual.  
Parker, Jeffrey. "RAINBOWfest Reporter"; September 1989, p.73. Chicago 1989 fest report.  
Parker, Jeffrey. "RAINBOWfest Reporter"; March 1990, p.34. Somerset 1989 fest report.  
Ries, Richard. "Printing the Unprintable"; CoCo1/CoCo2/CoCo3; December 1989, p.121. A filter program for odd characters. READ.B.  
Staff. "Anniversary Special: One-Liner Insert"; CoCo1/CoCo2/CoCo3; July 1989, p.131. A collection of one-liners.  
Staff. "Did You Hear the One About Hints & Tips?"; January 1990,



p.60. Hints, tips and one-liners.  
 Staff, "Reader Survey"; November 1989, p.124. General survey of CoCo readers' use and opinions..  
 Staff, "The Heat is On!"; July 1989, p.26. A midyear buyers guide to new games and game hardware.

## GRAPHICS

Barden, William. "Barden's Buffer"; November 1989, p.64. "Put on Your 3-D Glasses".  
 Bennett, Jim. "Tricky Graphics"; CoCo3; October 1989, p.20. Neat trick for programming graphics on CoCo 3. CARRIER.  
 Bernico, Bill. "The CoCo Coloring Book"; CoCo3; September 1989, p.12. Coloring pictures with the computer. COLORBOOK.  
 Curtis, Allen. "High-Capacity Screen Dumps"; CoCo3; August 1989, p.38. High-density printer enhancements for desktop publisher. DRIVERHT.  
 Curtis, Allen. "High-Capacity Screen Dumps"; CoCo3; October 1989, p.63. How to save and load a half-screen. DHPATCH.  
 Gollas, Ruth. "He's Just a Snowman"; CoCo3; December 1989, p.20. Sing along with Frosty. FROSTY.  
 Grant, Ron. "The Schematic Soundrel, Revisited"; CoCo1/CoCo2/CoCo3; July 1989, p.101. Adding symbol rotation for more flexibility. COCCOCAD.  
 Messer, Shane. "Improving the Scheme of Screens"; CoCo3; January 1990, p.82. Create icons for your programs. DESIGNER.  
 Mosely, John. "Winter Magic"; CoCo3; December 1989, p.12. A program for producing snow onscreen. SNOW.  
 Nee, William. "The Graphics Corner"; CoCo1/CoCo2/CoCo3; August 1989, p.36. Three ways to create color graphics on the CoCo. CLRDemo.  
 Nee, William. "The Graphics Corner, Part II"; CoCo1/CoCo2/CoCo3; September 1989, p.48. PSETing numbers without using coordinates. SCRLDEMO.  
 Nee, William. "The Graphics Corner, Part III"; CoCo1/CoCo2/CoCo3; October 1989, p.78. A two-dimensional array that helps generate new values. NEIGHBRI.  
 Ostrom, Steve. "A Perfect Star"; CoCo1/CoCo2/CoCo3; March 1990, p.92. Lesson in trigonometry and CoCo graphics. TRIG1.  
 Spiller, Jeremy & Spiller, Marty. "The Mandelbrot Bug and CoCo 3 Microscope"; CoCo3; January 1990, p.76. A geometric look at chaos. MANDEL.  
 Stanwood, Ron. "Color Your CoCo World"; CoCo3; July 1989, p.66. Utility to transfer PMODE 3 & 4 screens to CoCo 3 HSCREENS. MULTIRES.  
 Tinklepaugh, Dale. "Draw It Quick!"; CoCo1/CoCo2/CoCo3; August 1989, p.24. Draws in High-Res, creates file of BASIC Statements. QUICKDRAW.  
 Vandal, Michael. "Graphics in a Hurry"; CoCo3; October 1989, p.26. Converts artwork on graphics screen into BASIC code. GRAPHPRO.

## HARDWARE

Barden, William. "Barden's Buffer"; September 1989, p.102. "Loose Ends and CoCo Outputs".  
 Barden, William. "Barden's Buffer"; CoCo3; February 1990, p.42. "High Hopes for the Hi-Res". READHI.  
 Barden, William. "Barden's Buffer"; CoCo3; March 1990, p.40. "A CoCo Dual-Trace Oscilloscope". SCOPE.  
 Bodnar, David. "Exposing the CoCo to Photography"; CoCo1/CoCo2/CoCo3; February 1990, p.96. Use the CoCo for timing applications in the darkroom. DARKROOM.  
 Brunotte, Benjamin. "Custom Built Desk for the CoCo"; December 1989, p.67. A real nail and hammer project.  
 Distefano, Tony. "Turn of the Screw"; July 1989, p.98. "Dynamic Random Access Memory Explained".  
 Distefano, Tony. "Turn of the Screw"; September 1989, p.56. "Building a RAM Disk".  
 Distefano, Tony. "Turn of the Screw"; October 1989, p.86. "Building a RAM Disk".  
 Distefano, Tony. "Turn of the Screw"; CoCo1/CoCo2/CoCo3; December 1989, p.64. "RAM Disk, Part III". GENTEST.  
 Distefano, Tony. "Turn of the Screw"; January 1990, p.40. "Disk Track Tracer".  
 Distefano, Tony. "Turn of the Screw"; February 1990, p.18. "A Digital Lesson".  
 Distefano, Tony. "Turn of the Screw"; March 1990, p.56. "A Digital Lesson, Part 2".  
 Distefano, Tony. "Turn of the Screw"; April 1990, p.110. "Digital Lesson, Part 3".  
 Distefano, Tony. "Turn of the Screw"; May 1990, p.54. "Tools of the Trade".  
 Distefano, Tony. "Turn of the Screw"; June 1990, p.80. "Cleaning the Paths".  
 Francisco, Harleen. "The Economy Printer Buffer, Part II"; July 1989, p.72. Build and troubleshoot the printer buffer.  
 Goodman, Marty. "Adding a Disk Drive to Your CoCo Pt. 2"; April 1990, p.92. Adding disk drives to the CoCo.  
 Goodman, Marty. "Disk Drives and the Color Computer"; March 1990, p.22. Adding a floppy disk to the CoCo.  
 Goodman, Marty. "The OS-9 'CART Interrupt Fix'"; CoCo3; November 1989, p.50. Multi-Pak and CoCo 3 fixes.  
 Iacovou, Neophytos. "A Special Switch"; May 1990, p.43. Four projects using the 4PDT switch.  
 Weide, Dennis. "A CoCo Digital Logic Analyzer, Part 1"; CoCo1/

CoCo2/CoCo3; March 1990, p.26. Hardware project for circuit construction and debugging. TESTIF.  
 Weide, Dennis. "Completing the Analyzer Project"; CoCo1/CoCo2/CoCo3; April 1990, p.72. Tool for testing low-speed logic circuits. ANALYZER.

## HOME APPLICATIONS

Francis, David. "Moon Mapper"; CoCo3; March 1990, p.82. Helps you track the planet-size moons of Jupiter. GALISAT3.  
 Hinton, Ron. "Best Medicine for Disorderly Med. Bills"; CoCo3; February 1990, p.116. Keep the financial side of your medical history in order. MEDIC3.  
 Kenny, Keiran. "Booklet, Revisited"; CoCo1/CoCo2/CoCo3; May 1990, p.40. Mods to allow for bigger booklets. PATBOOK.  
 LeBlanc, Dave. "Personal Secretary"; CoCo1/CoCo2/CoCo3; December 1989, p.56. A personalized notepad for easy organization. COCCOMEMO.  
 Macias, David. "Mapping Your Finances"; CoCo3; November 1989, p.20. Calculates annual interest rates in percentage form, etc. AMORTIZE.  
 Minze, Bill. "Reckoning With the CoCo"; CoCo1/CoCo2/CoCo3; April 1990, p.20. Printing calculator program. CALCULAT.  
 Reichert, Kevin. "Captivating Captions"; CoCo3; November 1989, p.58. Makes labels for photos. CAPTION.  
 Soerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; August 1989, p.104. "More Time Applications". REALTIME.  
 Shaulis, Jerry. "Bank & Budget"; CoCo1/CoCo2/CoCo3; February 1990, p.74. Helps maintain your checkbook. CHECK1.  
 Thomas, Scott. "Innovation Along the Border"; CoCo1/CoCo2/CoCo3; January 1990, p.106. Creates border along stationery. STATION.  
 Turner, Robert Allen. "CoCo Typewriter"; CoCo1/CoCo2/CoCo3; May 1990, p.58. Turn CoCo into a typewriter for those short notes. COLRTYPE.  
 Wulfsberg, Bruce. "From Fractions to Fractions"; CoCo1/CoCo2/CoCo3; February 1990, p.12. Program that reduces fractions to their lowest form. FRACTION.

## MUSIC

Bernico, Bill. "Guitar 3"; CoCo3; February 1990, p.112. Displays guitar chords on the CoCo 3 graphics screen. GUITAR3.  
 Budenholzer, William. "Nickelodeon"; CoCo1/CoCo2/CoCo3; August 1989, p.84. Song editor/player. NICKEL-D.  
 Parker, Jeffrey. "Play It Again, CoCo"; December 1989, p.74. A close look at MIDI.

## NOVICES NICHE

Aftamnow, Ellen. "Tax and Tip"; CoCo1/CoCo2/CoCo3; July 1989, p.105. Helps you divvy up restaurant bills. TAXTIP.  
 Arko, Lyn. "Doggone"; CoCo1/CoCo2/CoCo3; July 1989, p.108. Draws a graphics image of a dog. DOGGONE.  
 Babich, Tio. "Draw Figures Using Asterisks"; CoCo1/CoCo2/CoCo3; November 1989, p.39. Draw figures using asterisks. FIGDRW.  
 Babich, Tio. "Slope and Funnel"; CoCo3; July 1989, p.108. Draws a slope and funnel on the CoCo 3 640x192 screen. SLOPEFNL.  
 Benny, Patrick. "On The Run"; CoCo1/CoCo2/CoCo3; July 1989, p.106. Create smooth animation sequences. LION.  
 Bernico, Bill. "Box Menu"; CoCo1/CoCo2/CoCo3; January 1990, p.32. Spices up menu screen and makes item selection interesting. BOXMENU.  
 Bernico, Bill. "Songwriter's Helper"; CoCo3; September 1989, p.60. Plays various musical patterns. SONGRTR.  
 Bernico, Bill. "Sound-to-Play"; CoCo1/CoCo2/CoCo3; August 1989, p.110. Matches up PLAY command note values for SOUND command. PLAYCONV.  
 Bernico, Bill. "This Is Your Big Debut"; CoCo3; February 1990, p.35. Title screen with moving lights. MARQUEE3.  
 Boughton, Ralph. "Star Defender"; CoCo3; September 1989, p.61. Shoot down enemy ships before your bases are hit. STARDEF.  
 Cheves, Warren. "Car Bingo Game"; CoCo1/CoCo2/CoCo3; November 1989, p.42. Prints index cards with two-character state abbreviations. BINGO.  
 Christensen, Glenn. "Attributes"; CoCo3; March 1990, p.60. Adds color to your screen. ATTR.  
 Darren Day. "The Change Counter"; CoCo1/CoCo2/CoCo3; September 1989, p.64. Counts change. Enter Q for quarter, D for dime, etc. CHANGE.  
 Driessen, David. "Want a Personalized Phone Number?"; CoCo1/CoCo2/CoCo3; August 1989, p.108. Takes phone number and spells out all letter combinations. FONEFIND.  
 Driscoll, Chris. "Escape"; CoCo1/CoCo2/CoCo3; February 1990, p.37. Try to escape from this twenty-level castle. ESCAPE.  
 Ehrenberg, R.M. "Categories"; CoCo1/CoCo2/CoCo3; March 1990, p.62. An alternative to Trivial Pursuit or Monopoly. CATS.  
 Flinn, William. "Solving Quadratic Equations"; CoCo1/CoCo2/CoCo3; June 1990, p.49. Help in finding roots of quadratic equations. QUADRATC.  
 Forster, Jim. "Mooncape"; CoCo3; January 1990, p.32. Forms moon in sky. MOON.  
 Friedrich, John. "Story Writer"; CoCo1/CoCo2/CoCo3; July 1989, p.104. A game that challenges writing creativity. STORYWRT.  
 Friesen, Geoff. "Superpoke"; CoCo3; June 1990, p.48. Allows

multiple-byte pokes. SUPRPOKE.  
 Garcia, Carlos. "Searching for a Rainbow"; CoCo3; January 1990, p.36. Animates a rainbow and waterfall. RAINBOW.  
 Hall, Greg. "Let CoCo Calculate HBUFF"; CoCo3; February 1990, p.36. A fast simple way to calculate HBUFF. HBUFF.  
 Haveman, Evan. "Computer Aided Design"; CoCo3; October 1989, p.59. Demonstrates computer aided design at minimal level. MINICAD.  
 Hobson, Jon. "Marynote"; CoCo1/CoCo2/CoCo3; October 1989, p.58. Plays songs and displays notes one at a time. MARYNOTE.  
 Jacob, David. "Let's Make a List"; CoCo3; February 1990, p.38. Create a database for your books. LISTER.  
 Jones, Leroy. "Innkeeper"; CoCo1/CoCo2/CoCo3; March 1990, p.62. Catch falling drinks with trays. INNKEEP.  
 Kastack, Rebecca. "What Day?"; CoCo1/CoCo2/CoCo3; January 1990, p.30. Calendar for finding day of week of birthdays. WHATDAY.  
 Kenny, Keiran. "What Is on the Agenda for Today?"; CoCo1/CoCo2/CoCo3; April 1990, p.49. Home help, scratchpad. AGENDA.  
 Ketchel, Kyle. "The Time Sheet"; CoCo1/CoCo2/CoCo3; October 1989, p.62. For employers. TIMESHT.  
 Kraft, Michael. "As the World Turns"; CoCo1/CoCo2/CoCo3; August 1989, p.106. Draws eight graphics screens and produces animation. WORLD1.  
 Kuntz, Steven. "The CoCo Signal"; CoCo3; March 1990, p.61. A signal for programming problems or hardware glitches. HCAT.  
 Mabry, George. "Lowercase and Colors Too"; CoCo3; March 1990, p.60. Adjusts the colors and actuates a true lowercase text screen. LOCASE.  
 McNeill, James. "Shopper Ease"; CoCo1/CoCo2/CoCo3; September 1989, p.62. A form for shopping lists. GROLIST.  
 Medlock, William. "Disk Copy Utility"; CoCo1/CoCo2/CoCo3; January 1990, p.31. Copies files from one disk to another. COPY.  
 Mills, Robert. "Letters & Numbers"; CoCo3; June 1990, p.48. Helps youngsters learn to recognize letters and numbers. LETRSNUM.  
 Mosley, John. "3-D Grapher"; CoCo3; August 1989, p.107. Graphics using three-variable equations. GRAPH.  
 Mosley, John. "Kaleidoscope"; CoCo3; September 1989, p.63. Computer display of multicolor symmetric patterns. SCOPE.  
 Needham, Andre. "But It's Not Winter Yet!"; CoCo1/CoCo2/CoCo3; August 1989, p.107. Creates a snowflake. SNOWLAKE.  
 Needham, Andre. "Fun With Fractals"; CoCo3; October 1989, p.60. Mathematically generated images. FRACTMTN.  
 Oimstead, Paul L. "Title Screen Splashdown"; CoCo1/CoCo2/CoCo3; April 1990, p.51. Animation utility. FALLING.  
 Pendall, Joseph. "And Along Came a Spider"; CoCo3; April 1990, p.48. Graphics program. SPIDERS.  
 Pendall, Joseph. "Quickgrass"; CoCo1/CoCo2/CoCo3; January 1990, p.38. Game of cutting grass before it grows too long. QGRASS.  
 Pendall, Joseph. "Spray Can"; CoCo1/CoCo2/CoCo3; October 1989, p.60. Graphics program that draws a pattern using joystick button. SPRAYCAN.  
 Phansavath, Hinh. "Running BASIC Programs Can Be a Breeze"; CoCo1/CoCo2/CoCo3; February 1990, p.38. Run BASIC programs with one keystroke. MCP.  
 Pollock, Grahame. "Up-Down List"; CoCo1/CoCo2/CoCo3; July 1989, p.106. Utility to allow scrolling through LLISTings. UPDNLST.  
 Porter, John. "Mortgage"; CoCo1/CoCo2/CoCo3; March 1990, p.63. Mortgage calculation program. MORTGAGE.  
 Pucella, Ric. "Hi-Res Graphics"; CoCo3; November 1989, p.41. Utility to save HSCREENS. HRCOM.  
 Rodriguez, Alejandro. "No Smoking!"; CoCo3; November 1989, p.40. Graphics animation of No Smoking sign. NOSMOKE.  
 Rumpel, Kathy. "Balancing the Budget"; CoCo1/CoCo2/CoCo3; February 1990, p.40. Print a journal for your accounting needs. JOURNAL.  
 Rumpel, Kathy. "Steady Aim Fire"; CoCo3; April 1990, p.50. Shoot-em-up game. BIRD.  
 Seats, Darrin. "The Memo Maker"; CoCo1/CoCo2/CoCo3; January 1990, p.37. Put notes on disk. MEMOMAKE.  
 Severs, Roger. "Keeping a Tab on Your Tap"; CoCo1/CoCo2/CoCo3; April 1990, p.48. Figuring water bills. WATER.  
 Speight, Kevin. "Mind Master"; CoCo3; September 1989, p.62. Selects a four-digit code for you to break. MINDMSTR.  
 Stakelin, James. "The Base Converter"; CoCo1/CoCo2/CoCo3; January 1990, p.34. Converts number bases quickly and easily. CONVERT.  
 Thompson, Ernie. "Now, Where Was I?"; CoCo1/CoCo2/CoCo3; August 1989, p.108. Prints format to keep track of programs, articles, comments. RBOWLIST.  
 Weaver, Dan. "Automile"; CoCo1/CoCo2/CoCo3; November 1989, p.40. Figures miles per gallon. AUTOMILE.  
 Wells, John T. "Cutting Corners"; CoCo3; April 1990, p.50. A familiar game. CHASE.  
 Wong, Thomas. "Bowling"; CoCo3; July 1989, p.103. A CoCo 3 bowling game.. BOWLING.  
 Wong, Thomas. "Gopher Smash"; CoCo3; January 1990, p.37. Kill gophers as they pop out of boxes. SMASH.

## OS-9

Behrmann, Darrel. "Syscall Sounds"; CoCo3; July 1989, p.126.

Calling OS-9's SS.Tone system call from BASIC09. SOUND. Brumley, Troy. "Text File Compression"; CoCo1/CoCo2/CoCo3; September 1989, p.112. Programs to compress text files for more storage space. COMPRESS.

Cheek, Joseph. "Reach Out and Touch OS-9"; CoCo3; October 1989, p.72. A utility for updating files. TOUCH.

Deneen, Kevin. "One Label or Two?"; CoCo1/CoCo2/CoCo3; January 1990, p.110. Makes labels in groups of one or more. LABEL.C.

Goldberg, Stephen. "Do the Split"; CoCo1/CoCo2/CoCo3; March 1990, p.86. Making large files easier to handle. SPLIT.

Goldberg, Stephen. "Drive With Speed"; CoCo1/CoCo2/CoCo3; February 1990, p.56. Double the speed of your OS-9 floppy drives. VFY.C.

Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; December 1989, p.86. "Open Sesame!"; SU.

Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; January 1990, p.56. "Lost and Found"; VOL.

Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; February 1990, p.122. "Dissecting the Command Line"; UDIRC.

Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; March 1990, p.96. "Give It Top Priority"; NICE.ASM.

Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; April 1990, p.113. "Conversions and Diversions"; NICE.A.

Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; May 1990, p.30. "The OS-9 File Structure"; FILES.B09.

Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; June 1990, p.44. "Scaling the Directory Tree"; PWDIRC.

Numa, David. "What You Should Know About C Compiler"; CoCo3; October 1989, p.82. Utility that gets you started with c9x functions.

Page, Stephen. "Flipper09"; CoCo1/CoCo2/CoCo3; December 1989, p.106. Game, try to have more colored pieces on board than opponent. FLIPPER09.

Parker, Jeffrey. "OS-9 Survival Training"; August 1989, p.66. Overview of OS-9 and available hardware and software.

Pittman, Larry. "Larry's Labeler"; CoCo1/CoCo2/CoCo3; May 1990, p.46. Organizing your collection of floppy disks. DIABEL.

Puckett, Dale. "KISSable OS-9"; CoCo3; July 1989, p.138. "Adding Fireworks to Find"; LOCATE.

Puckett, Dale. "KISSable OS-9"; August 1989, p.122. "OS-9 Makes Big Showing at Chicago".

Puckett, Dale. "KISSable OS-9"; CoCo3; September 1989, p.114. "Maxic in Multi-Vue"; MAXIC.

Puckett, Dale. "KISSable OS-9"; CoCo3; October 1989, p.110. "More on Maxic and OS-9 Hits the Mac"; TANDY.

Puckett, Dale. "KISSable OS-9"; CoCo3; November 1989, p.112. "Clearing the Board"; GETICON.

Puckett, Dale. "KISSable OS-9"; December 1989, p.110. "OS-9 Takes Bean Town".

Puckett, Dale. "KISSable OS-9"; January 1990, p.117. "Are Your Programs Headed for a Breakdown?".

Puckett, Dale. "KISSable OS-9"; March 1990, p.65. "Rumors from Rainbowfest".

Puckett, Dale. "KISSable OS-9"; CoCo3; April 1990, p.52. "A New Look for OS-9"; MVFINANCE.

Ries, Richard. "Carte Blanche"; CoCo3; March 1990, p.118. Menu-building program for BASIC09. CARTE.BLANCH.

Saksa, Jonathan. "Do You Have The Time?"; CoCo3; January 1990, p.46. A calendar program to help you organize your time. CALENDAR.

Sunderlin, Mark. "A CLS Command for OS-9"; CoCo1/CoCo2/CoCo3; July 1989, p.128. Adding a speedy assembly language CLS to the system. CLS.

Swineforth, Chris. "Type Does Windows"; CoCo3; June 1990, p.36. A utility to switch window types in a hurry. TYPE.C.

Tandy Home Computer. "Multi-Vue and Pre-Existing Applications"; CoCo3; December 1989, p.38. Aid for getting more out of Multi-Vue. EDIC.

Yates, Jerry. "UStime & StripBin"; CoCo1/CoCo2/CoCo3; August 1989, p.22. Utility, sets up time as "January 3, 1989 9:23:45 am/pm". USTIME.

## PROGRAMMING

Barden, William. "Barden's Buffer"; CoCo1/CoCo2/CoCo3; July 1989, p.130. "That's the Way the Ball Bounces"; BALL1.

Barden, William. "Barden's Buffer"; August 1989, p.112. "Computer Knowledge in Any Language"; ECB INTEREST.

Barden, William. "Barden's Buffer"; October 1989, p.122. "Your First BASIC Program".

Barden, William. "Barden's Buffer"; CoCo1/CoCo2/CoCo3; December 1989, p.116. "Take a Gamble"; RANDOM.

Barden, William. "Barden's Buffer"; CoCo1/CoCo2/CoCo3; April 1990, p.35. "Take Your Files for a Spin"; R"L"D"X.

Barden, William. "Barden's Buffer"; CoCo3; May 1990, p.78. "Thanks for the Memory"; MANAGER.

Friesen, Geoff. "Introducing BASIC+"; CoCo3; September 1989, p.38. An enhancement to BASIC. BASIC+.

Nee, William. "Assembly Line, Part 1"; CoCo1/CoCo2/CoCo3; May 1990, p.22. A way to speed up routines in ROM using complex math. SCALE1.

Nee, William. "The Assembly Line, Part 2"; CoCo1/CoCo2/CoCo3; June 1990, p.84. Rotating, mirroring and more with PMODE4. MODIFY.

Nee, William. "Machine Language Made BASIC, Part XIII"; CoCo1/CoCo2/CoCo3; July 1989, p.80. Drawing graphics lines using machine language. BINLINE.

Periman, Richard. "Do-It Yourself Database, Part 4"; CoCo3; April 1990, p.12. How to use the database. DATAB.

Periman, Richard. "Do-It Yourself Disk Database, Part 3"; CoCo1/CoCo2/CoCo3; September 1989, p.20. How to create a full-

featured disk database system. CREATE.

Zumwalt, Greg. "Breaking the 32K Barrier"; June 1990, p.58. A look at the 64K plus ROM Paks.

## QUESTION AND ANSWER

Boeldt, Larry. "BASICally Speaking"; July 1989, p.96.

Boeldt, Larry. "BASICally Speaking"; August 1989, p.60.

Boeldt, Larry. "BASICally Speaking"; September 1989, p.72.

Boeldt, Larry. "BASICally Speaking"; December 1989, p.24.

Esposito, Richard. "Doctor ASCII"; November 1989, p.34.

Esposito, Richard & Libra, Richard. "Doctor ASCII"; July 1989, p.124. Technical potpourri.

Goodman, Marty. "CoCo Consultations"; July 1989, p.78.

Goodman, Marty. "CoCo Consultations"; August 1989, p.62.

Goodman, Marty. "CoCo Consultations"; October 1989, p.16.

Goodman, Marty. "CoCo Consultations"; November 1989, p.30.

Goodman, Marty. "CoCo Consultations"; December 1989, p.42.

"Need a Little Support?".

Goodman, Marty. "CoCo Consultations"; January 1990, p.20.

"The Disk System that Lied".

Goodman, Marty. "CoCo Consultations"; February 1990, p.59.

"Disconnecting Call Waiting".

Goodman, Marty. "CoCo Consultations"; March 1990, p.74.

"Converting to the CoCo".

Goodman, Marty. "CoCo Consultations"; April 1990, p.59. "Looking for Connectors".

Goodman, Marty. "CoCo Consultations"; May 1990, p.62. "OS-9 vs. BASIC".

Goodman, Marty. "CoCo Consultations"; CoCo1/CoCo2/CoCo3; June 1990, p.39. "CoCos Not up to Par".

## REVIEWS

"Arcade Collection"; March 1990, p.110.

"Art-Deli"; November 1989, p.98.

"BASIC Windows"; November 1989, p.99.

"Big BASIC"; October 1989, p.100.

"Big RAM Disk"; April 1990, p.101.

"C.A.R."; October 1989, p.104.

"CC3 Flags"; August 1989, p.97.

"CEBBS - A BBS You Can Live With"; November 1989, p.94.

"Cili Pages"; February 1990, p.100.

"CRT Collection"; March 1990, p.102.

"Calendar and Convert"; September 1989, p.100.

"Chess Made Easy"; August 1989, p.93.

"CoCo 3 Games Disk"; September 1989, p.101.

"CoCo MIDI 3"; October 1989, p.105.

"CoCo Stereo Headphone"; August 1989, p.92.

"CoCoRun-12"; February 1990, p.107.

"Color Schematic Creator 1.2"; September 1989, p.92.

"Comics+"; February 1990, p.106.

"CycleJump"; January 1990, p.104.

"Diamond in the Rough, A"; December 1989, p.96.

"DIR-MGR"; July 1989, p.121.

"DSKLBL"; March 1990, p.105.

"Dancosoft's Disk Utilities"; November 1989, p.100.

"Data Form III"; January 1990, p.93.

"Disassembler"; December 1989, p.99.

"Disk Doctor"; August 1989, p.94.

"Disk Handyman"; November 1989, p.104.

"Div and Condiv"; June 1990, p.68.

"Donut Dilemma"; November 1989, p.102.

"Dual Hi-Res Joystick Adapter"; March 1990, p.106.

"Eagle Keyboard and Interface"; January 1990, p.92.

"Eldus"; March 1990, p.108.

"Extended ADOS-3"; October 1989, p.92.

"FORTHO9"; March 1990, p.100.

"Fast Formatter"; July 1989, p.118.

"File System Repack"; January 1990, p.95.

"Foods II"; September 1989, p.98.

"HD-1"; August 1989, p.94.

"Hard Drive Zap"; July 1989, p.115.

"Jack Rabbit"; December 1989, p.94.

"King's Quest III"; August 1989, p.90.

"Kyuri-Gal-To Be Ninja"; December 1989, p.92.

"Label Designer"; May 1990, p.66.

"Leisure Suit Larry"; October 1989, p.98.

"Lesson Planner"; September 1989, p.95.

"Lock Master"; August 1989, p.93.

"Lyra 2.62"; November 1989, p.105.

"Lyra Companion, The"; November 1989, p.107.

"Lyra>>TRAX<<"; May 1990, p.68.

"M-Menu System"; April 1990, p.99.

"MC-1"; October 1989, p.97.

"MasterDIR"; October 1989, p.106.

"Memory Master"; September 1989, p.96.

"Menu Maker"; September 1989, p.100.

"Milestones"; November 1989, p.104.

"Mutant Miners"; July 1989, p.115.

"Newspaper Plus"; July 1989, p.112.

"Nine-Digit Calculator"; July 1989, p.119.

"Nine-Times"; August 1989, p.98.

"Notes"; July 1989, p.120.

"O.S.I.T.E. File, The"; November 1989, p.102.

"OS-9 Pascal 2.0"; December 1989, p.100.

"Omni Utility"; July 1989, p.116.

"Omni Utility 2.0"; June 1990, p.68.

"Owl-Ware's Hard Drive"; April 1990, p.98.

"Paladin's Legacy"; June 1990, p.74.

"Peninsular War"; September 1989, p.97.

"PentASCII"; August 1989, p.96.

"Phonics Fun"; January 1990, p.99.

"Predator"; June 1990, p.76.

"Pt. File Manager"; May 1990, p.73.

"Revenge of the Mutant Miners"; September 1989, p.94.

"Riddle of the Ring"; May 1990, p.67.

"RoboCop"; May 1990, p.72.

"Roots"; August 1989, p.98.

"Rorke's Drift"; February 1990, p.106.

"S - Screen Control"; June 1990, p.72.

"Simply Better 2.0"; February 1990, p.102.

"Sinistarr"; May 1990, p.74.

"Slam Bam"; April 1990, p.101.

"Slots & Cards"; October 1989, p.100.

"Space Pac"; January 1990, p.102.

"Studio Works"; January 1990, p.94.

"Super Backup Utilities"; April 1990, p.102.

"SuperDisk"; March 1990, p.105.

"Supersound"; January 1990, p.100.

"T&D Subscription Software"; May 1990, p.76.

"Tazman"; March 1990, p.108.

"TelePak II"; November 1989, p.109.

"Teletypewriter Keyboard Templates"; December 1989, p.95.

"TextPro IV"; October 1989, p.102.

"Those Dam Marbles"; June 1990, p.66.

"Treasury Packs #1 and #2"; January 1990, p.98.

"Trythis"; December 1989, p.101.

"UltiMusE III"; February 1990, p.110.

"Ultra-Cat"; October 1989, p.103.

"Ultra-Merge"; July 1989, p.121.

"UltraEd+"; April 1990, p.104.

"UpDOS"; June 1990, p.72.

"Utilities & Subroutines in BASIC"; March 1990, p.103.

"VIP Calc III"; July 1989, p.116.

"Vocab"; March 1990, p.104.

"Wargame Designer II"; September 1989, p.99.

"Wheel of Fate"; December 1989, p.98.

"Wheeler, The"; July 1989, p.117.

"Window Writer"; December 1989, p.102.

"Wizard's Castle"; February 1990, p.104.

"World at War"; November 1989, p.110.

"World at War, A"; June 1990, p.75.

"Z89"; December 1989, p.98.

## TUTORIAL

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; August 1989, p.100. "The Art of Graphics Characters"; DIAMOND1.

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; October 1989, p.66. "More Graphics"; NEWCOMER.

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; December 1989, p.50. "Program Shape-Up"; FLASHES.

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; January 1990, p.87. "The Unfolding Block"; LISTING1.

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; February 1990, p.52. "Working in Quadrants"; AOPTION.

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; March 1990, p.78. "Graphics Fairland"; DIAMONDS.

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; April 1990, p.86. "Go Forth and Create!"; WINDMILL.

Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; June 1990, p.54. "The A-Option Wrap-Up"; AOPTION1.

## UTILITY

Campbell, Marc. "The Invincible Duplicator"; CoCo1/CoCo2/CoCo3; September 1989, p.44. Makes BASIC programs virtually crashproof. DUPLICAT.

Dalens, Mike. "Harness Those Keys"; CoCo1/CoCo2/CoCo3; January 1990, p.26. Redefine the "control" keys for your own specific needs. KEYEDIT.

Daniels, Bill. "Back From the Dead"; CoCo1/CoCo2/CoCo3; June 1990, p.26. Resurrecting killed disk files. DISKEDT.

Estrado, Richard. "The File Handler"; CoCo1/CoCo2/CoCo3; April 1990, p.108. Copy routine that uses wildcards. COPYASM.

Medlock, William. "Auto Repeat, Part 1"; CoCo1/CoCo2/CoCo3; July 1989, p.16. Add software key repeat to the CoCo 1, 2 or 3. REPEAT.

Medlock, William. "Key Ahead"; CoCo1/CoCo2/CoCo3; August 1989, p.14. Create type-ahead buffer for any CoCo. KEYSBIN.

Moore, Mike. "Save the Variables!"; CoCo1/CoCo2/CoCo3; January 1990, p.12. Chain BASIC programs and keep variables while editing. VARKEEP.

Ottum, J.A. "From Screen to Printed Page"; CoCo1/CoCo2/CoCo3; February 1990, p.83. A utility that lets you print straight from the screen. PRT.

Ottum, J.A. "Habla Espanol?"; CoCo1/CoCo2/CoCo3; July 1989, p.29. CoCo accepts commands in Spanish. ESPANOL.

Ricketts, Steve. "To The Rescue"; CoCo1/CoCo2/CoCo3; March 1990, p.54. Aid for lost files on crashed disks. COCOCLN.

## AUTHORS

Atamow, Ellen. "Tax and Tip"; CoCo1/CoCo2/CoCo3; July 1989, p.105. Helps you div

- p.124. "OS-9: Room for Growth".
- Augsburg, Cray. "Wrapping The Rainbow"; January 1990, p.124. "From Reader to Writer".
- Augsburg, Cray. "Wrapping The Rainbow"; February 1990, p.10. "The Show Must Go On".
- Augsburg, Cray. "Wrapping The Rainbow"; March 1990, p.124. "What's in Store?".
- Augsburg, Cray. "Wrapping The Rainbow"; April 1990, p.124. "How Many Colors in a Rainbow?".
- Augsburg, Cray. "Wrapping The Rainbow"; May 1990, p.124. "Rainbow Illusions".
- Babich, Tio. "Draw Figures Using Asterisks"; CoCo1/CoCo2/CoCo3; November 1989, p.39. Draw figures using asterisks. FIGDRW.
- Babich, Tio. "Slope and Funnel"; CoCo3; July 1989, p.108. Draws a slope and funnel on the CoCo3 3640x192 screen. SLOPEFNL.
- Barden, William. "Barden's Buffer"; CoCo1/CoCo2/CoCo3; July 1989, p.130. "That's the Way the Ball Bounces". BALL1.
- Barden, William. "Barden's Buffer"; August 1989, p.112. "Computer Knowledge in Any Language". ECB INTEREST.
- Barden, William. "Barden's Buffer"; September 1989, p.102. "Loose Ends and CoCo Outputs".
- Barden, William. "Barden's Buffer"; October 1989, p.122. "Your First BASIC Program".
- Barden, William. "Barden's Buffer"; November 1989, p.64. "Put on Your 3-D Glasses".
- Barden, William. "Barden's Buffer"; CoCo1/CoCo2/CoCo3; December 1989, p.116. "Take a Gamble". RANDOM.
- Barden, William. "Barden's Buffer"; CoCo3; February 1990, p.42. "High Hopes for the Hi-Res". READHI.
- Barden, William. "Barden's Buffer"; CoCo3; March 1990, p.40. "A CoCo Dual-Trace Oscilloscope". SCOPE.
- Barden, William. "Barden's Buffer"; CoCo1/CoCo2/CoCo3; April 1990, p.35. "Take Your Files for a Spin". RL'D'X.
- Barden, William. "Barden's Buffer"; CoCo3; May 1990, p.78. "Thanks for the Memory". MANAGER.
- Behrmann, Darrel. "Sycsal Sounds"; CoCo3; July 1989, p.126. Calling OS-9's SS.Tone system call from BASIC09. SOUND.
- Bennett, Jim. "Tricky Graphics"; CoCo3; October 1989, p.20. Neat trick for programming graphics on CoCo 3.. CARRIER.
- Benny, Patrick. "On The Run"; CoCo1/CoCo2/CoCo3; July 1989, p.106. Create smooth animation sequences. LION.
- Bernico, Bill. "Box Menu"; CoCo1/CoCo2/CoCo3; January 1990, p.32. Spices up menu screen and makes item selection interesting. BOXMENU.
- Bernico, Bill. "Guitar 3"; CoCo3; February 1990, p.112. Displays guitar chords on the CoCo 3 graphics screen. GUITAR3.
- Bernico, Bill. "Songwriter's Helper"; CoCo3; September 1989, p.80. Plays various musical patterns. SONGRTR.
- Bernico, Bill. "Sound-to-Play"; CoCo1/CoCo2/CoCo3; August 1989, p.110. Matches up PLAY command note values for SOUND command. PLAYCONV.
- Bernico, Bill. "The CoCo Coloring Book"; CoCo3; September 1989, p.12. Coloring pictures with the computer. COLORBOOK.
- Bernico, Bill. "This Is Your Big Debut"; CoCo3; February 1990, p.35. Title screen with moving lights. MARQUEE3.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; August 1989, p.64. "Building Reading Skills". FOLLOW.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; September 1989, p.54. "Learning About Ratios". RATIOS.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; October 1989, p.52. "Cracking Codes". CODEWORD.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; November 1989, p.24. "Probability". PROBABLE.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; December 1989, p.32. "To Rhyme or Not to Rhyme". POETRY.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; February 1990, p.94. "One-On-One Math Drills". BASKET.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; March 1990, p.112. "Toronto, Ontario for a Basket". BASKETBL.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; April 1990, p.85. "a.e.i.o.u.". VOWELS.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; May 1990, p.88. "Cooking With Metric Measures". METRIC.
- Blyn, Steve. "Education Notes"; CoCo1/CoCo2/CoCo3; June 1990, p.18. "Integers in Order". CONSEC.
- Bodnar, David. "Exposing the CoCo to Photography"; CoCo1/CoCo2/CoCo3; February 1990, p.36. Use the CoCo for timing applications in the darkroom. DARKROOM.
- Boeldt, Larry. "BASICally Speaking"; July 1989, p.96.
- Boeldt, Larry. "BASICally Speaking"; August 1989, p.60.
- Boeldt, Larry. "BASICally Speaking"; September 1989, p.72.
- Boeldt, Larry. "BASICally Speaking"; December 1989, p.24.
- Boughton, Ralph. "Star Defender"; CoCo3; September 1989, p.61. Shoot down enemy ships before your bases are hit. STARDEF.
- Bradbury, Nick. "Icarus in Search of Wings"; CoCo3; April 1990, p.12. Do an arcade penguin dance. PENGUIN.
- Bradbury, Nick. "One Tile at a Time"; CoCo3; January 1990, p.72. Fast action tile game. FRUSTRAT.
- Britton, Steve. "Samurai"; CoCo1/CoCo2/CoCo3; March 1990, p.114. Oriental battle-type game. SAMURAI.
- Brumley, Troy. "Text File Compression"; CoCo1/CoCo2/CoCo3; September 1989, p.112. Programs to compress text files for more storage space. COMPRESS.
- Brunotte, Benjamin. "Another Form"; CoCo3; April 1990, p.64. Create custom forms. FORMAKER.
- Brunotte, Benjamin. "Custom Built Desk for the CoCo"; December 1989, p.67. A real nail and hammer project.
- Budenholzer, William. "Nickelodeon"; CoCo1/CoCo2/CoCo3; August 1989, p.84. Song editor/player. NICKEL-D.
- Campbell, Marc. "The Checkers Champ"; CoCo3; November 1989, p.82. Computerized checker game.. CHECKERS.
- Campbell, Marc. "The Invincible Duplicator"; CoCo1/CoCo2/CoCo3; September 1989, p.44. Makes BASIC programs virtually crashproof. DUPLICAT.
- Cheek, Joseph. "Reach Out and Touch OS-9"; CoCo3; October 1989, p.72. A utility for updating files. TOUCH.
- Cheves, Warren. "Car Bingo Game"; CoCo1/CoCo2/CoCo3; November 1989, p.42. Prints index cards with two-character state abbreviations. BINGO.
- Christensen, Glenn. "Attributes"; CoCo3; March 1990, p.60. Adds color to your screen. ATTR.
- Collicott, John. "Bookworm"; CoCo1/CoCo2/CoCo3; September 1989, p.32. Helps develop problem-solving skills in math. BOOKWORM.
- Coty, Curt. "Shopping Spree"; CoCo3; July 1989, p.34. Action game - player goes shopping in a department store. SPREE.
- Crooks, Mary. "Time Test"; CoCo1/CoCo2/CoCo3; August 1989, p.56. Timed drills in multiplication and division. TIMETEST.
- Cuadra, Hector. "What Goes Up ..."; CoCo1/CoCo2/CoCo3; January 1990, p.112. Physics game. GRAVITY.
- Curtis, Allen. "High-Capacity Screen Dumps"; CoCo3; August 1989, p.38. High-density printer enhancements for desktop publisher. DRIVERHT.
- Curtis, Allen. "High-Capacity Screen Dumps"; CoCo3; October 1989, p.63. How to save and load a half-screen. DHPATCH.
- Dalena, Mike. "Harness Those Keys"; CoCo1/CoCo2/CoCo3; January 1990, p.26. Redefine the "control" keys for your own specific needs. KEYEDIT.
- Daniels, Bill. "Back From the Dead"; CoCo1/CoCo2/CoCo3; June 1990, p.26. Resurrecting killed disk files. DISKEDT.
- Darren Day. "The Change Counter"; CoCo1/CoCo2/CoCo3; September 1989, p.64. Counts change. Enter Q for quarter, D for dime, etc. CHANGE.
- Deneen, Kevin. "One Label or Two?"; CoCo1/CoCo2/CoCo3; January 1990, p.110. Makes labels in groups of one or more. LABELC.
- Distefano, Tony. "Turn of the Screw"; July 1989, p.98. "Dynamic Random Access Memory Explained".
- Distefano, Tony. "Turn of the Screw"; September 1989, p.56. "Building a RAM Disk".
- Distefano, Tony. "Turn of the Screw"; October 1989, p.86. "Building a RAM Disk".
- Distefano, Tony. "Turn of the Screw"; CoCo1/CoCo2/CoCo3; December 1989, p.64. "RAM Disk, Part III". GENTEST.
- Distefano, Tony. "Turn of the Screw"; January 1990, p.40. "Disk Track Tracer".
- Distefano, Tony. "Turn of the Screw"; February 1990, p.18. "A Digital Lesson".
- Distefano, Tony. "Turn of the Screw"; March 1990, p.56. "A Digital Lesson, Part 2".
- Distefano, Tony. "Turn of the Screw"; April 1990, p.110. "Digital Lesson, Part 3".
- Distefano, Tony. "Turn of the Screw"; May 1990, p.54. "Tools of the Trade".
- Distefano, Tony. "Turn of the Screw"; June 1990, p.80. "Clearing the Paths".
- Driessen, David. "Want a Personalized Phone Number?"; CoCo1/CoCo2/CoCo3; August 1989, p.108. Takes phone number and spells out all letter combinations. FONEFIND.
- Driscoll, Chris. "Escape"; CoCo1/CoCo2/CoCo3; February 1990, p.37. Try to escape from this twenty-level castle. ESCAPE.
- Ehrenberg, R.M. "Categories"; CoCo1/CoCo2/CoCo3; March 1990, p.62. An alternative to Trivial Pursuit or Monopoly. CATS.
- Esposito, Richard. "Doctor ASCII"; November 1989, p.34.
- Esposito, Richard & Libra, Richard. "Doctor ASCII"; July 1989, p.124. Technical potpourri.
- Estrado, Richard. "The File Handler"; CoCo1/CoCo2/CoCo3; April 1990, p.106. Copy routine that uses wildcards. COPYASM.
- Falge, Linda. "KinderFun"; CoCo1/CoCo2/CoCo3; September 1989, p.64. Children's program to learn colors, letters, numbers, music. KINDRFUN.
- Falk, Lonnie. "Print#-2"; July 1989, p.12. "Fun at the 'Fest'".
- Falk, Lonnie. "Print#-2"; August 1989, p.10. "Eight Years Strong".
- Falk, Lonnie. "Print#-2"; September 1989, p.10. "A New Site for RAINBOWWest".
- Falk, Lonnie. "Print#-2"; October 1989, p.10. "A Transition at The Rainbow".
- Falk, Lonnie. "Print#-2"; November 1989, p.10. "Spread the Word".
- Falk, Lonnie. "Print#-2"; December 1989, p.10. "Canadian Future II".
- Falk, Lonnie. "Print#-2"; January 1990, p.10. "History in the Making".
- Falk, Lonnie. "Print#-2"; March 1990, p.10. "New Life for CoCo".
- Falk, Lonnie. "Print#-2"; April 1990, p.10. "A Helping Hand".
- Falk, Lonnie. "Print#-2"; May 1990, p.10. "Spring Forward, Look Back".
- Flinn, William. "Solving Quadratic Equations"; CoCo1/CoCo2/CoCo3; June 1990, p.49. Help in finding roots of quadratic equations. QUADRATC.
- Ford, Steven. "CoCo and Amateur Radio"; November 1989, p.44. Discussion of ham radio as a hobby.
- Ford, Steven. "Plug Into Packet"; February 1990, p.22. Exploration of packet radio.
- Forster, Jim. "Moonscape"; CoCo3; January 1990, p.32. Forms moon in sky. MOON.
- Foster, Leslie. "The Eighth Year of Rainbow"; July 1989, p.147. Index - July 1988 to June 1989.
- Fouts, Gordon E. "The Price is Right"; CoCo3; April 1990, p.116. An aid for finding mark-up/down percentages. MARKUP.
- Francis, David. "Moon Mapper"; CoCo3; March 1990, p.82. Helps you track the planet-size moons of Jupiter. GALISAT3.
- Francisco, Harleen. "The Economy Printer Buffer, Part II"; July 1989, p.72. Build and troubleshoot the printer buffer.
- Friedrich, John. "Story Writer"; CoCo1/CoCo2/CoCo3; July 1989, p.104. A game that challenges writing creativity. STORYWRT.
- Friesen, Geoff. "Introducing BASIC+"; CoCo3; September 1989, p.38. An enhancement to BASIC. BASIC+.
- Friesen, Geoff. "Superpoke"; CoCo3; June 1990, p.48. Allows multiple-byte pokes. SUPRPOKE.
- Garcia, Carlos. "Searching for a Rainbow"; CoCo3; January 1990, p.36. Animates a rainbow and waterfall. RAINBOW.
- George, Thomas. "The Tholean Web"; CoCo1/CoCo2/CoCo3; July 1989, p.42. Maze game where player must neutralize a force field. WEBBAS.
- Giles, Douglas. "Super Quiz"; CoCo1/CoCo2/CoCo3; October 1989, p.40. Helps develop memorization skills. SUPRQUIZ.
- Goldberg, Stephen. "Do the Split"; CoCo1/CoCo2/CoCo3; March 1990, p.86. Making large files easier to handle. SPLIT.
- Goldberg, Stephen. "Drive With Speed"; CoCo1/CoCo2/CoCo3; February 1990, p.56. Double the speed of your OS-9 floppy drives. VFY.C.
- Gollas, Ruth. "He's Just a Snowman"; CoCo3; December 1989, p.20. Sing along with Frosty. FROSTY.
- Goodell, Kirk. "Patchwork on the CoCo 3"; CoCo3; November 1989, p.26C. Lets you patch disks. BLASTER.
- Goodman, Marty. "Adding a Disk Drive to Your CoCo Pt. 2"; April 1990, p.92. Adding disk drives to the CoCo.
- Goodman, Marty. "CoCo Consultations"; July 1989, p.78.
- Goodman, Marty. "CoCo Consultations"; August 1989, p.62.
- Goodman, Marty. "CoCo Consultations"; October 1989, p.16.
- Goodman, Marty. "CoCo Consultations"; November 1989, p.30.
- Goodman, Marty. "CoCo Consultations"; December 1989, p.42. "Need a Little Support?".
- Goodman, Marty. "CoCo Consultations"; January 1990, p.20. "The Disk System that Lied".
- Goodman, Marty. "CoCo Consultations"; February 1990, p.59. "Disconnecting Call Waiting".
- Goodman, Marty. "CoCo Consultations"; March 1990, p.74. "Converting to the CoCo".
- Goodman, Marty. "CoCo Consultations"; April 1990, p.59. "Looking for Connectors".
- Goodman, Marty. "CoCo Consultations"; May 1990, p.62. "OS-9 vs. BASIC".
- Goodman, Marty. "CoCo Consultations"; CoCo1/CoCo2/CoCo3; June 1990, p.39. "CoCos Not up to Par".
- Goodman, Marty. "Disk Drives and the Color Computer"; March 1990, p.22. Adding a floppy disk to the CoCo.
- Goodman, Marty. "The OS-9 \*CART Interrupt Fix"; CoCo3; November 1989, p.50. Multi-Pak and CoCo 3 fixes.
- Grant, Ron. "The Schematic Scoundrel, Revisited"; CoCo1/CoCo2/CoCo3; July 1989, p.101. Adding symbol rotation for more flexibility. COCCGAD.
- Hall, Greg. "Let CoCo Calculate HBUFF"; CoCo3; February 1990, p.36. A fast simple way to calculate HBUFF. HBUFF.
- Haveman, Evan. "Computer Aided Design"; CoCo3; October 1989, p.59. Demonstrates computer aided design at minimal level. MINICAD.
- Hegberg, Joel. "A Mazing Adventure"; CoCo1/CoCo2/CoCo3; December 1989, p.46. Maze Adventure, quest for evil dragon. THEQUEST.
- Hinton, Ron. "Best Medicine for Disorderly Med. Bills"; CoCo3; February 1990, p.116. Keep the financial side of your medical history in order. MEDIC3.
- Hobson, Jon. "Marynote"; CoCo1/CoCo2/CoCo3; October 1989, p.58. Plays songs and displays notes one at a time. MARYNOTE.
- Hutchison, Don. "Delphi Bureau"; July 1989, p.87. GameTerm and other shareware terminal programs.
- Hutchison, Don. "Delphi Bureau"; September 1989, p.42. "New Horizons".
- Hutchison, Don. "Delphi Bureau"; October 1989, p.54. "Tokenized BASIC".
- Hutchison, Don. "Delphi Bureau"; November 1989, p.36. "KEY-SUB and WEFAX and Guide - Oh, My!".
- Hutchison, Don. "Delphi Bureau"; December 1989, p.35. "The World's First".
- Iacovou, Neophytos. "A Special Switch"; May 1990, p.43. Four projects using the 4PDT switch.
- Jacob, David. "Let's Make a List"; CoCo3; February 1990, p.38. Create a database for your books. LISTER.
- Johnson, Samuel. "EduSpell, Part II: The Dictionary"; CoCo1/CoCo2/CoCo3; July 1989, p.50. Part II in the development of a talking spelling tutor. MAINMENU.
- Jones, Leroy. "Innkeeper"; CoCo1/CoCo2/CoCo3; March 1990, p.62. Catch falling drinks with trays. INNKEEP.
- Kastack, Rebecca. "What Day?"; CoCo1/CoCo2/CoCo3; January 1990, p.30. Calendar for finding day of week of birthdays. WHATDAY.
- Kenny, Keiran. "Booklet, Revisited"; CoCo1/CoCo2/CoCo3; May 1990, p.40. Mods to allow for bigger booklets. PATBOOK.
- Kenny, Keiran. "What is on the Agenda for Today?"; CoCo1/CoCo2/CoCo3; April 1990, p.49. Home help. scratchpad.
- AGENDA.
- Ketchel, Kyle. "The Time Sheet"; CoCo1/CoCo2/CoCo3; October 1989, p.62. For employers. TIMESHT.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; August 1989, p.100. "The Art of Graphics Characters". DIAMOND1.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; October 1989, p.66. "More Graphics". NEWCOMER.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; December 1989, p.50. "Program Shape-Up". FLASHES.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; January 1990, p.87. "The Unfolding Block". LISTING1.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; Febru-



- ary 1990, p.52. "Working in Quadrants". AOPTION.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; March 1990, p.78. "Graphics Fairyland". DIAMONDS.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; April 1990, p.86. "Go Forth and Create!". WINDMILL.
- Kolar, Joseph. "BASIC Training"; CoCo1/CoCo2/CoCo3; June 1990, p.54. "The A-Option Wrap-Up". AOPTION.
- Koonce, Tim. "Observing the Social Graces"; November 1989, p.72. Introduction to file-transfer protocols.
- Kraft, Michael. "As the World Turns"; CoCo1/CoCo2/CoCo3; August 1989, p.106. Draws eight graphics screens and produces animation. WORLD1.
- Kuns, Eddie. "Database Report"; April 1990, p.62. "Name That Tune With Ultimate".
- Kuns, Eddie. "Database Report"; June 1990, p.92. "OS-9 Uploads Growing".
- Kuntz, Steven. "The CoCo Signal"; CoCo3; March 1990, p.61. A signal for programming problems or hardware glitches. HCAT.
- Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; December 1989, p.86. "Open Sesame!". SU.
- Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; January 1990, p.56. "Lost and Found". VOL.
- Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; February 1990, p.122. "Dissecting the Command Line". UDIRC.
- Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; March 1990, p.96. "Give It Top Priority". NICE.ASM.
- Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; April 1990, p.113. "Conversions and Diversions". NICE.A.
- Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; May 1990, p.30. "The OS-9 File Structure". FILES.B09.
- Law, Greg. "BreakPoint"; CoCo1/CoCo2/CoCo3; June 1990, p.44. "Scaling the Directory Tree". PWDIRC.
- Law, Greg. "Database Report"; March 1990, p.72. "New Uploads".
- LeBlanc, Dave. "Personal Secretary"; CoCo1/CoCo2/CoCo3; December 1989, p.56. A personalized notepad for easy organization. COCOMEMO.
- Mabry, George. "Lowercase and Colors Too"; CoCo3; March 1990, p.60. Adjusts the colors and actuates a true lowercase text screen. LOCASE.
- Macias, David. "Mapping Your Finances"; CoCo3; November 1989, p.20. Calculates annual interest rates in percentage form, etc. AMORTIZE.
- Macias, David. "Predicting Profits"; CoCo3; April 1990, p.44. Perform break-even analysis. COST.PAS.
- McNeill, James. "Shopper Ease"; CoCo1/CoCo2/CoCo3; September 1989, p.62. A form for shopping lists. GROLIST.
- Medlock, William. "Auto Repeat, Part 1"; CoCo1/CoCo2/CoCo3; July 1989, p.18. Add software key repeat to the CoCo 1, 2 or 3. REPEAT.
- Medlock, William. "Disk Copy Utility"; CoCo1/CoCo2/CoCo3; January 1990, p.31. Copies files from one disk to another. COPY.
- Medlock, William. "Key Ahead"; CoCo1/CoCo2/CoCo3; August 1989, p.14. Create type-ahead buffer for any CoCo. KEYSBIN.
- Messer, Shane. "CoCo Jumble"; CoCo1/CoCo2/CoCo3; June 1990, p.50. A scrambled-word game for two players. JUMBLE2.
- Messer, Shane. "Improving the Scheme of Screens"; CoCo3; January 1990, p.82. Create icons for your programs. DE-SIGNER.
- Messer, Shane. "The Golden Retriever"; CoCo3; April 1990, p.24. Roll your own database program. COLRBASE.
- Mills, Robert. "Letters & Numbers"; CoCo3; June 1990, p.48. Helps youngsters learn to recognize letters and numbers. LETRSNUM.
- Minze, Bill. "Reckoning With the CoCo"; CoCo1/CoCo2/CoCo3; April 1990, p.20. Printing calculator program. CALCULAT.
- Moore, Mike. "Save the Variables!"; CoCo1/CoCo2/CoCo3; January 1990, p.12. Chain BASIC programs and keep variables while editing. VARKEEP.
- Mosely, John. "Winter Magic"; CoCo3; December 1989, p.12. A program for producing snow onscreen. SNOW.
- Mosley, John. "3-D Grapher"; CoCo3; August 1989, p.107. Graphics using three-variable equations. GRAPH.
- Mosley, John. "Kaleidoscope"; CoCo3; September 1989, p.63. Computer display of multicolor symmetric patterns. SCOPE.
- Mosley, John. "Vegas at Your Fingertips"; CoCo3; June 1990, p.12. A slot machine for the CoCo 3. SLOTS.
- Murphy, Stephen. "The Price of Wisdom"; February 1990, p.14. A humorous admonishment to use your manual.
- Nee, William. "Assembly Line, Part 1"; CoCo1/CoCo2/CoCo3; May 1990, p.22. A way to speed up routines in ROM using complex math. SCALE1.
- Nee, William. "The Assembly Line, Part 2"; CoCo1/CoCo2/CoCo3; June 1990, p.84. Rotating, mirroring and more with PMODE4. MODIFY.
- Nee, William. "Machine Language Made BASIC, Part XIII"; CoCo1/CoCo2/CoCo3; July 1989, p.80. Drawing graphics lines using machine language. BINLINE.
- Nee, William. "The Graphics Corner"; CoCo1/CoCo2/CoCo3; August 1989, p.36. Three ways to create color graphics on the CoCo. CLRDemo.
- Nee, William. "The Graphics Corner, Part II"; CoCo1/CoCo2/CoCo3; September 1989, p.48. PSETing numbers without using coordinates. SCRLDemo.
- Nee, William. "The Graphics Corner, Part III"; CoCo1/CoCo2/CoCo3; October 1989, p.78. A two-dimensional array that helps generate new values. NEIGHBRI.
- Needham, Andre. "But it's Not Winter Yet!"; CoCo1/CoCo2/CoCo3; August 1989, p.107. Creates a snowflake. SNOFLAKE.
- Needham, Andre. "Fun With Fractals"; CoCo3; October 1989, p.60. Mathematically generated images. FRACTMTN.
- Numa, David. "What You Should Know About C Compiler"; CoCo3; October 1989, p.82. Utility that gets you started with cgfx functions.
- Olmstead, Paul L. "Title Screen Splashdown!"; CoCo1/CoCo2/CoCo3; April 1990, p.51. Animation utility. FALLING.
- Onley, Ray. "An Old Code in a New Mode"; CoCo1/CoCo2/CoCo3; November 1989, p.12. Morse code training program for CoCo. CODEMSTR.
- Ostrom, Steve. "A Newfangled Maze"; CoCo1/CoCo2/CoCo3; February 1990, p.50. A maze that uses numbers for directional clues. MAZEWAY.
- Ostrom, Steve. "A Perfect Star"; CoCo1/CoCo2/CoCo3; March 1990, p.92. Lesson in trigonometry and CoCo graphics. TRIG1.
- Ottum, J.A. "From Screen to Printed Page"; CoCo1/CoCo2/CoCo3; February 1990, p.63. A utility that lets you print straight from the screen. PRT.
- Ottum, J.A. "Habla Espanol?"; CoCo1/CoCo2/CoCo3; July 1989, p.29. CoCo accepts commands in Spanish. ESPANOL.
- Page, Stephen. "Flipper09"; CoCo1/CoCo2/CoCo3; December 1989, p.106. Game, try to have more colored pieces on board than opponent. FLIPPER09.
- Parker, Jeffrey. "OS-9 Survival Training"; August 1989, p.66. Overview of OS-9 and available hardware and software.
- Parker, Jeffrey. "Play It Again, CoCo"; December 1989, p.74. A close look at MIDI.
- Parker, Jeffrey. "RAINBOWfest Reporter"; September 1989, p.73. Chicago 1989 fest report.
- Parker, Jeffrey. "RAINBOWfest Reporter"; March 1990, p.34. Somerset 1989 fest report.
- Pendall, Joseph. "And Along Came a Spider"; CoCo3; April 1990, p.48. Graphics program. SPIDERS.
- Pendall, Joseph. "Quickgrass"; CoCo1/CoCo2/CoCo3; January 1990, p.38. Game of cutting grass before it grows too long. OGRASS.
- Pendall, Joseph. "Spray Can"; CoCo1/CoCo2/CoCo3; October 1989, p.60. Graphics program that draws a pattern using joystick button. SPRAYCAN.
- Perlman, Richard. "Do-It-Yourself Database, Part 4"; CoCo3; April 1990, p.12. How to use the database. DATAB.
- Perlman, Richard. "Do-It-Yourself Database, Part 3"; CoCo1/CoCo2/CoCo3; September 1989, p.20. How to create a full-featured disk database system. CREATE.
- Phansavath, Hinh. "Running BASIC Programs Can Be a Breeze"; CoCo1/CoCo2/CoCo3; February 1990, p.36. Run BASIC programs with one keystroke. MCP.
- Pittman, Larry. "Larry's Labeler"; CoCo1/CoCo2/CoCo3; May 1990, p.46. Organizing your collection of floppy disks. LABEL.
- Pollock, Grahame. "Up-Down LIST"; CoCo1/CoCo2/CoCo3; July 1989, p.106. Utility to allow scrolling through LLISTings. UPDLNLIST.
- Porter, John. "Mortgage"; CoCo1/CoCo2/CoCo3; March 1990, p.63. Mortgage calculation program. MORTGAGE.
- Pucella, Ric. "Hi-Res Graphics"; CoCo3; November 1989, p.41. Utility to save HSCREENs. HRCOM.
- Puckett, Dale. "KISSable OS-9"; CoCo3; July 1989, p.138. "Adding Fireworks to Find". LOCATE.
- Puckett, Dale. "KISSable OS-9"; August 1989, p.122. "OS-9 Makes Big Showing at Chicago".
- Puckett, Dale. "KISSable OS-9"; CoCo3; September 1989, p.114. "Maxic in Multi-Vue". MAXIC.
- Puckett, Dale. "KISSable OS-9"; CoCo3; October 1989, p.110. "More on Maxic and OS-9 Hits the Mac". TANDY.
- Puckett, Dale. "KISSable OS-9"; CoCo3; November 1989, p.112. "Clearing the Board". GETICON.
- Puckett, Dale. "KISSable OS-9"; December 1989, p.110. "OS-9 Takes Bean Town".
- Puckett, Dale. "KISSable OS-9"; January 1990, p.117. "Are Your Programs Headed for a Breakdown?".
- Puckett, Dale. "KISSable OS-9"; March 1990, p.65. "Rumors from Rainbowfest".
- Puckett, Dale. "KISSable OS-9"; CoCo3; April 1990, p.52. "A New Look for OS-9". MVFINANCE.
- Quellhorst, George. "Peg Mel"; CoCo3; December 1989, p.26. CoCo version of Hi-Co. COCO-Q.
- Reichert, Kevin. "Captivating Captions"; CoCo3; November 1989, p.58. Makes labels for photos. CAPTION.
- Ricketts, Steve. "To the Rescue"; CoCo1/CoCo2/CoCo3; March 1990, p.54. Aid for lost files on crashed disks. COCOCLN.
- Ries, Richard. "Carte Blanche"; CoCo3; March 1990, p.118. Menu-building program for BASIC09. CARTE. BLANCH.
- Ries, Richard. "Printing the Unprintable"; CoCo1/CoCo2/CoCo3; December 1989, p.121. A filter program for odd characters. READ.B.
- Rodriguez, Alejandro. "No Smoking!"; CoCo3; November 1989, p.40. Graphics animation of No Smoking sign. NOSMOKE.
- Rumpel, Kathy. "Balancing the Budget"; CoCo1/CoCo2/CoCo3; February 1990, p.40. Print a journal for your accounting needs. JOURNAL.
- Rumpel, Kathy. "Steady Aim Fire"; CoCo3; April 1990, p.50. Shoot-em-up game. BIRD.
- Saksa, Jonathan. "Do You Have The Time?"; CoCo3; January 1990, p.46. A calendar program to help you organize your time. CALENDAR.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; July 1989, p.91. "Getting the Whole Picture on Fractions". FRACTION.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; August 1989, p.104. "More Time Applications". REALTIME.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; September 1989, p.66. "CoCo Teaches Kids to Just Say No". NODRUGS.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; October 1989, p.48. "Meteor Storm 3". METEOR3.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; November 1989, p.54. Machine Language Tricks from a BASIC Game: Star Siege II. SIEGE2.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; December 1989, p.60. "Learning Letters". UPOLOCASE.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; January 1990, p.42. "Learn to Give and Take". DRILLER3.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; February 1990, p.62. "Music Class 101". MUSIC101.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; March 1990, p.12. "Right on Time". WATCH.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; April 1990, p.118. "It Strikes a Chord". MUSIC102.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; May 1990, p.36. "A Real Cif Hanger". MUSIC103.
- Scerbo, Fred. "Wishing Well"; CoCo1/CoCo2/CoCo3; June 1990, p.22. "Learning Letter Sequence". BETWEEN.
- Seats, Darrin. "The Memo Maker"; CoCo1/CoCo2/CoCo3; January 1990, p.37. Put notes on disk. MEMOMAKE.
- Severs, Roger. "Keeping a Tab on Your Tap"; CoCo1/CoCo2/CoCo3; April 1990, p.48. Figuring water bills. WATER.
- Shaulis, Jerry. "Bank & Budget"; CoCo1/CoCo2/CoCo3; February 1990, p.74. Helps maintain your checkbook. CHECK1.
- Speight, Kevin. "Mind Master"; CoCo3; September 1989, p.62. Selects a four-digit code for you to break. MINDMSTR.
- Spiller, Jeremy & Spiller, Marty. "The Mandelbrot Bug and CoCo 3 Microscope"; CoCo3; January 1990, p.76. A geometric look at chaos. MANDEL.
- Staff. "Anniversary Special: One-Liner Insert"; CoCo1/CoCo2/CoCo3; July 1989, p.131. A collection of one-liners.
- Staff. "Did You Hear the One About Hints & Tips?"; January 1990, p.60. Hints, tips and one-liners.
- Staff. "Reader Survey"; November 1989, p.124. General survey of CoCo readers' use and opinions.
- Staff. "The Heat is On!"; July 1989, p.26. A midway buyers guide to new games and game hardware.
- Stakelin, James. "The Base Converter"; CoCo1/CoCo2/CoCo3; January 1990, p.34. Converts number bases quickly and easily. CONVERT.
- Stanwood, Ron. "Color Your CoCo World"; CoCo3; July 1989, p.66. Utility to transfer PMODE 3 & 4 screens to CoCo 3 HSCREENs. MULTIRE.
- Stephens, Bryan. "Show the Facts"; CoCo3; April 1990, p.67. 3-D bar-graph program. 3DGRAPH.
- Stuart, John. "The Total Figure"; CoCo1/CoCo2/CoCo3; February 1990, p.26. A full-feature spreadsheet. COCOCALC.
- Sunderlin, Mark. "A CLS Command for OS-9"; CoCo1/CoCo2/CoCo3; July 1989, p.128. Adding a speedy assembly language CLS to the system. CLS.
- Swinefirth, Chris. "Type Does Windows"; CoCo3; June 1990, p.36. A utility to switch window types in a hurry. TYPE.C.
- Tandy Home Computer. "Multi-Vue and Pre-Existing Applications"; CoCo3; December 1989, p.38. Aid for getting more out of Multi-Vue. EDIC.
- Thomas, Scott. "Innovation Along the Border"; CoCo1/CoCo2/CoCo3; January 1990, p.106. Creates border along stationery. STATION.
- Thompson, Ernie. "Now, Where Was I?"; CoCo1/CoCo2/CoCo3; August 1989, p.106. Prints format to keep track of programs, articles, comments. RBOWLST.
- Tinklepaugh, Dale. "Draw it Quick!"; CoCo1/CoCo2/CoCo3; August 1989, p.24. Draws in High-Res, creates file of BASIC Statements. QUICKDRAW.
- Turner, Robert Allen. "CoCo Typewriter"; CoCo1/CoCo2/CoCo3; May 1990, p.58. Turn CoCo into a typewriter for those short notes. COLRTYPE.
- Vandall, Michael. "Graphics in a Hurry"; CoCo3; October 1989, p.26. Converts artwork on graphics screen into BASIC code. GRAPHPRO.
- Veal, Evan. "The Black Box"; CoCo1/CoCo2/CoCo3; August 1989, p.26. Computer hides five balls in a box and you must find them. BLACKBOX.
- Weaver, Dan. "Automile"; CoCo1/CoCo2/CoCo3; November 1989, p.40. Figures miles per gallon. AUTOMILE.
- Webb, Mark. "The Guessing Game"; CoCo3; May 1990, p.50. A one-player game of choosing colors. MINDSTIM.
- Weide, Dennis. "A CoCo Digital Logic Analyzer, Part 1"; CoCo1/CoCo2/CoCo3; March 1990, p.26. Hardware project for circuit construction and debugging. TESTIF.
- Weide, Dennis. "Completing the Analyzer Project"; CoCo1/CoCo2/CoCo3; April 1990, p.72. Tool for testing low-speed logic circuits. ANALYZER.
- Wells, John T. "Cutting Corners"; CoCo3; April 1990, p.50. A familiar game. CHASE.
- Wolf, Eric. "Where's the Matching Box?"; CoCo3; February 1990, p.88. A two-player game of concentration. COTRATE.
- Wolf, Eric. "Worm Invaders from Space"; CoCo3; March 1990, p.18. An arcade-action game. WORMINVD.
- Wong, Thomas. "Bowling"; CoCo3; July 1989, p.103. A CoCo 3 bowling game. BOWLING.
- Wong, Thomas. "Gopher Smash"; CoCo3; January 1990, p.37. Kill gophers as they pop out of boxes. SMASH.
- Wulfsberg, Bruce. "From Fractures to Fractions"; CoCo1/CoCo2/CoCo3; February 1990, p.12. Program that reduces fractions to their lowest form. FRACTION.
- Yates, Jerry. "UStime & StripBin"; CoCo1/CoCo2/CoCo3; August 1989, p.22. Utility, sets up time as "January 3, 1989 9:23:45 am/pm". USTIME.
- Zumwalt, Greg. "Breaking the 32K Barrier"; June 1990, p.58. A look at the 64K plus ROM Paks.

# Announcing .... **Quick-Link™** Buffer and Printer Interface-in-One!

**NEW!**

See Below for Special Introductory Pricing

**NEW!**

## Window Writer 1.3a

What we believe to be the best word processor available for OS/9 just got better! You asked and we listened. We have added new features which the public has requested!

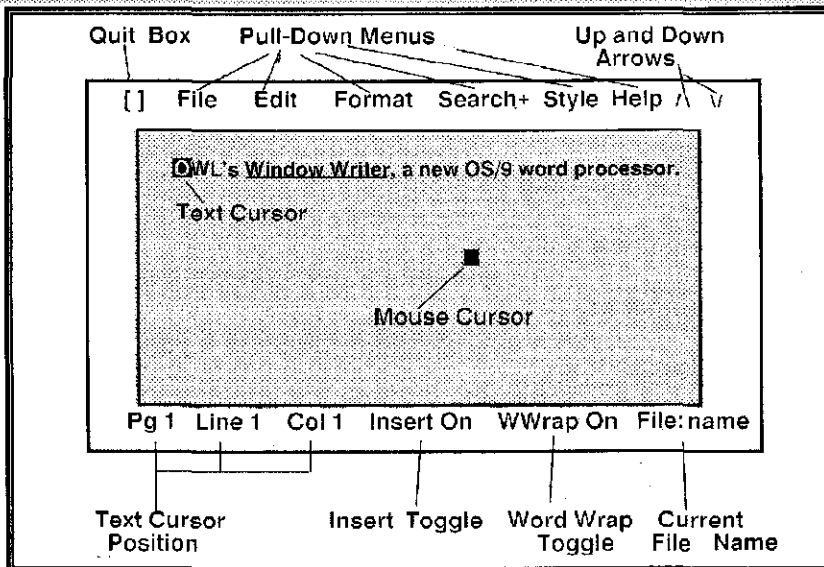
**DYNASPELL 102K WORD SPELLING CHECKER NOW AVAILABLE!**

### Multi-Tasks

Window Writer is the first Color Computer word processor which takes full advantage of OS/9. The result is a word processor which is fully as modern and professional in action as those previously available only for the IBM and Mac. The operating system allows true multi-tasking with other programs or itself. Not limited to just printing one file and editing another. You can print one file in one window while you edit files in other windows. At the same time you can be running a small program in another window. You can cut and paste between sections of files in different windows.

### Hi-Res Display

Window Writer uses an 80-column monitor display screen for clarity. As shown in the above screen drawing, you can quickly see how to access the menus and help screens. You can determine the current position by page, line number, and column. The mouse can use this section to quickly change to a specific page or line in the file. The text insert and word wrap toggles also are indicated and changeable with the mouse button.



### Pull Down Menus and Help Screens

A full selection of pull down menus and detailed help screens make learning easy and are only a key stroke (or mouse click) away. All menus and help screens can be user configured for everything including menu colors and contents. You don't like the color of a menu? You think one help item should be listed differently? Change them!

The menus and help screens can be reached by cursor keys or the mouse

(or joystick) or can be accessed by control keys.



One nice feature is the price:

**only \$59.**

For the DynaSpell Spelling Checker by Dale Puckett including the 102K Word Dictionary:

**only \$20. additional!**

Editing is a snap with OWL's Efficient Mouse Usage!

The Ram Disk supplied with Window Writer also works with many other OS/9 programs

## Introducing the **Quick-Link™** Interface

Provides both a 64K Printer Buffer and Serial and Parallel Interfaces. Useable with any computer.

### Serial to Parallel Printer Interface (64K Buffer) \$65.

Converts serial computer output to parallel printer and also provides a 64K buffer in front of the printer. Serial side Female DB-25 and Parallel side is Centronics. Includes Centronics to Centronics cable and power AC-adaptor. If you need an adapter from the CoCo 4-pin serial to DB-25 add \$9. From 300-38,400 Baud.

### Parallel to Serial Interface (64K Buffer) \$49.

Same as above except it converts Centronics parallel computer output to DB-25 Female serial. Plug into an IBM printer cable to provide output to a serial plotter.

### Parallel to Parallel (64K Buffer) \$45.

This is parallel printer buffer with no conversion.





# Proven

On the Razor's Edge of

**Summer  
Sale!**

## The New Frontier: The Most Advanced Color Computer Drive Systems Ever Offered!

**Fast No-Halt SCSI Floppies Using Optional SCSI Controller**

**Proven Performance for Demanding Home or Business Users**

OWL-WARE has now been supplying Color Computer hard drive systems for over 4 years. We have reached our position in the hard drive market by providing our customers with a high quality product that they can be proud to own and use. Our first concern has always been quality and sound design.

We are now announcing our most advanced hard drive system ever. Using the optional OMTI 5200 SCSI controller with our Hard Drive Interface, our new system will support no-halt floppy drives. You need not wait while typing or worry about clock time losses. Why be limited to 3 floppy drives? A complete system could now consist of 1-3 standard CoCo floppy drives, 1-2 (or more) hard drives, and 1-2 no-halt floppies using standard (not just CoCo) OS/9 format. You can use single or double-sided 40 or 80 track drives with the SCSI no-halt controller.

There are several new features with this improved interface. These include:

- Full SASI/SCSI compatible (this allows many add-ons to the versatile SCSI buss)
- No-Halt Floppies with optional SCSI controller allows full type-ahead during access
- Low factory-direct prices
- Fast Delivery from factory stock
- Optional Real Time Clock with built in battery (3-10 year lifetime)
- With the Clock you have 240 Bytes of battery backed up RAM for password protection or data storage!
- Same super stable LRTech quality

Our quality is obvious when compared to any other Hard Drive system or interface. Even the box is special. Our systems have always had a fan. Has our competition just heard about them?

**Interface Price only: \$85.**

**Real Time Clock-RAM: \$25.**

**20 Meg.    40 Meg.    80 Meg.**

**System Prices:** (Includes Hard Drive, case, & fan, SCSI Controller\*, LR/OWL Interface, Software. Fully assembled and tested.)

**\$495.    \$609.    \$875.**

**Super System Prices:** (LR/OWL System as above but OMTI 5200 SCSI Controller AND 3.5" 80 Track Floppy Drive in same case)

**\$615.    \$729.    \$1059.(2 cases)**

\*SCSI controller is OMTI 5100. Add \$75 for OMTI 5200 with FDC.

Now Available with High Density 5.25" drives as well as 720K!

Disk Capacity of more than 1 Meg Formatted!

Same low price as our 720K super systems listed below.

### Drive System Parts

#### Hard Drives

20 Meg	ST225	\$279.
40 Meg	ST251-1	395.
80 Meg	ST4096	690.

#### SCSI Controllers

OMTI 5100	HD Only	\$89.
OMTI 5200	HD/FD	189.
OMTI 5400	HD/FD/Tape	225.

(Note: We have no drivers for tape yet)

#### Cases and Cables

Case, 45 Watt PS, Fan	\$105.
Cable set (3 pieces)	25.

Drives have a 1-year limited warranty. Other parts are 90-day warranty. Please Note - At these prices, only very limited support can be given.



# Technology

the Color Computer Frontier

## DISK DRIVES

Bonus!  
Special  
Bundled  
Software  
with any  
Disk Drive  
Purchase!



**Summer  
Sale!**

### Floppy Drive Systems

The Highest Quality for Years of Service

**Drive 0 Systems** (Half Height, Double Sided,  
Direct Drives) **\$189.**

Drive 0 systems complete with drive, controller, legal DOS, cable, case, power supply, and manual

**Drive 1 Systems** (Half Height, Double Sided,  
Direct Drives) **\$115.**

**New 3.5", 720K Drives for OS-9 with case  
& Power Supply \$155.**

Drive 1 Systems have drive, case, power supply. (You may require optional cable and/or DOS chip to use)

**Special for 0/1 Combos (0,1,2,3) \$285.**

#### HALF-HEIGHT DRIVE UPGRADES FOR RS HORIZON- TAL CASES

Why only double the capacity of your system when you can triple in the same case? Kit includes: double-sided to fit your case, chip to run both sides of new drive, hardware, and detailed instructions. Easy! Takes only 5 minutes!

**Model \$115. Model \$109.**

500 or 501

502

All drives are new and fully assembled. We ship only FULLY TESTED and CERTIFIED at these low prices. We use Fuji, YE Data, and other fine brands. No drives are used or surplus unless otherwise stated to you when you order. We appear to be the one of the few advertisers in Rainbow who can truly make this claim. We have 5 years experience in the CoCo disk drive market! We are able to provide support when you have a problem.

**Drives 1 Year Warranty**

### OWL Phones

Order Numbers (only)

1-800-245-6228

1-215-682-6855

Fax: 1-215-837-1942

Technical Help

1-215-837-1917

### OWL WARE Software Bundle

#### Disk Tutorial/Utilities/Games

##### DISK TUTOR Ver 1.1

Learn how to use your disk drive from this multi-lesson, machine language program. This tutor takes you through your lessons and corrects your mistakes for a quick, painless disk drive introduction. (This professionally written tutor is easily worth the bundle's total price.)

##### 3 UTILITIES

A copy verify, copy, and DOS utility.

##### 2 GAMES

We will select 2 games from our stock. These are sold for more than \$20 each.

Do not mistake this software with cheap "Public Domain" software which others offer. All of this software is copyrighted and professional in quality. The tutor is unique with us and has helped thousands of new users learn their disk drive.

**only \$27.95  
(or even better)  
only \$6.95 with  
any Disk Drive Purchase!!**

### 512K Upgrade

Again at a popular price. Fully assembled and tested before shipping. Easy to install. Uses fast 120 ns. chips.

**Only \$85.**

Now includes memory test, Ram Disk Lighting, Printer Lighting, and Back-up Lighting. All with an upgraded manual exclusive with OWL!

Our prices include a discount for cash but do not include shipping.

OWL-WARE has a liberal warranty policy. During the warranty period, all defective items will be repaired or replaced at our option at no cost to the buyer except for shipping costs. Call our tech number for return. Return of non-defective or unauthorized returns are subject to a service charge.

**OWL-WARE**

**P.O. BOX 116**

**Mertztown, PA 19539**

# The Missing Link

by Greg Law  
Technical Editor

**T**hose of you who read my column in the May and June issues may have realized that a piece of the puzzle is missing. While the information given is correct, the overall picture is simplified. We let OS-9 do most of the work for us as we skipped the details of the file descriptors. As I demonstrated, the dot and dot-dot entries in the directories are the forward and backward links in the directory chain. What I didn't mention is the file descriptor that sits in the middle, between the two.

Using the same figures for the disk we created last month, the true representation looks like Figure 1. The entries in the directory tell us the name of the file and the logical sector number of the file descriptor. The file descriptor contains the actual details such as the attributes and the file size.

The attributes for a file or a directory tell

the operating system how to access the file. The directory attribute tells the operating system whether the file is a regular file or a directory. If the directory attribute is set, the file is a directory; otherwise it is a regular file. The sharable attribute (more properly, the non-sharable attribute) tells the operating system whether or not two or more programs or users can access the file or directory at the same time. The execution attribute tells the operating system whether or not a normal file can be executed as a program. The read and write attributes tell the operating system whether or not the file can be written to or read from.

All of these attributes play an important role in the file structure. For example, a database could become severely corrupted if a user updated any records while it is being sorted. For this reason, the operating system allows us to set the non-sharable attribute. If another user attempts to open the file while the non-sharable attribute is set, the operating system will return a Non-Sharable File Busy Error.

The owner's user ID tells the operating system who owns, or created, the file. For the owner to access a file or directory, he or she must have read, write or execute per-

mission by setting the owner read, write or execute attributes. Everyone else must have read, write or execute permission by setting the public read, write or execute attributes.

The modified date tells us the date and time the file or directory was updated last. The created date tells us the date the file or directory was created. I say us because the operating system provides this information for our curiosity. The file size tells the operating system the number of bytes stored in the file, which is 128 bytes for the root directory in our example.

The segment allocation table tells the operating system where on disk the file is located. For example, the root directory occupies seven sectors beginning at LSN 3. Even though it is only using half of the first sector (128 bytes), OS-9 allocates extra storage for directories for future expansion. The number of sectors allocated is specified in the device descriptor for the drive. This gives the directory enough room for 56 entries. Note here that the root directory currently occupies LSN \$02 (the file descriptor) and LSN \$03 through LSN \$09. Also, the CMDS directory occupies LSN \$0A (the file descriptor) and LSN \$0B through LSN \$12.

*In addition to being OS-9 Online SIGop, Greg Law enjoys programming on all types of computers and has worked on systems ranging from the CoCo to the Burroughs B6700 super mainframe. He lives in Louisville, Kentucky.*

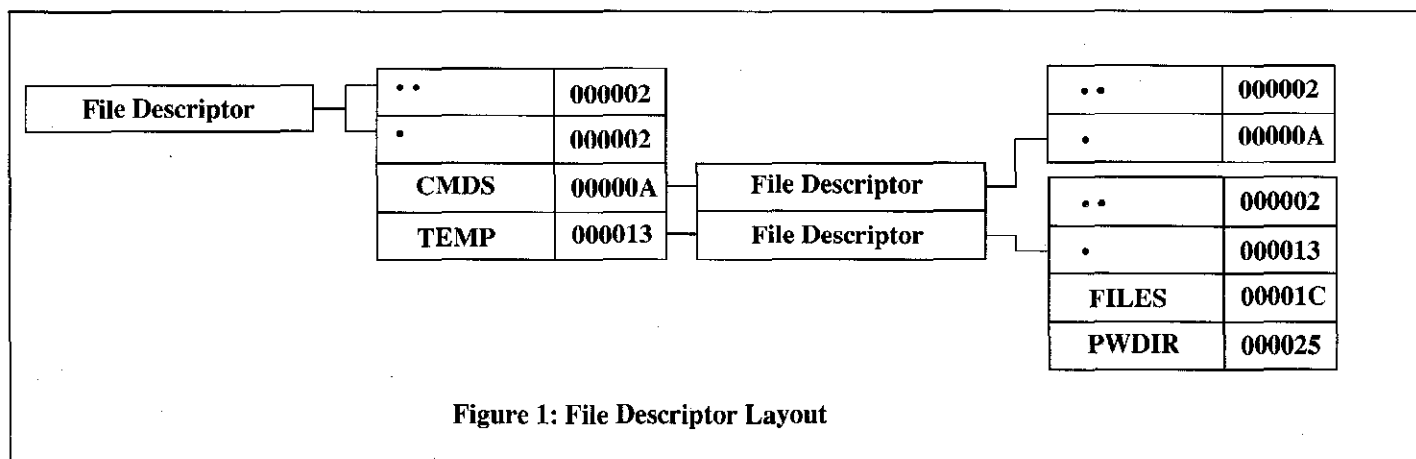


Figure 1: File Descriptor Layout

What happens when we add a 57th entry? First OS-9 attempts to expand the directory by allocating seven additional sectors starting at LSN \$0A. If this were possible, the first entry in the segment list would be changed to \$000003, \$000E (14 sectors). However, since the CMDS directory is already occupying these sectors, it allocates the first seven sectors that are available. In this case, it starts at LSN \$2D following the PWDIR directory that occupies LSN \$25 (the file descriptor) and LSN \$26 through LSN \$2C. The second entry in the segment list, which is presently unused, is changed to \$00002D, \$0007.

Each file and directory is allowed to span up to 48 non-contiguous areas on the disk. If the segment list already has 48 entries and it needs to be expanded again, you will get a Segment List Full Error, and the additional data will be lost. However, it is very rare that your system will exceed the maximum number of segments.

### Linking Files

The link count indicates the number of directory entries attached to the file descriptor. As mentioned earlier, the directory entry contains the filename and the logical sector number of the file descriptor. The file descriptor itself tells us where the file is located on the disk. If you wanted a duplicate file in another directory, you would normally use the copy command. This adds the filename specified to the new directory, creates a new file descriptor, and copies the contents of the original file to a new location on the disk. This isn't necessarily bad, but it does use extra disk space.

An alternative method is to add the

filename to the new directory using the same LSN value and increment the link count in the file descriptor. With this method, any modifications made to the file in one directory are reflected in the other directory as well. This makes sense considering that the directory entry only tells us the name of the file and where the file descriptor is located, and all modifications are made to the file descriptor and the file itself.

When OS-9 deletes a file, it removes the entry from the directory and decrements the link count in the file descriptor. If the link count is zero, the sectors storing the file descriptor and the file itself are deallocated. If the link count is not zero, meaning there is another directory entry linked to the same file, the file descriptor and the file itself are left allocated.

Linked files are relatively safe, but there are certain pitfalls. For example, the I\$Delete system call automatically detects a linked file and does not destroy the contents of the file or the file descriptor until all links are removed. Utilities that physically erase the contents of the file prior to deleting it, however, may not detect a linked file.

You can link a directory to another directory, but it is not a good idea. For example, let's assume we link the /DD/USERS/PAUL/SYS directory into the /DD/SYS directory with the directory name PAUL. Thus, /DD/USERS/PAUL/SYS and /DD/SYS/PAUL both refer to the same directory. If you delete the /DD/SYS/PAUL directory, each file within the directory is deleted since they are not linked. The attributes in the file descriptor have the directory attribute turned off and the PAUL entry in the /DD/SYS directory is removed. The first problem is that all of the files in the directory are completely deleted. The second problem is that /DD/USERS/PAUL/SYS is no longer a directory, but a regular file.

There is a third reason for not linking directories, but you'll need to put on your thinking cap to see the effects of this one. Again, assume that we have linked the directories from above and that we are using dsave to copy the /DD/SYS directory and its subdirectories to a floppy disk. First dsave copies all the files in the /DD/SYS directory and then performs a chd PAUL. After it has copied all the files in the /DD/SYS/PAUL directory and its subdirectories, it will chd ... to return to the parent directory. Which directory will be the current working directory when it issues the chd ... command? If you guess that it's /DD/SYS, guess again.

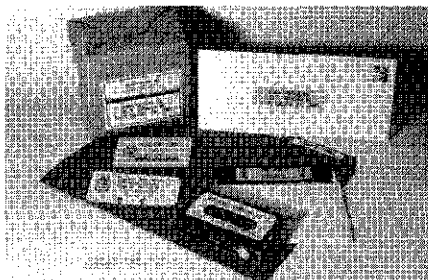
Remember that the dot-dot entry in the /DD/USERS/PAUL/SYS directory points to the /DD/USERS/PAUL directory. If we linked it into the /DD/SYS/PAUL directory, the dot-dot entry remains the same. Therefore, dsave will copy both the /DD/SYS directory as well as the /DD/USERS/PAUL directory and all of their subdirectories.

There are also cases where linking a directory within another directory can lead to dsave recursively backing up that directory. Let's assume that we link the /DD/SYS directory into the /DD/USERS/PAUL/SYS directory. If you run dsave to backup all or part of the disk, it goes to the /DD/USERS/PAUL/SYS directory as expected. However, when it performs the chd ... command, it returns to the /DD directory and starts backing up each of these directories again. It does this each and every time it reaches the /DD/USERS/PAUL/SYS directory.

I don't have a listing for you this time, but we will be back on track next month. If you have a short utility you would like examined in this column, submit it to "BreakPoint" in care of THE RAINBOW.



**Signs, Banners & Greeting Cards**  
Coco Graphics Designer Plus.....\$29.95



**Labels with Text & Graphics**  
Label Designer .....\$34.95

**Zebra Systems, Inc., 121 S. Burrowes Street, State College PA 16801 (814) 237-2652**

The CGDP and Label Designer require a 64K CoCo II or 3 with a disk drive and mouse or joystick. Many popular printers are supported. Consult previous ads or call Zebra. Include \$3 Shipping plus \$3 more for CODs. VISA/MC accepted. PA residents add sales tax.



## Software

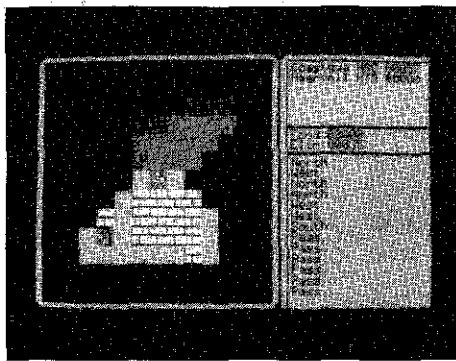
CoCo 3

### *The Seventh Link— For an “Out of This World” Adventure*

Have you been waiting for an Adventure that is not only exciting, but also keeps you playing for hours on end? Try *The Seventh Link*! You can't imagine what this program is like until you try it!

It seems as though (so the records say) a few billion years ago there was a robotic ship sent out to find a lush, tropical planet for a new civilization. Somehow something went wrong and the ship sent back pictures of what it was looking for and not what it found. When a cargo ship found the robot ship, the ship discovered a protosystem of swirling gasses. The cargo ship's fusion engineer created a small device made of seven superconductor wires, which allowed the cargo ship's crew to sleep for the billions of years it would take for the planet to become habitable. However, when the last wire is gone, the planet (Elira) will slowly start to die. Your job? To save it! You will travel to other worlds, through cities and deep into 3-D dungeons.

I hope you are ready for an Adventure of this size. I got it in June of 89 and am still



just getting past the halfway mark. However, if you have played other Adventures and are familiar with how they work, then I urge you to get this one.

*The Seventh Link* contains three disks with really neat labels, two double-sided maps of all four planets, and a very nicely done manual explaining races, history and some of the spells. *The Seventh Link* also comes with one double-sided reference card and a strip of simulated superconductor wire.

You will need two blank disks to get started; one disk creates backups of the two data disks (one being Elira and the other the Dungeon) in order to create a personalized character who travels through the game. The only thing I don't like about the program is that it is copy-protected. However, that hasn't posed a problem so far.

Once you boot *The Seventh Link*, the title screen appears, flashing in a 3-D effect while it waits for you to insert the Elira disk. It also plays a small music clip that was created with the program *Studio Works*. After this musical introduction, a screen pops up and you create a character. You name it, give it a race, sex and personalized statistics.

The game screen comes up next. It is composed of a small box for text, a box above that shows the main character's statistics, and finally to the left is a fairly large playing box. Your character is in the middle of this box. As you move around with the arrow keys, the land "scrolls" around you. These land graphics are made up of tiles (or icons) and are nicely done. The movement, which is extremely fast and very smooth, is probably one of the program's neatest features. You can enter cities (the ones with flags waving) and move around basically the same way. In these cities you find people who may want to join your party. You then discover shops to buy food and other good stuff. When you are done, simply move out of the city. As you move along you may become engulfed in mountains; moreover, the mazes through the mountains are very tricky.

Moving merrily along you notice something is following you! Uh-oh! At this point the screen changes and there are several of these *things* shooting at you! In this combat round you get to see yourself fight. You move each of your characters around and "shoot" by simultaneously pressing A and the arrow keys for the desired direction.

During the game you will use special commands that are implemented by pressing the appropriate key — i.e., L for Look. Or if there isn't an assigned key for the command, you can try the Non-Key feature, which lets you enter the command. Sometimes you will stumble upon treasure chests. To see what you have discovered, press I. This brings up a screen that lets you drop, use and sell objects.

And then there are dungeons — my personal favorite! When you enter one the screen changes, and you see a forward view (you move forward most of the time). If

you want to go right, turn right and go forward. This is an extremely good example of what the CoCo can do when used the right way!

Often reviewers protest that there are so many features in a program they can't possibly write about them all. Such is the case with *The Seventh Link*. My suggestion: Buy It! In my opinion it is one of the best Adventure games for the CoCo.

I commend Dave Triggerson and Jeff Noyle on this program. I hope to see more products from them.

(Oblique Triad, 32 Church St., Georgetown, ON L7G 2A7, Canada, 416-877-8149; \$38 in U.S. or \$48 Cdn., \$2.50 S/H)

— Shane Messer

## Software

CoCo 1 2 & 3

### *Morse CW — Morse Code Tutor On a Disk*

Have you ever listened to transmission of Morse Code and wondered how anyone could decipher the seemingly random clicks and beeps? I've seen plenty of movies depicting a passenger sending an SOS from a sinking ship, who is relying on somebody being able to understand the distress signal. Would you be able to translate the urgent message?

To the rescue comes Second City Software with *Morse CW*, a Morse Code software tutorial for the CoCo written by John Crawford. The CW stands for Continuous Wave. With a brief three-page manual containing helpful hints, the character code table and an explanation of menu functions, this package keeps excess baggage to a minimum.

The program allows you to make files that can be saved then printed to the screen with the encoded sounds using the code file as CW and play options. These functions are handy for learning common phrases. To be tested on random 5-block characters, you can select random alphabet, random numbers or random punctuation.

If you have forgotten the name of a file you want to load, you can use the disk

## New CoCo Calligrapher V2 for CoCo III!

The popular RS-DOS version of the Calligrapher has been upgraded for the CoCo III! This new version has some of the advanced features that were only available in the OS9 Calligrapher. **\$24.95** (upgrade your old V1 version for \$12.50).

### CALLIGRAPHER

**CoCo Calligrapher V2** - Turn your CoCo and dot-matrix printer into a calligrapher's quill. Make beautiful flyers, certificates, labels and more. Includes three 1/4 inch high fonts. Over 135 additional fonts are available (see below). Version V1 is available for any CoCo, Tape or Disk; Version V2 requires CoCo III and Disk; **\$24.95**.

**Calligrapher V2** - Prints all the same fonts as the CoCo Calligrapher. It reads a standard text file which contains text and formatting codes. You specify the fonts, centering, left, right or full justify, line fill, margin, line width, page size, page break, page numbers, indentation, multiple columns, macros, headers, footers and more. Includes the same 3 fonts with additional fonts available below. Disk only; Specify OS9 or MS-DOS; **\$24.95**.

**Calligrapher Fonts** - Requires Calligrapher above. Each set on tape or disk with 8 to 10 fonts; Specify RS-DOS, OS9 or MS-DOS format; **\$14.95** each:

- Set #1 Reduced and reversed originals;
- Set #2 Old Style and Broadway;
- Set #3 Antique and Business;
- Set #4 Wild West and Checkers;
- Set #5 Stars, Hebrew and Victorian;
- Set #6 Block and Computer;
- Set #7 Small: Roman, Italics, Cubes, etc;
- Set #8 Novelty fonts;
- Set #9 Gallant and Spartan;
- Set #10 Several Roman fonts;
- Set #11 Gothic and Script;
- Set #12 More Roman and Italic;
- Set #13 Several Courier fonts;
- Set #14 Modern and Screen;
- Set #15 Tektron and Prestige.

**Economy Font Packages** available on disk only, with 25 to 30 fonts; Specify RS-DOS, OS9 or MS-DOS format; **29.95** for any one or save by buying two or more at **\$19.95** each:

- Pkg #1 - Above font sets 1, 2 and 3;
- Pkg #2 - Above font sets 4, 5 and 6;
- Pkg #3 - Above font sets 7, 8 and 9;
- Pkg #4 - Above font sets 10, 11 and 12;
- Pkg #5 - Above font sets 13, 14 and 15.

**Calligrapher Combo Package** - Includes the Calligrapher and any two Economy Font Packages (your choice) for only **\$59.95**. Disk only. Specify RS-DOS, OS9 or MS-DOS format.

### Sample Calligrapher CliPix Pictures



**The Font Massager** - This OS9/MS-DOS utility program allows you to do many things to Calligrapher font files. You may create new fonts, modify existing fonts, invert fonts, compress fonts, double the height and/or width, halve the height and/or width and convert between RS-DOS and OS9/MS-DOS formats. (Note: OS9 and MS-DOS font files are identical and need no conversion. Simply copy or upload the files from one OS to the other). OS9 or MS-DOS; **\$19.95**.

**Calligrapher CliPix** - The Calligrapher may now include graphics pictures along with the text it prints. There are currently 9 different CliPix disks available, each one has over 60 different graphic pictures. While the OS9/MS-DOS Calligrapher may easily combine both text and CliPix, the RS-DOS (CoCo) Calligrapher may also print out the CliPix. **\$9.95** each.

- CliPix #1 - Animals
- CliPix #2 - Astrology/Mythology
- CliPix #3 - Jobs (Occupations)
- CliPix #4 - Kid Stuff
- CliPix #5 - Miscellaneous
- CliPix #6 - Occasions
- CliPix #7 - Sports
- CliPix #8 - Vehicles
- CliPix #9 - X-Rated

### SPECIAL INTEREST

**Rental Property Income and Expense Management Package** - Maintain rental property income and expense records and print reports. 28 expense categories. *This program may be tax deductible.* Disk only; **\$29.95**.

### DATA BASE

**TIMS Combo Package** - All three of the following programs: TIMS, TIMS Mail and TIMS Utility on one disk - **\$34.95**. Save about \$20.00!

**TIMS (The Information Management System)** - Tape or disk, fast and simple general data base program. Create files of records that can be quickly sorted, searched, deleted and updated. Powerful printer formatting. Select records to print: all, from screen or a range. Up to 8 user fields, sort on up to 3 fields. Tape/Disk; **\$19.95**.

**TIMS Mail** - Tape or Disk based mailing list program. Files are compatible with TIMS. Fast and simple to use. Supports labels 1, 2 or 3 across, 2 1/4 to 4 inches wide. Tape/Disk; **\$19.95**.

**TIMS Utility** - Utility companion for TIMS and TIMS Mail for multi-term search (AND and OR logic), global change and delete, split large files and more! Tape/Disk; **\$14.95**.

### EDUCATIONAL

**The Educational Combo** - Learning stuff has never been so much fun! The Combo includes these educational (and entertaining) games:

- Silly Syntax - (ages 5 and up)
- Galactic Hangman - (ages 7 and up)
- The Presidents - (ages 10 and up)
- The Great USA - (ages 9 and up)
- Trig Attack - (ages 9 and up)

All five programs on one disk for only **\$29.95!**

For a complete catalog of Sugar Software products and fonts, send a stamp and a label.



**SUGAR SOFTWARE**

P.O. Box 7446  
Hollywood, Florida 33081  
(305) 981-1241

All programs run on the CoCo 1, 2 and 3, \$2K Extended Basic, unless otherwise noted. Add \$1.50 per tape or disk for shipping and handling. Florida residents add 6% sales tax. COD orders add \$5. Dealer inquiries invited. Orders generally shipped in 24-48 hours. No refunds or exchanges without prior authorization.

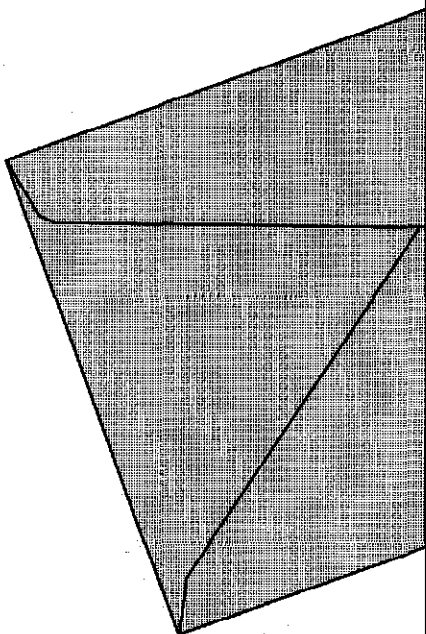
\*TRS-80 is a trademark of Tandy Corp.

## About Your Subscription

Your copy of *THE RAINBOW* is sent second 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. Send your correspondence to our editorial offices at Falsoft, Inc., The Falsoft Building, P.O. Box 385, Prospect, KY 40059.



directory option. The disk directory lists only those files with an extension of .MCW. Files saved by this program have the .MCW extension.

Keys 1 through 7 set the speed at which you are tested. The speed varies from five to twenty words per minute.

The code table is split in two pages, making it awkward to use. I found errors in the code table while trying to decipher some text a co-worker had entered. A couple of code translations were incomplete — J and O are missing a dash. My suggestion is to correct the code table, print it on one page and tighten it up so users don't need a ruler to look up a code.

Morse CW teaches you how to read International Morse Code, if you invest the time and energy. With a little practice I was able to increase my speed. I recommend this program to those beginning a hobby in ham radio or another communication field that requires knowledge of Morse Code.

(Second City Software, P.O. Box 72956, Roselle, IL 60172, 312-653-5610; \$19.95 plus \$2.50 S/H)

—Tony Olive

## Software

CoCo 1 2 & 3

### Joy — Fire Up that Soldering Iron!

Have you ever noticed that game programs use joysticks in two different ways? This may be because joysticks come in two varieties. One type of joystick, the analog joystick, allows smooth control over its entire range of motion. This is the kind of joystick used by the CoCo. The digital joystick, on the other hand, is a directional switch — control is on/off. The digital joystick is used in some coin-operated video games, but it is most commonly used with 8-bit Atari and Commodore computers and most home video games. In fact, the de-facto standard among digital joysticks is the Atari joystick popularized by the Atari 2600, the grandfather of home video game machines.

Since analog joysticks offer more control than their digital relatives, it's easy to think they're more superior. You may forget the advantages of digital joysticks for certain kinds of games. I can't imagine trying to play *Polaris* or use a paint program with a digital joystick; but, consider maze games such as *PacMan*. Here the joystick is

only used to steer in one of four directions. An Atari joystick would be a definite advantage with some games. Besides, many of us have a couple of spare Atari joysticks collecting dust in a closet or attic just waiting to become part of our CoCo equipment.

Digital joysticks have limited advantages and they're cheap (or free) and plentiful. What good is that? The CoCo is designed to use *only* analog joysticks. That's where *Joy* from B&B Software comes in. *Joy* comes with a complete set of instructions telling you how to adapt a digital joystick adapter for the CoCo. The device allows you to use Atari joysticks with your CoCo and takes advantage of their improved playability for certain games.

That's the good news. Mixed in is some not-so-good news. First, the plans are on disk, which doesn't sound bad at first, but delivering plans on disk doesn't make much sense. A simple set of well-drawn diagrams accompanied by written instructions would be easier to use. I don't normally fire up my soldering iron on my computer's desk, so building the adapter involved clearing the desk and moving my soldering equipment into the computer room and working in front of the CoCo — which wasn't dangerous, just inconvenient. Then there is the matter of the parts list. For instance, I had to run *Joy* and locate the Parts screen so that I could copy the list of parts onto a piece of paper to bring with me to Radio Shack. Fortunately all the parts required are standard Radio Shack fare and are inexpensive. It just seems odd I had to copy a list from the computer screen when the list could just as easily been printed in the first place.

While I'm picking at the program, the required 9-pin connector is a crimp-type connector, which is more difficult to work with than a standard 9-pin solder connector. Either type works, but the solder type is easier to solder wires to. Also, starting with the first screen after the opening title, I ran into typographical and spelling errors. These things scare me. I wonder if mistakes could creep into other screens?

The circuit is relatively simple in that anyone who is likely to own a soldering iron is capable of building it. The only construction problems I had were no fault of the instructions: The holes in the circuit board are too large for the wire leads you solder in them, making the soldering job a little harder than it could have been.

In defense of B&B, using a standard circuit board is the best choice. Speaking of good choices, B&B is thoughtful enough to include a case in its plans. I hate making a simple project only to discover I spend twice as much time trying to find a case to finish it off. The B&B adapter plans are really complete in that respect.



The other good news is the adapter works as advertised. It's simple to use and effective. In fact, my son adopted it right after I finished building and testing it. He began a thorough test and has had no problems whatsoever. He really prefers using it for some of his games.

What's the final verdict? I'm not sure. The adapter works well and the plans are usable if slightly flawed. Unfortunately the delivery method is inappropriate. B&B could improve the product by eliminating the disk of display screens and replacing it with three or four sheets of good line drawings and a set of printed instructions. But, it isn't that bad the way it is, especially considering its price. For that kind of money I wouldn't expect any more than what B&B delivers: a working adapter that a novice solderer can build in less than an hour. Plus the company sells it for a fraction of what I'd expect to pay — so ignore the rough edges. If you have games that would work better with digital joysticks, contact B&B and build its adapter. Then enjoy your work.

Editor's Note: B&B Software sells a hardcopy of *Joy* for \$6.50

(B&B Software, 1637 Hanchette N.W., Grand Rapids, MI 49504, 800-237-2409; \$6)

— Don McGarry

## Software

CoCo 3

# Wild & MV — Directory Assistants for OS-9

Missing from OS-9 Level II, yet very much needed, is the ability to use wildcards in a long pathname. Suppose you are writing a book using OS-9 for file storage and you want to list all files associated with Chapter 1. Maybe you know you have named some `ch1start`, `ch1next`, `ch1middle` and `ch1end`. With a wildcard, the command might look like `list ch1*` rather than four separate command lines. Even more advantageous, suppose you are unsure if a fifth file named `ch1more` exists and you want the computer to search for it, looking not only in the directory you know about, but also in all its subdirectories! In this example, I would enter the command line:

```
wild -r list /d1/ch1* >/p
```

`wild` and `list` tell OS-9 to use wildcard options in the existing `list` command. `-r` tells it I was unsure if the files were in the directory shown or in its subdirectories, so search both ways. `>/p` is the normal redirection of output to the printer; and `/d1/ch1*` tells OS-9 only Drive 1 is to be accessed and that the file and/or directory names to be worked on must begin with `ch1`.

*Wild* performs this type of operation for any valid command or utility in your OS-9 library, and does so while having wildcard options for the source file and/or directory and also the destination file and/or directory. It contains many more options, but I'll let those be surprises for the new owner — rest assured they do work properly. I tried all my usual "crash this program" tricks on the program and was unable to crash it or find any bugs. However, there is a confusing error in the manual where the `-o` and `-q` subcommand options are both given inconsistently, although they are really the same option!

*Wild* comes with *MV*, a utility that allows files and/or subdirectories to be easily and quickly moved to other locations in your directory tree. This Burke & Burke package also includes *trash*, a utility that moves the files you intend to delete to a new subdirectory called (what else?) *TRASH*. This directory can then be deleted later with a single command. Why do it that way? Well, many of us (even including this super-perfect programmer) have deleted a file part way through a programming session only to realize we deleted the wrong file. (I have pulled out many a non-existent hair!) Now I simply send the file to *TRASH* and don't bother "emptying the trash" until the end of the session.

This package includes two other utilities that are not mentioned in the manual or even the documentation file present on the disk. So I phoned Burke & Burke and learned three things. First, this company provides courteous and competent technical support to its customers. (I did not identify myself as a RAINBOW reviewer until after receiving answers to a whole list of questions.) The second point is that it is Burke & Burke policy to place a short help file in each utility it sells. Simply substitute `-?` for an option entry on the command line to display the notes. Lastly I learned what the two mysterious extra utilities do.

*fcheck* allows you to check a storage device (floppy or hard disk) for file fragmentation. For instance, consider a disk containing text files being edited. Each time one is edited, its length may change. As that happens, parts of the file become scattered to unused portions of the disk; the file is said to have become fragmented. No

## More Baud Less Bucks Now Better



These Surprisingly Affordable 2400/1200/300 BPS Modems are now greatly improved. New Rockwell chip, non-volatile memory, impedance matching, expanded Hayes command set, etc.

These are high quality modems made by Zoom Telephonics in the USA, with performance features unmatched by competitors costing three times as much.

These are full-featured fully Hayes compatible modems that work with any computer. They include advanced digital signal processing, and adaptive equalization for great performance and reliability.

All of this in a compact, attractive go-anywhere package that's not much larger than a paperback book.

All the features which you expect in a state of the art modem. With a seven year mfg warranty.

Money saving premiums for Delphi, GEnie, CompuServe, etc. Software available ProcComm (PC) + 5 QuickLink (Mac) + 5 WizPro is free (shareware).

External modem \$115.00  
Internal version (for PC) \$105.00

Please add: USA - shipping and handling \$3.50  
Canada - Air PP and Insurance \$7.46

### GCS FILE TRANSFER UTILITIES now updated to Version 3.0

The GCS File Transfer Utilities provide a simple and quick method to transfer text and binary files from and to a variety of floppy disk formats.

Need to transfer files to and from PC (MSDOS), RSDOS, FLEX or MINI-FLEX disks on your OS-9 system? You need GCS File Transfer Utilities.

Commands: Dir of PC, RS or FLEX disk  
Dump disk sector of PC, RS or FLEX disk  
Read file from PC, RS or FLEX disk  
Write file to PC, RS or FLEX disk  
Rename file on PC disk  
Delete file from PC disk  
Format PC disk

Version 3.0 handles most 5.25 and 3.5 formats. Any level sub-directories (PC). Binary files. Multi-Vue version can be used under Multi-Vue as stand alone Shell commands.

Requires OS-9 L2 for COCO 3 L1 for COCO 1/2  
2 drives (one can be hard or ramdisk, one floppy 40 T DD DS).  
Multi-Vue for Multi-Vue version.  
D. P. Johnson SDISK3 for COCO 3  
SDISK for COCO 1 or 2

GCS File Transfer Utilities for CoCo  
Multi-Vue version \$54.95  
Standard version \$44.95  
Version 3.0 update - either version (provide disk number) \$15.00

D. P. Johnson Software  
SDISK or SDISK3 \$29.95  
L1 & L2 Utilities \$75.00  
Ask about FORTH09 (6809 & 68K)

Standard diskettes are OS-9 format (5.25") - add \$2.50 for 3.5". Orders must be prepaid or COD. VISA/MC accepted. Add \$1.75 S&H. COD is additional.

GRANITE COMPUTER SYSTEMS  
Route 2 Box 445 Hillsboro, NH 03244  
(603) 464-3850

OS-9 is a trademark of Microware Systems Corporation and Motorola Inc. MS-DOS is a trademark of Microsoft Corp. FLEX is a trademark of TSC, Inc.

problem! The operating system supposedly knows where the pieces are, right? But if fragmentation is bad enough, the disk access time would become lengthy and you may even be unable to get the file. *fcheck* tells you whether you should perform cleanup operations on the disk. It is a *must* for hard-disk users, but it's also convenient for those using floppies.

The other utility, *zap*, allows you to remove a file directory entry without releasing its allocated sectors. This is useful when you are repairing a damaged file and want to retain the sectors undisturbed while reissuing the filename.

While *Wild & MV* performs similar housekeeping chores as *r3 Systems' pt*, each has options not available with the other. The overlap is minor compared to the convenience of being able to use two different approaches to OS-9 file and directory maintenance chores.

Because it is highly useful yet low-priced, I'll keep *Wild & MV* in my OS-9 library.

(Burke & Burke, P.O. Box 58342, Renton, WA 98058, 800-237-2409; \$19.95 plus \$3 S/H in U.S., \$4 S/H in Canada)

— Larry Elman

## Software

CoCo 3

### *Presto Partner* — An OS-9 Desktop for All Users

Most of us who use the OS-9 operating system on a regular basis have accumulated software for the BASIC functions of word processing, databases, spreadsheets and communication. However, there is not much applications-type software available for CoCo OS-9, at least at an affordable price. For the PC there are quite a few packages that come under the heading of desktop accessories. I am not aware of many for OS-9 other than *DeskMate* and *Multi-View*. And so enters a neat, inexpensive little package that meets the needs of the average home user — *Presto Partner*.

*Presto Partner* is a cutsy name for a serious desktop package that resides in a Level II window, has a calculator (decimal and Hex), notepad, appointment calendar and a phone book with auto-dial and ten programmable macros. *Presto Partner* is

easily installed by copying the module *pp* to the CMDS (or any other execution) directory. When you type *pp*, *Presto Partner* creates a new window and then executes. I placed the *pp* command in my startup file so that *Presto Partner* automatically runs on startup. When *pp* has executed, all the data — calendar, notes, phone book — are automatically loaded. You simply tap the CLEAR key to move to the *pp* window, where you are greeted with a screen showing the current time and a calendar for the current month in the upper right-hand corner. In the left corner is a box 38 characters wide by 10 rows deep. This box is the first of seven notepads.

Using the Notepad is very simple. Select one of the notepads using ALT-down or ALT-up keys. The Notepads overlay each other so that the first line of each note is visible. Simply press the appropriate key to select the note of interest by typing it. The Notepad does not have an editor (don't cry, there really isn't a need for one). You can move around the note by using the arrow and typeover keys. This is not a problem considering the Notepad is designed for quick notes. An interesting option with any of the notepads is the built-in Calculator. Simply type the numbers to calculate, including parenthesis, and press ALT= for the answer. Pressing ALT\* gives you the Hex equivalent. Finally, any one or all of the notes can be sent to the printer.

Pressing ALT-C brings up the Appointment Calendar function. When the calendar is activated, the arrow keys are used to select the date. If you press S to schedule an appointment, you are prompted for the time, the event, an option for either an audio and/or visual alarm and a reminder period (such as five days before the event). You can schedule the event for the day, month and year. The reminder option is very useful. I have been setting my calendar with three-day reminders. On booting my CoCo each day, I first move to the window running *Presto Partner*, and there in a separate overlay window are the calendar reminders. By the way, you can always tell what days have appointments scheduled by the highlight color used on the calendar.

The Phone Book is what you would expect. Each entry has room for a name, two address lines and a phone number. A Lookup function is provided to search by name. It is possible to page through phone numbers by simply pressing the up and down arrow keys.

One nice feature of the Phone Book is that it lets the CoCo waltz through the phone book and automatically place a call. If you have a Hayes-compatible modem, you can look up a number and have *Presto Partner* dial the number. When the phone

starts ringing, simply pick up the phone and press any key.

The last feature of *Presto Partner* is the macro capability. Ten macros can be defined (ALT 0 to ALT 9). Each macro can contain up to 10 OS-9 commands, and with any command you can have *Presto Partner* prompt you for a parameter. Here's an example:

```
ds %Enter Filename%
```

When this line is run as a macro, *Presto Partner* prompts for a filename and then runs the *Dynastar* word processor that loads *filename*.

One thing you have probably noticed by now is that I haven't said a word about loading and saving files. While these functions have been provided, they really are not necessary. *Presto Partner* automatically loads a default file, and if you choose the auto save function, the program *pp* saves every 15 minutes. The only problem I observed is the lack of a List function in the Phone Book and the inability to edit macros.

Overall, *Presto Partner* is an excellent product for those wanting the functions of a desktop accessory. The product is well-designed, easy-to-use and inexpensive. What more can you want?

(Alpha Software Technologies, 1500 I-10 Service Rd., #61, Slidel, LA 70461; \$29.95, \$3 S/H)

— Donald Dollberg

## Software

CoCo 3

### *CIH Fonts* — A Speedball Pen for the CoCo 3

Fifteen or so years ago, as a junior in high school, I discovered a talent I possessed. My art teacher demonstrated the use of the calligraphic nibpen, and I was hooked. There wasn't yet such a thing as the chisel tip or a calligraphic marker that never needed to be dipped or refilled with ink, so I went to the stationery store across the street and bought a Speedball brand lettering set with a penholder and a handful of nibs. That Christmas my family got me the complete Speedball outfit with a Hunt's crowquill, a big bottle of ink and fifteen or twenty fancy nibs. I was in heaven; I even wrote a paper on calligraphy and illumination for English class.

As the years have passed, arthritis has made it difficult for me to hold those old pens, and most of my writing is now done from the keyboard of my CoCo. But how I miss those hand-lettered documents and their special look! Imagine my delight then, when THE RAINBOW asked me to review Coless Computer Design's *CIII Fonts* this month.

**Many of my favorite letter styles are included in this program, like the Old English and Celtic alphabets. There are even Russian Cyrillic fonts!**

The problem with a font package is that it's always set up for a particular graphics program, and it won't work with anything else. Not so with *CIII Fonts*. The documentation says it works with *Color Max 3* and *Color Max Deluxe* from Computize, the *Newspaper* series from Second City Software and the standard font version of *The RAT* from Diecom. Most of my testing was done with *Color Max 3*.

I priced font disks with the aid of THE RAINBOW and found that sets usually run from \$20 for an eight- or ten-font disk to \$30 for forty fonts. Coless offers nearly 60 fonts on three disks for \$19.95, certainly a bargain. I also found that my graphics program treats it like its own proprietary fonts, so I can make outline, shadow and italic customized letters at the click of a mouse.

What, you might ask, is a font exactly? Well, the word comes from the printing business and refers to a particular typeface. The title THE RAINBOW, as printed on the cover, uses a popular font called Helvetica, which is identified by the distinctive curvy sweep on the right leg of the letter R. If you visit an art store and look at the rub-on transfer letter sheets, you'll find many of them have unusual names like Peignot and Baby Teeth, both of which are included with their proper names in the *CIII Fonts* collection. In fact, many of my favorite letter styles are included in this program,

like the Old English and Celtic alphabets. There are even Russian Cyrillic fonts!

Using *CIII Fonts* is a breeze. It works on single or multiple disk systems, but you might have to do some disk swapping from time to time with one drive because the *CIII Fonts* disks are full. The fonts load into the graphics or publishing programs the same way as the built-in fonts, and you can call up to twenty type faces from each disk. These are nice designs, proportionally spaced. Some of the larger fonts may not offer all the numbers and symbols or may be strictly uppercase with numbers, but for signs and whatnot that's more than sufficient. There are fonts like Keyboard, which looks like computer keys; Skyline, resembling a cityscape with outlined Roman letters in the foreground; and Sukiyaki, ideal for setting menus to be used in a Japanese restaurant.

I'll have to say Coless *CIII Fonts* is a good buy. It has versatility, compatibility and desirability at a great price.

(Coless Computer Design, 1917 Madera Street #8, Waukesha, WI 53186, 414-549-0750; \$19.95 plus \$3 S/H)

— Fred Toon

## Software

CoCo 1 2 & 3

## Space Raiders — A Speedy Invasion

Just as there will always be cereal manufacturers that find a need to bake up new ideas for the same ole' cornflake, you can

# Graduate up to **stair** micronics

## MULTI-FONT PRINTER NX-1000II

Now a Blazing  
180 characters  
per second!

The NX-1000II gives you plenty of print options for attractive printing.

Four typestyles.  
Four pitch sizes,  
in standard  
and italics  
for a total  
of 32  
NLO  
modes.

The NX-1000 Rainbow gives you all these features plus online access to 7 color printing and graphics. Black, blue, red, yellow, green, violet, and orange. Both models have a 1 year warranty and a 30 day online trial.

NX-1000II SPECS: 180 cps Draft, 42 cps NLO (18 x 23 dot matrix), 4 NLO Fonts, Italics, Sub & Superscripts, Emphasized, Doublestrike, Proportional, Condensed, International, Downloadable, Quad Tail, Double Tail, Underline, 34 Pitches, Forward and Reverse, 1/2" Line Feeds, Absolute or Relative Vert. & Horiz. Tabs, Left, Center or Right Justification, 8 Graphics Modes to 1000 dpi, Macro Instruction, Bidirection, Adjustable Tractor Feed, 200+ Printable Characters, Semi-Auto Sheet Feed, Front Panel Soft Touch Control, Epson and IBM Emulate, 4K Data Buffer, View Dump.  
NX-1000 Rainbow: 144 cps Draft, 36 cps NLO, rest same as NX-1000II plus color.

**NX-1000II SYSTEM INCLUDES:**  
• Star NX-1000II Printer **\$199.95**  
• Blue Streak Ultima **+\$10 Shipping**  
• Software Support Trio **COMPLETE**

**NX-1000 RAINBOW SYSTEM INCLUDES:**  
• Star NX-1000 Colour Printer **\$259.95**  
• Blue Streak Ultima **+\$10 Shipping**  
• Software Trio **COMPLETE**  
• Color Super Gemprint

## The Smallest, Sleekest, Fastest Serial To Parallel Converter You Can Buy!

7 Switchable Baud Rates

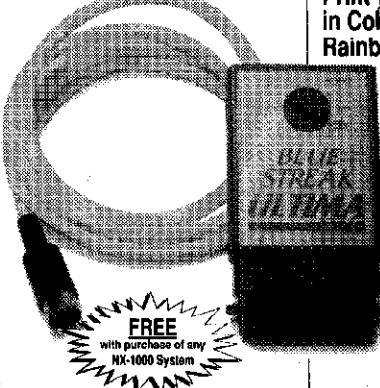
300 • 600 • 1200 • 2400 •  
4800 • 9600 • 19200

Use this "smart" cable to connect a Centronics parallel printer to any version CoCo or use it to improve performance of your current printer. The cables are long-life, high quality shielded cables with moulded plugs for extra durability.

Try a Blue Streak Ultima on your system for 30 days RISK FREE. One year warranty.

## The Blue Streak Ultima

Powered version **\$39.95**  
add \$6.00. **+\$2 Shipping**



**FREE**  
with purchase of any  
NX-1000 System

## Software Support Trio

### Type Selection/Tutorial

Online instructional program that will select 24 special features of your printer or display methods to incorporate them into your programs.

### Super Gemprint

Will transfer Pmode 0, 1, 2, 3, or 4 picture screen to printer 8"x11" hardcopy. Black/white, white/black or grey level shading for color.

### Hi-Res Super Gemprint

Disk software that will transfer a Hscreen 1, 2, 3, or 4 picture screen to printer. Gray level shading for color.

**FREE**  
with purchase of any  
NX-1000 Printer  
**All Three Programs \$19.95**

## Color Super Gemprint

Print your Graphics Screen in Color on your NX-1000 Rainbow!

Use your favorite program to create a pmode or hi-res graphic image, but don't stop there! Run our color graphics software and print a color image using a palette of 81+ colors on your NX-1000 Rainbow from a CoCo 1, 2, or 3. Requires 32k ECB Disk.

**\$19.95**  
**FREE**  
with purchase of any  
NX-1000 Rainbow  
System  
Price, availability and specifications  
subject to change without notice.

**Order Your System Today... Call (513) 885-5999**

**DAYTON ASSOCIATES of W.R. Hall, INC.**

9644 Quailwood Trail • Spring Valley, Ohio 45370

Shipping charges to Canada, P.R., HI, AK, APO, FPO are double. Triple charge to all other countries.

Visa & Master accepted within the continental U.S.  
Ohio residents add 6.5% sales tax  
COD add \$3.00



bet there will be computer companies that will continue to market new versions of the *Space Invader*-type game. *Space Raiders*, a machine language offering from Second City software, is another version of this already well-stocked item.

Moving rows of aliens creep toward and shoot at your hovering ship located at the bottom of the screen. The object is, of course, to use your joystick to avoid their bullets and to shoot them using the joystick button. You gain points as you hit them, and as your score increases you receive reserve ships. If you shoot down all the aliens before they shoot you, a new troop of them appears onscreen.

Speed and simplicity are the game's most satisfying characteristics. Its machine-language speed challenges you to stay cool by tempting you to try to keep up with the darting aliens, which is usually impossible. Once you discover that the trick is to let the aliens come to you, the game is easy, almost relaxing. Yet it can still be addicting. With less challenge, however, *Space Raiders* runs the risk of becoming bland.

Less satisfying are the sound effects. Briefly stated, the zapping lacks punch. Also, there is an extremely wide margin between the volume of the laser guns and the explosion of your ship. You must turn the volume up to hear the laser guns, then when your ship explodes, the corresponding sound proceeds to jar you out of your seat.

*Space Raiders* is your basic cornflake with the added crunch of machine language that makes the program faster than those written in BASIC. Keep this in mind if you want to fill an empty spot on your game shelf. The game runs on all 32K CoCos, but is fastest on the CoCo 3. It requires a joystick and supports CMP, RGB and mono video.

(Second City Software, P.O. Box 2956, Roselle, IL 60172, 708-653-5610; \$16.95)

— Kelly Goff

## Software

CoCo 1 2 & 3

### DMP-PIC Utility — It's Picture Perfect

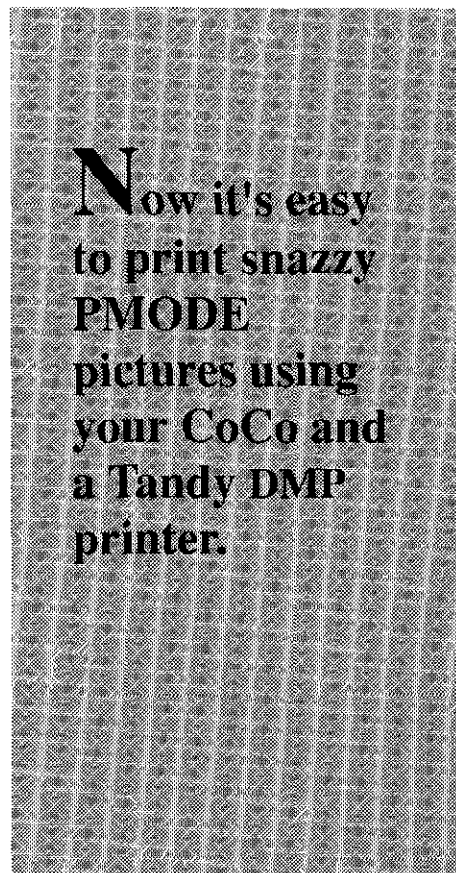
Do you need a way to print out snazzy PMODE pictures on your CoCo? Perhaps what you need is *DMP-PIC* utility from Second City Software.

Upon running this utility, press the fire-button and the main menu appears. The program does include sample pictures, and

their names are listed in a large box in the center of the screen. To load these files, just move the cursor to the desired file and press the fire-button. At this point the picture appears onscreen.

At the top of the main screen are three pull-down menus: Disk, Baud and Goodies. To view a particular menu, place the cursor on the desired menu and it appears.

The Disk menu allows you to choose a different drive from which to load your pictures. You may also look at a new disk in the same drive or exit the program.

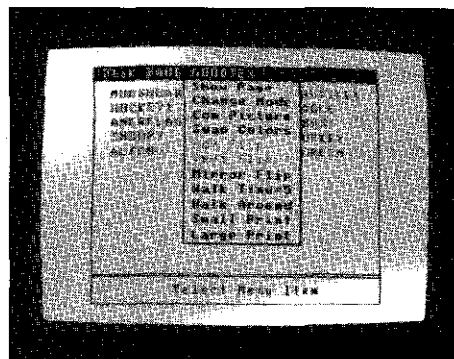


Another exciting feature in this menu is the Compress option. This compresses a file so more pictures can be stored on disk (a feature that is especially handy for two-screen pictures). Rounding things out is the Save Pic option, which allows you to re-save the picture to disk.

The Baud menu is pretty much self-explanatory: You use this menu to select the correct baud rate for your printer (e.g., 600, 1200, 2400, 4800, 9600).

As its name implies, the Goodies option is where all the good stuff is. For instance, you can change or swap the picture's colors; you can flip the picture both horizontally and vertically; and you can also select Mirror Flip — handy for making T-shirt iron-ons. The Small Print option allows you to print a smaller-scaled version of your picture, and Large Print prints a large picture (often more than a page so make

sure the printer is set to the paper's top edge). This menu also features a Walk Around option, which is an electronic guided tour of the pictures on your drive. Moreover, you can adjust the rate at which these



pictures are shown with the Walk Times option (selecting 0 equals about 1 second, whereas 9 equals about 22 seconds of view time).

System requirements include any Color Computer with at least 64K and one disk system. The program includes a very terse, three-page manual, which is as short and sweet as *DMP-PIC* itself. One improvement would be an upgraded version that could be used for HSCREENS. Also, the grammar and spelling are a little loose in both the program and manual. (Come on guys, Happy Thanksgiving to all you turkies?)

Now for a confession: This is the first product I have reviewed for the CoCo (complete with a 30-minute drill on how to load a file). Yes, it's true — I'm green to the gills. So you can believe me when I say *DMP-PIC* is a breeze to operate!

(Second City Software, P.O. Box 72956, Roselle, IL 60172, 708-653-5610; \$19.95)

— Theresa Johnson

## Software

CoCo 2 & 3

### Killer Hawk— Battles Over the Phone Lines

In the deep darkness of outer space you are confronted and challenged by an enemy ship. It is your mission to save the universe.

*Killer Hawk* is a fast, strategy/arcade game designed for two people using modems or for one person against the computer. You can play the game on a CoCo 2 or 3. If you use a CoCo 2, you need to make a small modification to the filename KHAWK/

BAS. Delete Line 700, an ON ERROR GOTO command the CoCo 2 does not have.

To play with a modem, you must have the modems hooked up to the serial port at the back of the CoCo. The program does not support the RS-232 Pak. If you play this way, both you and a friend must have a copy of *Killer Hawk* to play against each other. If you don't have a modem, you can still play against another CoCo using a null modem cable.

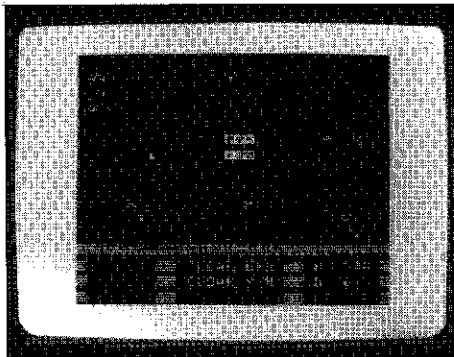
At first it is not clear how to play against the computer or a drone — the last part of the program's manual tells you how to do this. There are three different boot programs to play the game: COMPUTER, DRONE and KHAWK.

- COMPUTER/BAS: allows you to play against the computer.
- DRONE/AS: lets you play against the drone.
- KHAWK/AS: allows you to play against another person using either a modem or null cable. You can run any game you want (however, it would be nice to select the type of game from a menu within the game).

When you run one of the boot programs, you see a great-looking title screen with the name of the program KILLERHAWKS and star ships with asteroids all in graphics. I had to

use a TV for composite colors because there is no RGB video support.

The program shows you a menu of nine types of ships lettered A through J. One nice feature is that the menu displays the shape of each ship next to its name. If you are playing over modems or a null modem



cable, each player can select a different ship. You are then asked if you want to have asteroids and if you want to go first. You are then ready to play the game. If you are playing using Hayes modems, you are connected. If you are using manual modems, you must turn on the carriers of the modems. The purpose of the game is to destroy your enemy's ship before it or asteroids destroy yours.

If you and your opponent are cloaked, you are invisible to each other, but you can see your own ship at all times. You are also able to see the amount of fuel and damage to each ship.

You may only fire at your opponent if you are not cloaked, but then you give away your current position. All control is from the keyboard, using the left, right, up-arrow, BREAK and ENTER keys.

*Killer Hawk* requires a CoCo 2 or 3 with at least one disk drive and a composite monitor for the colors. To use the Play feature against another person you also need a modem, Hayes-compatible or manual, or a null-modem cable.

If you run the directory command, you are greeted by a graphics space ship. This ship has nothing to do with game play, but it gives the disk an even more professional look. I found no bugs in *Killer Hawk*. It's fast and easy to use and well worth the \$8 price tag. I highly recommend it to game lovers, especially those who use a modem.

(B&B Software, 1637 Hanchett, N.W., Grand Rapids, MI 49504, 616-453-1011; \$8)

— John Cleveland, Jr.

Call for package price

## ACCOUNTING SYSTEMS

### SMALL BUSINESS ACCOUNTING

This sales-based accounting package is designed for the non-accountant 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. Includes Sales Entry, transaction driven Accounts Receivable and Accounts Payable, Journal Entry, Payroll Disbursement, and Record Maintenance programs. 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.

**\$79.95**

### INVENTORY CONTROL/SALES ANALYSIS

This module is designed to handle inventory control, with user defined product codes, and produce a detailed analysis of the business' sales and the sales force. One may enter/update inventory data, enter sales, run five sales analysis reports, run five inventory reports, set up product codes, enter/update salesman records, and update the SBAP inventory.

**\$59.95**

### PAYROLL

Designed for maintaining personnel and payroll data for up to 200 hourly and salaried employees with 8 deductions each. Calculates payroll and tax amounts, prints checks and maintains year-to-date totals which can be automatically transferred to the SBA package. 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. Suited for use in all states except Oklahoma and Delaware.

**\$59.95**

### PERSONAL BOOKKEEPING 2000

Handles 45 accounts. Enters cash expenses as easily as checks. Handles 26 expense categories. Menu driven and user friendly.

**\$39.95**

### ACCOUNTS RECEIVABLE

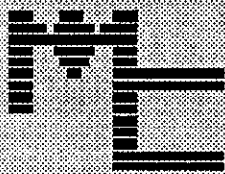
Includes detailed audit trails and history reports for each customer, prepares invoices and monthly statements, mailing labels, aging lists, and an alphabetized customer listing. The user can define net terms for commercial accounts or finance charges for revolving accounts. This package functions as a standalone A/R system or integrates with the Small Business Accounting package.

**\$59.95**

### ACCOUNTS PAYABLE

Designed for the maintenance of vendor and A/P invoice files. The system prints checks, voids checks, cancels checks, deletes cancelled checks, and deletes paid A/P invoices. The user can run a Vendor List, Vendor Status report, Vendor Aged report, and an A/P Check Register. This package can be used either as a standalone A/P system or can be integrated with the Small Business Accounting Package.

**\$59.95**



**MICROTECH  
CONSULTANTS  
INC.**

1906 Jerrold Avenue  
St. Paul, MN 55112

Dealer Inquiries Invited  
Author Submissions accepted  
OS-9 is a trademark of Microsoft



### Ordering Information

Add \$3.00 shipping & handling, MN residents add 6% sales tax.  
Visa, Mastercard, COD (add \$3.50), personal checks.

**(612) 633-6161**

# Received and Certified

The following products have recently been received by THE RAINBOW, examined by our magazine staff and issued the Rainbow Seal of Certification, your assurance that we have seen the product and have ascertained that it is what it purports to be.

**Arkanoid**, a CoCo version of an arcade *Break-out*-type game. A bouncing ball careens off the walls and other solid objects; your job is to deflect the ball back with your Vaus paddle, knocking out bricks to reach the next level. There are more than 20 levels, and players can start play on any level they choose. *Arkanoid* comes on a ROM pack for CoCos 1, 2 and 3, requiring a minimum of 64K and a joystick or mouse. The game supports the CoCo 3 and RGB monitors (color TVs or RGB monitors recommended). *Taito, dist. by Tandy Corporation, 1700 One Tandy Center, Fort Worth, TX 76102; \$34.95. Available in Radio Shack stores nationwide, Cat. No. 26-3043.*

**Mind-Roll**, a 3-D game on a ROM pack in which the player becomes "the Orb of Id, ready to bump, bash, roll and crash through 10 different planes of an insane 3-D puzzle." Players slide around electric seas, bounce off invisible walls and pick up keys and amulets to escape infinite mazes, while avoiding the "dark Void of Freud." For CoCos 2 or 3, requiring 64K; joystick is optional. Supports RGB and TV. *Epyx, dist. by Tandy Corporation, 1700 One Tandy Circle, Fort Worth, TX 76102; \$34.95. Available in Radio Shack stores nationwide, Cat. No. 26-3100.*

**Pistol Grip Deluxe Joystick**, a smooth-tracking analog four-button joystick (two firebuttons on the base, with one thumb button on top of the stick and one trigger button for the index finger). It has molded, aircraft-style finger grips, a suction base, switchable dual-control buttons, x- and y-axis trim controls and a 6-foot cable. It connects to a six-pin DIN analog game port, fitting both Color Computers and the Tandy 1000 family. *Tandy Corporation, 1700 One Tandy Center, Fort Worth, TX 76102; \$29.95. Available in Radio Shack stores nationwide, Cat. No. 26-3123.*

**Rampage**, a CoCo 3 ROM pack game. In this game up to three players can work out their frustrations smashing and trashing a city as George the Big Ape, Lizzie the Lizard or Ralph the Wolf. Players can pick off helicopters and climb walls, punching holes and grabbing people and things as they climb. The monsters need to eat to keep up their energy levels: If your energy gets too low, you can turn into a human, and then your friends can eat you. *Activision, dist. by Tandy Corporation, 1700 One Tandy Center, Fort Worth, TX 76102; \$34.95. Available in*

*Radio Shack stores nationwide, Cat. No. 26-3174.*

**T&D Software's Grafix Disk Package Set 2**, a collection of 10 disks with pictures of celebrities, cartoon characters and classic graphics files. *T&D Subscription Software, 2490 Miles Standish, Holland, MI 49424, (616) 399-9648; \$35.*

**Writest 3.3**, a flexible test-writing program for the CoCo 1, 2 or 3. Generates matching, multiple choice, true-false or long/short tests. *Co-soft, Beech and Broadway, Box 665, New House, NM 88121, (505) 279-6455; \$15 plus \$2 S/H.*

**KJV on Disk #8**, chapters 1 through 29 of the Book of Deuteronomy in the King James version of the Bible, in ASCII files for the CoCo 1, 2 and 3. A word processor or text editor is recommended for viewing the files. *BDS Software, P.O. Box 485, Glenview, IL 60025, (312) 998-1656; \$3.*

**The Arcade Factory**, a one-disk package containing two premade game modules. Play these games or create your own game modules using the editor programs included in this package. For the CoCo 2 or 3. *B&B Software, 1637 Hanchett NW, Grand Rapids, MI 49504, (616) 453-1011; \$8.*

**Barbarian Quest**, a 512K arcade game for the CoCo 3. Requires a disk drive and a one- or two-button joystick. To win, recover the shattered spirit of Princess Leonore and present all the spirit fragments to the Queen. RGB or composite monitor recommended. *SPORTSware, 1251 South Reynolds Road, Suite 414, Toledo, OH 43615, (419) 389-1515; \$34.*

**Screenview 1.0**, a set of machine language subroutines designed to enhance the presentation of graphics material on a CoCo 1, 2 and 3. *Software Crafters, 13 Topaz Terrace, Diamond*

*Vale, Diego Martin, Trinidad, W.I., (809) 637-5412; \$8.95.*

**Superfile III**, a powerful, user-friendly, easy-to-use, multipurpose database. Configures to become a mailing list, checkbook, inventory, recipe, shopping list or just about any kind of database you can think of. *Gimmesoft, P.O. Box 421, Perry Hall, MD 21128, 1(800) 441-GIME; \$29.95 plus \$3 S/H.*

**CHID—Link**, copies files from disk to disk or entire disks including OS-9 disks via a modem. Features include rename, kill, view, chat mode and calendar. *Coless Computer Design, 1917 Madera St. No. 8, Waukesha, WI 53186, (414) 549-0750; \$24.95 plus \$3 S/H.*

**Elite Xfer**, a powerful utility for file transfers between a PC and CoCo. It reads and writes CoCo disks on your PC. Allows modifying and repairing of CoCo disks via a sector-edit utility. Runs on a PC. *Elite Software, Box 11224, Pittsburgh, PA 15238, (412) 795-8492; \$44.50 plus \$3 S/H.*

**Revelation!**, a CoCo 3 software package that allows the use of 225 lines in Hi-Res graphics modes and 28 lines of text. Supports 62 macro keys, high-speed disk access, international characters, and more to make programming easier. *Robert E. Offermann II, 2447 Oak Park Way, Orlando, FL 32822, (407) 282-6272; \$25.*

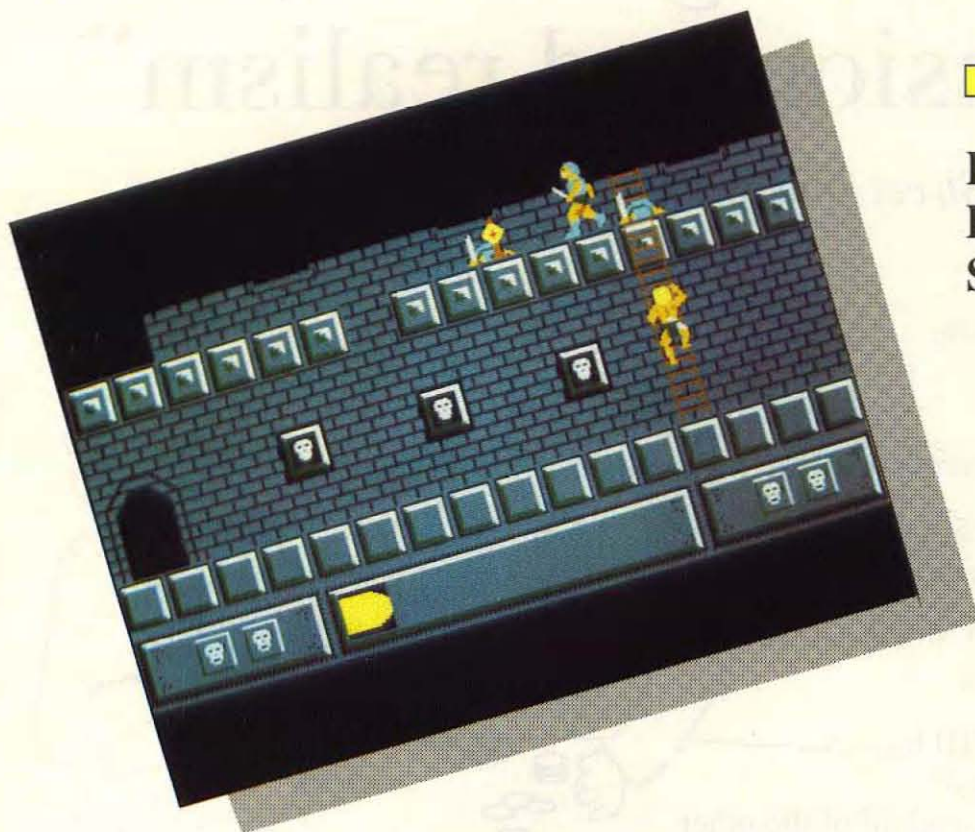
**OS-9 Level II BBS 3.0**, a set of commands and utilities for creating a Bulletin Board System. The package contains a disk with a complete bulletin board setup. The board can be modified to give it a personal touch. *Alpha Software Technologies, 1500 I-10 Service Rd., #61, Slidell, LA 70461, (504) 649-5176; \$29.95 plus \$3 S/H.*

**First product received from this company**

The Seal of Certification is open to all manufacturers of products for the Tandy Color Computer, regardless of whether they advertise in THE RAINBOW.

By awarding a Seal, the magazine certifies the program does exist—that we have examined it and have a sample copy—but this does not constitute any guarantee of satisfaction. As soon as possible, these hardware or software items will be forwarded to THE RAINBOW reviewers for evaluation.





## Software

CoCo 3

## Barbarian Quest— For Serious Soul-Searching

Before the days of the CoCo 3, in the land of Lynn there lived good King Brighton. He quietly ruled his kingdom and was loved by all. He and the Queen had a daughter, Princess Leonore. His good friend and companion, Wizard Lothor, completed his happy kingdom.

All was well until neighboring King Shannon of Arth proposed that his son, Prince Griswold, marry Princess Leonore. However, King Brighton declined because of Griswold's wicked reputation. This humiliated King Shannon, and in his anger he summoned demon spirits to kill King Brighton and possess the soul of Wizard Lothor. This turned Lothor from a kind and loving wizard to one of evil and cruelty.

Lothor tried to become the new King of Lynn and take lovely Princess Leonore as his Queen, but she refused his advances. In his anger Lothor stole her soul and broke it into many pieces, hiding them in various containers he placed throughout the land. He vowed to never restore her soul until he became king and they were married. This action led Queen Brighton to seek someone in the land who could find the lost contain-

ers in order to restore Leonore's spirit. She promised the hand of her daughter to the warrior who could fulfill this dark and dangerous task. Many tried but died in the attempt. In this Adventure you play the character of Hector — and now it is your chance.

*Barbarian Quest* is a Hi-Res graphics

Adventure arcade game written for the CoCo 3 with 512K RAM. It is supplied on a copy-protected 5¼-inch floppy disk and requires a joystick. Although it looked fair on my Amdek composite monitor, it was much better on my Tandy CM-8 RGB color monitor. The machine language game loads easily and features very colorful graphics

### Interview with Paul Olmstead, owner of SPORTSware.

*How long have you been programming?*

Roughly ten years. I've had every model of the CoCo and consider myself to be one of the oldtimers.

*When did you start SPORTSware?*

Actively in 1987. My first program was *Gridiron Strategy*, a computer version of a football game based on a popular board game.

*What is your most successful program?*

*Wargame Designer* has become a big success. I receive orders from as far away as the Marshall Islands, Brazil, Australia and England. I may not be a Donald Trump, but I do have customers around the world.

*Where did you get the idea for Barbarian Quest?*

The idea came from two PC-based games, *Barbarian* and *Sybatour II*.

*Why is it a 512K program?*

Memory limitations. The space required for the graphics, screen-flipping and digitized sound does not allow the program to fit in the 128K machine.

*How long did it take you to write it?*

Approximately three or four months. The program was written in 100-percent assembly language. Forty different graphics screens were created using over 200 icons.

*continued on Page 85*



# “Poker Showdown, a video game of high tension and realism”

—*The Wall Street Journal*, March 15, 1990, page 1

- Play against people worldwide
- Chat while you play
- Amass a fortune in “Computer Chips”
- Straight poker, 5-card-stud, 5-card-draw, 7-card-stud, and Texas hold'em
- Robot players ensure that all tables had an ideal number of participants

Poker not your game? DELPHI has many other games, thousands of CoCo programs to download, and all of the other services you would expect from the world's premier online information service.



As a *RAINBOW* subscriber, you get a **FREE** lifetime DELPHI membership (\$29.95 value) which includes a credit worth one evening hour of usage (\$7.20). If you don't already subscribe to *RAINBOW*, just request a subscription when you sign-up to DELPHI, and, for the \$31 subscription fee, you'll get the same great deal!

With your CoCo and modem:

- Dial 1-800-365-4636
  - At *Username*: type JOINDELPHI
  - At *Password*: type RAINBOW
- (Or, if you do not yet subscribe to *RAINBOW*, type SENDRAINBOW)

## DELPHI™

The World's Premier Online Information Service

800-544-4005 • 617-491-3393

and excellent sound effects. An easy-to-understand instruction booklet (four pages) explains all you need to know about the game.

You begin your quest just outside the castle and either walk or run across the various screens in your quest for pieces of Leonore's soul. While you can play this game with a single-button joystick, it's nearly impossible to finish. In effect, a single-button joystick uses the keyboard's space bar as the second button — this is extremely difficult to do. The action is fast and furious; therefore, a two-button joystick is really a necessity if you want to be able to fight, jump and dodge the evil warriors you confront along the way.

Depending on where you have the joystick pointed, you can stand still, walk, run, duck, climb or jump. You can also punch, stab and acquire objects. The digitized sounds are entertaining when you are fighting the evil warriors or falling into pits of fire.

*Barbarian Quest* includes a pause feature that I used frequently while trying to catch my breath and settle my nerves. You will be confronted with pits of fire, ladders, doors, rooms, dungeons and all sorts of other hazards during the course of play. You can acquire a total of 31 objects, 15 of

*What was the most difficult part of writing *Barbarian Quest*?*

Manipulating the memory and keeping track of where the many routines were in memory while developing new code.

*How did you test your program?*

The children in the neighborhood are always eager to try new games. Give an eight-year-old a joystick and he or she will try everything imaginable.

*Why do you write programs for the CoCo?*

Because of the Color Computer's low cost

and also because I'm familiar with Radio Shack's products.

*What are your future plans?*

I'm planning a sequel entitled *Barbarian Quest: The Revenge*. It will have twice as many screens as its predecessor and will have more elaborate graphics. I also plan to enhance *War Game Designer* by increasing the number of available units to 100 per army, and by enlarging the battlefield to a width and height of three screens. It will also have digitized sounds.

which contain fragments of Leonore's soul (all 15 must be acquired to win). A bar at the bottom of the screen changes color as you successfully acquire these objects. When it has completely changed color, you can go back to the castle to restore Leonore's soul and claim her hand. Be forewarned that many of the objects result in certain death or injury when you try to acquire them. You need practice and patience to find out which ones they are, and I can assure you that you'll spend countless hours of fun trying to find out which objects are harmful and which ones you need.

There are four levels of play: outside the castle, inside the castle and two dungeon

levels. You'll need to check the walls for hidden passages to enter the dungeons.

*Barbarian Quest* is a nice piece of software and my only complaint is that it's hard to play with a standard one-button joystick. Younger folks may have no trouble at all, however. I especially like the sound effects because the programmer did a nice job in capturing sounds that are realistic as well as humorous.

(SPORTsware, 1251 South Reynolds Rd., Suite 414, Toledo, OH 43615, 419-389-1515; \$29)

—Robert Gray

REVELATION!

**NEW FOR OS-9 LEVEL II**

The labeling package OS-9 users have been waiting for. You can edit a label up to 5.5" X 6".

You can print: disk labels, cassette labels, rolodex cards, standard address labels, VCR labels, invitations, letter heads, and envelopes complete with return address.

You can use any printer currently configured to your system. The same goes for your disk drives.

Includes a complete database with files of any size. Any field can be merged into the label.

10 programmable printer fonts.

You can have disk files of any size.

**NOW AT AN INTRODUCTORY PRICE OF \$14.95**

Send Check or Money Order to:

Constellation Computer Consultants  
P.O. Box 423  
Sanford, Me  
04073

Main residents add 5% sales tax.  
Add \$2.00 S/H No COD's.

# They're Moving on Without You!

That's right! Thousands of CoCo III Programmers and Users are moving ahead without you. Why? Because they're discovering "Revelation!" a new software package from Robert Offermann.

**With "Revelation!" here's what you get**

225 lines of Hi-res graphics  
 28 lines of text  
 Onscreen status display  
 High speed disk access  
 62 Macro keys  
 Keyboard entry of international characters  
 Control characters

**Revelation! is available for \$25.00 plus \$1.00 shipping and handling. Send check or money order to:**

Robert Offermann  
2447 Oak Park Way  
Orlando, FL 32822

**Cashiers Cheques and Money Orders will result in the promptest delivery**

All in 128k. Not one byte of user memory is lost. Don't settle for 192 or 200 lines of resolution! And don't settle for anything less than "Revelation!"

Don't be left Behind!



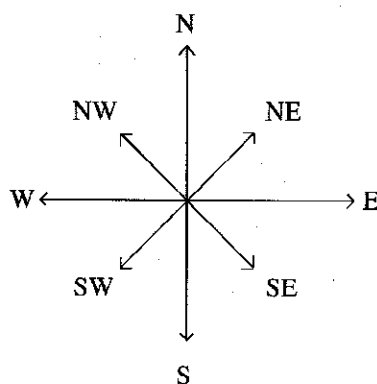
# Search the World Over

by Steve Blyn  
Contributing Editor

I prefer to classify Social Studies in the field of necessary life survival skills. Another of these skills is learning to use the directional on a map because we encounter maps throughout our lives. Young children usually start learning how to read maps in the classroom by discussing school and neighborhood maps. Middle-grade students advance to country and world maps. Adults often find themselves studying detailed road maps.

The normal convention is to use the top of a map as north. South is at the bottom of the map, and east and west are centered between them to the right and left, respectively. There are also the in-between directions: northwest, northeast, southwest and southeast.

The directional on most maps appears similar to the one shown below:



*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 owns Computer Island and lives in Staten Island, New York.*

There are many ways to practice using this type of compass. One way is to study this magazine page and determine words in each part of the page in relation to the directional. For example, the title of this article is probably in the Northern portion of this page. Another method is to make signs to label the parts of a room with the correct directional. Students can then practice walking to and from the various locations. Still another method is to use a computer program.

Our program presents a map — of no real place — for demonstration purposes. The screen shows six points connected by lines and a compass. The student's task is to determine which direction to travel when going from one computer-selected point to another.

This type of program works best using high-resolution graphics because it includes everything needed on the screen. Lines 40

through 200 contain strings created by Joseph Kolar to draw the letters used in the program.

Lines 210 through 300 draw the map. Line 390 selects a random problem from among eight programmed examples to display on the screen. The student then chooses the letter preceding the correct answer to the question. Pressing the ENTER key produces another example.

The student may proceed with this program as long as he wants. There is no scorecard included since most students will be able to completely master the concept. The program may be ended by entering X in response to any question.

Should you feel adventurous, here are some ideas for program modifications: You may easily alter the map by adding a few more points and lines, and you may also add to or completely change the questions we used.

16K Extended

140	.....	241
230	.....	90
280	.....	91
350	.....	31
410	.....	176
480	.....	223
550	.....	5
END	.....	133

D.STATEN ISLAND,NY,1990"  
30 CLEAR 2000:X=RND(-TIMER)  
40 A\$="BEHUNU2R4NU2DGL2BGBL6"  
50 B\$="BEHENR3HER3D4L3BGBL6"  
60 C\$="BU4ER2FD2GL2HBG2BL4"  
70 D\$="BEHU2ER3D4L3BGBL6"  
80 E\$="BER3U2NL2U2L4BG5BL2"  
90 F\$="BUR4U2NL3U2BG5BL5"  
100 G\$="BUR4U3HL2GDRBG3BL4"  
110 H\$="BUU2NU2R4NU2D2BGBL9"  
120 I\$="BR2BUU4BU2BD7BL8"  
130 N\$="BUU4F4U4BG5BL5"  
140 O\$="BEHU2ER2FD2GL2BGBL6"  
150 R\$="BEHERNH2R2NU2D2L3BGBL6"  
160 S\$="BU2FR2EHL2HER2FBG4BL6"  
170 T\$="BUR2NU4R2BDBL10"  
180 W\$="BUU4F2E2D4BGBL9"

**The Listing: MAP**

```

10 REM"USING MAP DIRECTIONALS"
20 REM"STEVE BLYN,COMPUTER ISLAN

```

```

190 X$="BUE2NH2NE2F2BGBL9"
200 SP$="BE4BUBG5BL5"
210 PMODE4,1:PCLS5:SCREEN1,1
220 COLOR0:LINE(50,90)-(100,90),
PSET:LINE-(50,50),PSET:LINE-(180
,50),PSET:LINE-(115,10),PSET:LIN
E-(115,70),PSET:LINE(115,10)-(50
,50),PSET
230 DRAW"C8A2S4BM53,95"+A$:DRAW"
BM100,95"+B$
240 DRAW"BM45,47"+C$:DRAW"BM190,
47"+D$
250 DRAW"BM107,6"+E$:DRAW"BM124,
70"+F$
260 CIRCLE(50,90),2,0:CIRCLE(100
,90),2:CIRCLE(115,10),2:CIRCLE(5
0,50),2,0:CIRCLE(115,70),2:CIRCL
E(180,50),2
270 LINE(0,108)-(255,110),PSET,B
F:LINE(0,126)-(255,128),PSET,BF
280 DRAW"BM210,17"+W$+SP$+SP$+SP
$+SP$+SP$+E$
290 DRAW"BM227,2"+N$:DRAW"BM227,
32"+S$
300 LINE(225,10)-(225,30),PSET:L
INE(212,20)-(238,20),PSET
310 DRAW"S4BM40,115"+W$+H$+I$+C$
+H$
320 DRAW +SP$+SP$+D$+I$+R$+E$+C$
330 DRAW +T$+I$+O$+N$+SP$+SP$+I$
+S$
340 DRAW"S8BM10,136"+A$+SP$+N$:D
RAW"BM70,136"+B$+SP$+S$
350 DRAW"BM130,136"+C$+SP$+E$:DR
AW"BM190,136"+D$+SP$+W$
360 DRAW"BM10,156"+E$+SP$+N$+E$:
DRAW"BM70,156"+F$+SP$+N$+W$
370 DRAW"BM130,156"+G$+SP$+S$+E$
:DRAW"BM190,156"+H$+SP$+S$+W$
380 FOR T=15 TO 210 STEP 60:CIRC
LE(T,145),2:CIRCLE(T,165),2:NEXT
T
390 R=RND(8)
400 IF R=1 THEN A1$=F$:A2$=E$:A3
$="A"
410 IF R=2 THEN A1$=E$:A2$=C$:A3
$="H"
420 IF R=3 THEN A1$=A$:A2$=0$:A3
$="C"
430 IF R=4 THEN A1$=C$:A2$=B$:A3
$="G"
440 IF R=5 THEN A1$=E$:A2$=F$:A3
$="B"
450 IF R=6 THEN A1$=D$:A2$=C$:A3

```

```

$="D"
460 IF R=7 THEN A1$=B$:A2$=C$:A3
$="F"
470 IF R=8 THEN A1$=C$:A2$=E$:A3
$="E"
480 DRAW"C8S4BM194,115"+T$+O$
490 DRAW"S8BM180,112"+A1$:DRAW"B
M220,112"+A2$
500 ENS=INKEY$
510 IF ENS="A" OR ENS="B" OR ENS
="C" OR ENS="D" OR ENS="E" OR EN
$="F" OR ENS="G" OR ENS="H" OR E
NS="X" THEN 530
520 IF ENS="" THEN 500
530 IF ENS="X" THEN CLS:END
540 IF ENS=A3$ THEN PLAY"04L25GF
ECCC"
550 IF ENS<> A3$ THEN PLAY"01L4B
-B-"
560 AN$=INKEY$
570 IF AN$=CHR$(13) THEN 580 ELS
E 560
580 COLOR5:LINE(170,112)-(185,12
4),PSET,BF:LINE(210,112)-(225,12
4),PSET,BF:GOTO 390
590 GOTO 590

```

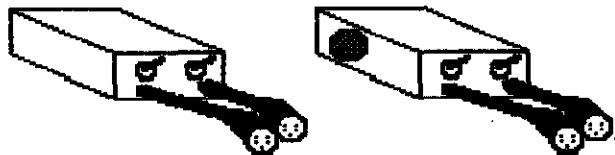
**COMPUTER ISLAND EDUCATIONAL SOFTWARE  
PROGRAMS ON SALE THIS MONTH**

**\$15 each-tape or disk**

First Games (for young children)  
 Arrow Games (for young children)  
 Beyond Words - Grade 3-5  
 Beyond Words - Grade 6-8  
 Beyond Words - Grade 9-12  
 Vocabulary Builders - Grade 3-5  
 Vocabulary Builders - Grade 6-8  
 Vocabulary Builders - Grade 9-12  
 Cocowheel of Fortune-For Coco 2  
 Cocowheel of Fortune- for the  
 Coco 3 with RGB OR TV  
 Math Invaders  
 Number Sequences  
 Signed Numbers

**COMPUTER ISLAND**  
 227 Hampton Green  
 Staten Island, NY 10312  
 (718) 948-2748

Add \$1.00 postage, NY res. add tax  
 VISA, MC - Send for free catalog



**ORIGINAL DUAL HI-RES Colorware Hi-Res**  
 Tandy Hi + Low Res, cassette jack.

**ECONOMY HI & LO-RES Tandy Hi + Lo-Res**

**DUAL HI-RES \$40 HI & LO-RES \$27**

HAWKSoft keyboard extend cable \$25  
 DOMINATION "risk"-like war game \$18  
 MYDOS the extended DOS for you! \$15

HAWKSoft P.O. Box 7112 Elgin, IL 60121  
 (708) 742-3084 eves and ends  
 SASE for more info and price list.  
 S/H ( US & CAN ) always included  
 M.O. Check C.O.D. (no credit cards yet)  
 1 year warranty on ALL hardware !!

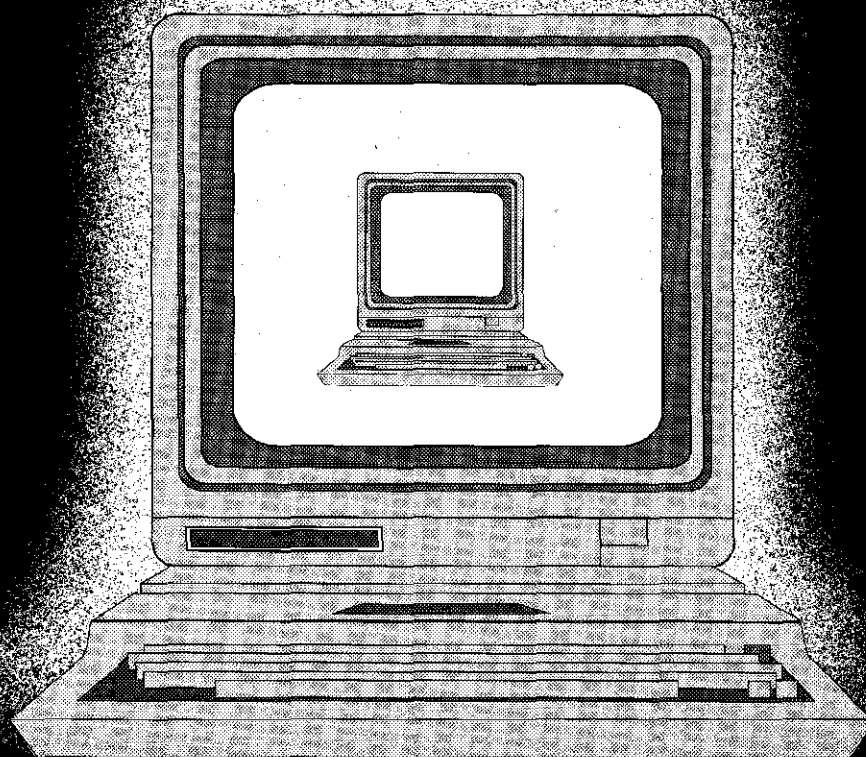
# In the Beginning . . .

Your CoCo is the longest-lived, most innovative and, surely, best-loved Computer ever to hit the market. In constant use by millions of us for a decade now, its story is both an interesting and fascinating one. And now you can relive it all — all the fun, the people, the frustrations — in *CoCo: An Affectionate History of the Tandy Color Computer*.

This anecdotal history of the CoCo, by well known authors Dale and Esther Puckett, tells the stories of those people at Tandy who brought us the Color Computer; the programmers who've put the 6809 through its paces; the hardware gurus with their electronic marvels; and the many vendors who have made these innovations available to us. You'll also read about people like you who have supported

the Color Computer with countless hours at the keyboard and by attending CoCo functions. You never know — you might even read about yourself. And this says nothing of the many pictures you'll see.

*CoCo: An Affectionate History* is scheduled for release early in the fall of 1990. Prior to publication it will be available in an attractive limited-edition hardcover version for only \$45. A softcover version will also be available for \$15.95. But if you order now, you can reserve copies of the softcover version for a pre-publication price of just \$13.50 apiece. Reserve a copy of *CoCo: An Affectionate History* for yourself. Or order several for those you care about — and take a walk down Memory Lane together.



**Yes!** I want to reserve: \_\_\_\_\_ hardcover copies of *CoCo: An Affectionate History* for \$45.00 apiece.  
\_\_\_\_\_ softcover copies of *CoCo: An Affectionate History* for \$13.50 (plus \$2.50 S/H) apiece.

Name \_\_\_\_\_

Address \_\_\_\_\_

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

Signature \_\_\_\_\_

My check in the amount of \_\_\_\_\_ is enclosed.

Or, bill to: ☐ VISA ☐ MasterCard ☐ American Express

Account Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

Mail to: CoCo History, The Falsoft Building, P.O. Box 385, Prospect, KY 40059. For credit card orders call (800) 847-0309, 8 a.m. to 5 p.m. EST.



# Buy One Sensational Duo And Get This One Free



**Authentic Photo of Lou Gehrig and Babe Ruth Free with Max-10 and CoCo Max III.**  
(Order now, limited supply available)

## System Requirements

Max-10 and CoCo Max III Require: any CoCo 3; 1 or more disk drives; joystick or mouse; Radio Shack Hi Resolution joystick interface; a video or RGB monitor or a TV.

## Max-10 ...~~\$79.95~~ \$49.95

Max-10 is the ultimate word processor. It allows on screen mixing of graphics and text, large headlines, multiple columns and full page preview with graphics. *Rainbow* stated "Max-10 takes a back seat to none". Without a doubt, Max-10 will add excitement to your word processing, and that's no small task!

**PRINTERS SUPPORTED:** EPSON FX, MX, RX, LX & COMPATIBLES; DMP 105, 106, 130; CGP220 (B&W); OKI 182, 92, 192; STAR NX-10, NX-1000.

## Max-10 Add-ons

- **Max-10 Fonts.** 36 super fonts on 2 disks.....~~\$29.95~~ \$14.95  
Max-10 and CoCo Max Fonts aren't interchangeable.
- **Spell Checker** 35,000 word dictionary for online spell checking and dictionary lookup. Perfect seamless integration with Max-10.....~~\$29.95~~ \$14.95

## CoCo Max III ...~~\$79.95~~ \$59.95

Whether you doodle for fun or do graphics for a living, **CoCo Max** will amaze you. It's a promise. *Rainbow* called it "the ultimate program." Its major features include: Huge picture area (2 full hires 320x192 screens). Large editing window. Zoom mode for detail work. 28 point and click drawing tools. Shrink and stretch. **Rotation** at any angle (1.5° steps). 512K memory support (all features work with 128K too). Undo (Oops) feature to fix mistakes. **Animation.** Special effects. Color sequencing (8 colors, variable speed). 13 fonts (more available). Each font has 8 sizes and 5 styles for thousands of possible combinations. Translate program to convert most types of pictures. **CoCo Show** "slide show" program. Miniload program to help use pictures with your software. Color editing of patterns. Prints in single or double size. Select 16 of 64 available colors, all 64 colors are shown at once for easy selection. Pull-down menus. **40 paint brush** shapes. 2 color lettering. Spray can. Amazing "flowbrush". RGB and composite monitor support. Colors print in 5 shades of gray.

**PRINTERS SUPPORTED:** EPSON RX, FX, MX, LX AND COMPATIBLES; STAR/GEMINI NX-10, NX-1000; DMP100, 105, 106, 110, 120, 130, 200; OKI 82A, 182, 192; CGP-220(B&W)  
**Color Drivers.** Next column.

## CoCo Max 3 and Max 10

Get both incredible programs at a stunning price.....~~\$179.95~~ \$79.95

## CoCo Max 3 Addons

- **Max Fonts set A, Max Fonts set B.** Each set has two disks and over 40 fonts.....~~\$29.95~~ \$14.95
- Both sets (95 fonts) .....~~\$49.95~~
- **Max Edit** Create new fonts or edit existing ones.....~~\$19.95~~ \$14.95
- **Color Printer drivers** NX-1000 *Rainbow*, CGP-220, and Okimate 20.....~~\$19.95~~ \$14.95

## A-Bus

Data Acquisition and Control boards. Call Alpha Products at number below for our 1990 catalog with all new products incl. the Cobra robot arm for only \$499.

## Call or Write Now

(203) 656-1806  
Weekdays 9-5 Eastern Time

242 West Avenue,  
Darien CT 06820

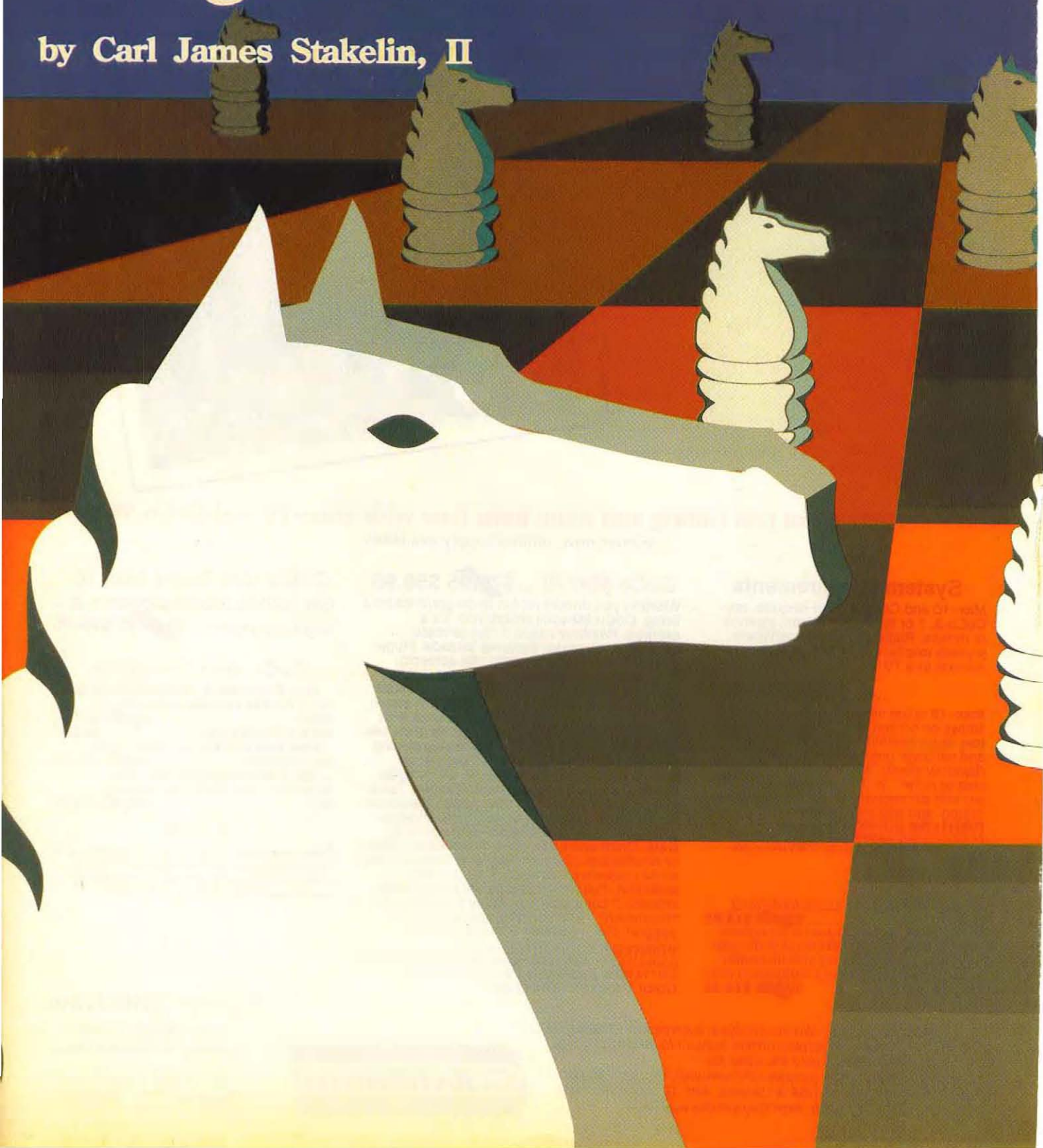
Ordering Information: We accept Visa, Mastercard, Checks, M.O. C.O.D. is \$4 extra. Purchase orders subject to credit approval. Connecticut residents add 8% sales tax. Shipping: \$4 per order (usually UPS ground). Canada: \$6 per order (Airmail). Outside USA & Canada: Add 10% of order total. UPS 2nd Day Air: \$6 extra. Next Day service available.

**COLORWARE**

*Doin' the White/Black Knight Shuffle*

# Knight's Errant

by Carl James Stakelin, II





CoCo 3 users, are you ready for a unique challenge in the way of brain games? Well if you are, *Knight's Errant* is for you. The object of the game is to move all your white knights (such as in the game of chess) to where all the black knights are, then move all the black knights to where the white ones are (with the fewest number of moves of course). Shew! That's a finger full.

*Carl James Stakelin II enjoys computer programming, writing, reading and synthesizing music. He may be contacted at 103 Old Lair Road, Cynthiana, KY 41031.*

Type in, save and then run the program. First you are prompted as to whether or not you want the speed-up poke in effect. After answering, a game board appears with a 5-by-5 grid consisting of 24 knights; moreover, there is only one empty square in the center of the board. Use the arrow keys to move the cursor to the piece you want to move, then press M. Then, moving in the shape of a three-block (L), put the piece into the empty square, and the computer automatically places it. For example, the knight can move up two squares on the board, then left one square, at which point the move is finished. The knight can also jump over any piece it needs to make the

move. With a little experimenting you'll pick this concept up quickly. You cannot make an illegal move, so most of you short-cutters will really be bummed.

On the right side of the screen notice the word Score and a number below it. This is the number of moves you have made in the course of your solution. When finished, you will receive your final score and just rewards. It is possible to score a 55 (which is decent), but it is -- nearly -- impossible to solve it in 45 moves or less.

Good luck with *Knight's Errant*. It is short, easy to play, and the graphics aren't too bad. Give it a try and have fun with it.

## CoCo 3

✓	30	.....	64
	90	.....	233
	120	.....	39
	210	.....	19
	280	.....	43
	320	.....	203
	390	.....	143
	460	.....	194
	480	.....	242
	END	.....	58

### The Listing: KNIGHT

```
0 *COPYRIGHT 1990. FALSOFT INC.
10 CLS:HBUFF1,1296:HBUFF2,1296:H
BUFF3,1296:HBUFF4,1296:DIMA$(16)
,V(5,5),W(5,5):INPUT"INITIALIZE
SPEED-UP POKE? (Y/N)":I$:I$=LEFT
$(I$,1):IFI$="Y"THENPOKE65497,0
20 HSCREEN2:PALETTE0,32:PALETTE1
,0:PALETTE2,63:PALETTE3,16:FORX=
1T02:HCOLORY,0:HDRAW"BM14,44R30U
2L30ND2RUR2NR24UR3URURUR2UR3R
E4M+1,-3U3BM-8,+9M-2,-1M-5,+2GL2
HUR2M+4,-1BL6BD1HLU2M+9,-6M+1,-2
E2R2M+2,-1R2LUM+2,-3D2ERD2M-1,+2
D2BH2U"
30 HDRAW"BM44,42H4M-1,-4U2M+1,+2
NUI4M-2,-4U8M-2,-4H2BU2NL2M+3,+1
F3D2":IFY=1THENHPRINT(34,34),2,1
ELSEHPRINT(34,34),1,2
40 IFY=1THENC=2:D=3ELSEC=1:D=2
50 HCOLORC,0:HLINE(15,43)-(43,43)
,PSET:RESTORE
60 FORX=1T050:READA,B:HSET(A,B,D)
,NEXT
70 HGET(10,10)-(46,46),Y
80 HCLS0:NEXTY:HCOLOR2:HGET(100,
100)-(136,136),3
90 FORX=1T025:READA,B,C:HPUT(A,B
)-(A+36,B+36),C:NEXT:HCOLOR2:HLI
NE(40,5)-(220,185),PSET,B:FORX=4
0T0220STEP36:HLINE(X,5)-(X,185),
PSET:NEXT:FORX=5T0185STEP36:HLIN
```

```
E(40,X)-(220,X),PSET:NEXT
100 HPRINT(30,1),"KNIGHT'S":HPRI
NT(31,3),"ERRANT":HPRINT(30,5),"
PRESS (M)":HPRINT(30,6),"TO MOVE
":HPRINT(30,7),"PIECES.":HPRINT(
30,12),"SCORE":HPRINT(32,13),S
110 X=3:Y=3:FORZ=1T016:READA$(Z)
:NEXT:Z=0:FORA=1T05:FORB=1T05:RE
ADC:W(A,B)=C:NEXTB,A:A=0:B=0:C=0
120 GOSUB410:GOSUB460
130 I$=INKEY$
140 IFI$=CHR$(8)THENX=X-1:GOSUB4
10:GOTO120
150 IFI$=CHR$(9)THENX=X+1:GOSUB4
10:GOTO120
160 IFI$=CHR$(10)THENY=Y+1:GOSUB
410:GOTO120
170 IFI$=CHR$(94)THENY=Y-1:GOSUB
410:GOTO120
180 IFI$="M"THEN200
190 GOTO120
200 Q=0:U$(1)="L":U$(2)="R":U$(3)
="D":U$(4)="U":A=X:B=Y
210 Q=Q+1:IFQ=4THEN280
220 I$=INKEY$:O=X:L=Y:X=A:Y=B:GO
SUB350:GOSUB460:X=O:Y=L
230 IFI$=CHR$(8)THENA=A-1:M=1:GO
SUB350:GOSUB340:GOTO210
240 IFI$=CHR$(9)THENA=A+1:M=2:GO
SUB350:GOSUB340:GOTO210
250 IFI$=CHR$(10)THENB=B+1:M=3:G
OSUB350:GOSUB340:GOTO210
260 IFI$=CHR$(94)THENB=B-1:M=4:G
OSUB350:GOSUB340:GOTO210
270 GOTO220
280 GOSUB400:FORZ=1T016:IFM$=A$(
Z)THEN290ELSENEXT:SOUND1,1:Z=0:Q
=0:M$="":GOTO120
290 HGET((X-1)*36+40,(Y-1)*36+5)
-(X*36+40,Y*36+5),4:HPUT((X-1)*3
6+40,(Y-1)*36+5)-(X*36+40,Y*36+5)
,3:HLINE((X-1)*36+40,(Y-1)*36+5)
-(X*36+40,Y*36+5),PSET,B:HPUT((
A-1)*36+40,(B-1)*36+5)-(A*36+40,
B*36+5),4:Q=0:Z=0:M$="
300 HCOLOR0:HPRINT(32,13),S:S=S+
1:HCOLOR2:HPRINT(32,13),S
310 V(A,B)=HPOINT((A-1)*36+53,(B
-1)*36+18):V(X,Y)=3:X=A:Y=B
320 FORA=1T05:FORB=1T05:IFV(A,B)
```

```
-W(A,B) THENNEXTB,A ELSEA=0:B=0:
GOTO120
330 FORX=1T050:PALETTE 0,RND(63)
:NEXT:PALETTE0,16:HCLS:HPRINT(10
,10),"CONGRATULATIONS!":HPRINT(1
0,12),"YOUR SCORE IS:"+STR$(S):H
PRINT(10,15),"PRESS <ENTER> TO E
ND":LINEINPUTO$:HSCREEN0:CLS:END
340 M$=M$+U$(M):RETURN
350 IFA=<1THENA=1
360 IFA=>5THENA=5
370 IFB=<1THENB=1
380 IFB=>5THENB=5
390 RETURN
400 IFHPOINT((A-1)*36+60,(B-1)*3
6+25)<>0THENZ=0:Q=0:M$="":RETURN
ELSERETURN
410 IFX=<1THENX=1
420 IFX=>5THENX=5
430 IFY=<1THENY=1
440 IFY=>5THENY=5
450 RETURN
460 HGET((X-1)*36+40,(Y-1)*36+5)
-(X*36+40,Y*36+5),4:HPUT((X-1)*3
6+40,(Y-1)*36+5)-(X*36+40,Y*36+5)
,3:HPUT((X-1)*36+40,(Y-1)*36+5)
-(X*36+40,Y*36+5),4:RETURN
470 DATA 27,30,27,32,26,34,25,35
,23,36,23,38,21,39,29,29,31,2
8,33,27,34,25,35,25,37,23,39,31,
28,31,30,30,32,30,34,28,36,26,30
,26,18,25,18,26,19,24,18,24,19,1
8,24,17,24,17,26,14,26,23,21,24,
20,26,20,16,26,30,38,30,36,30,28
,30,28,29,32,24,32,30,39
480 DATA 32,26,32,28,32,29,32,32
,32,36,33,39,30,39,28,39,26,39,2
4,39
490 DATA 40,5,2,76,5,1,112,5,1,1
48,5,1,184,5,1,40,41,2,76,41,1,1
12,41,1,148,41,1,184,41,1,40,77,
2,76,77,2,148,77,1,184,77,1,40,1
13,2,76,113,2,112,113,2,148,113,
2,184,113,1,40,149,2,76,149,2,11
2,149,2,148,149,2,184,149,1,112,
77,3
500 DATA RDD,LDD,UUL,UUR,DRR,URR
,LLU,LLD,DDL,DDR,RUU,LUU,RRU,RRD
,UUL,DLL,2,2,2,2,2,1,1,2,2,2,1,1
,3,2,2,1,1,1,2,2,1,1,1,1,1
```



# Debugging THE RAINBOW

**W**elcome to the “new look” for THE RAINBOW. I am sure you have noticed the new binding we have chosen for the magazine. Consider it another step in the evolution of a publication designed to serve.

Many readers have reported that THE RAINBOW is hard to set down. For some, this is a result of the enjoyment they get from reading the magazine. For others, though, it is a reflection of the way THE RAINBOW is put together — physically. The flat binding traditionally used in printing THE RAINBOW makes it difficult to lay the magazine flat. Usually the pages bow up, making reading somewhat of a task and entering listings a downright bummer. Even worse, after several sessions of opening and closing the magazine to type in a long listing, the binding weakens and sometimes pages fall out and are lost. Considering the voracious reading habits of RAINBOW readers, we decided it was time to find a solution.

The flat binding on magazines is called *perfect binding*. During RAINBOW's production, the press prints eight pages of text on each side of two large sheets of paper. The two sheets are then put together, folded and cut on three edges, making a 32-page form or *signature* (I've talked about this before). The printer stacks all the signatures one on top of the other to construct the magazine. Finally, the fourth (binding) edge is glued and a cover is folded around it. Voila! A perfect-bound magazine. Obviously, “perfect” in this case applies to how pretty it looks, *not* how well it holds up.

To solve these problems, we decided to switch THE RAINBOW to what is called a *saddle-stitch* binding. In this process, the printer cuts the 32-page forms differently. Then the signatures are folded and stacked in much the same way as you put a saddle on a horse. Finally, staples are used to hold the forms together. It doesn't look as pretty, but I doubt many of you read THE RAINBOW for its binding, eh?

The saddle-stitch process results in a much more durable binding that allows you to easily lay the magazine down flat without the hair-pulling experience of losing pages. As time goes on I'm sure we'll recognize other benefits as well.

Another important change, though not as noticeable at first, is our decision to eliminate gray *screens* from listings in the magazine. A screen is the darker background behind some text and listings. From a publishing standpoint screens are important, as they draw the reader's eye to significant information. The combination of the large dot pattern used by our electronic publishing system and the small size used for three-column listings, however, often results in fairly illegible listings. Poof! Consider them (and the associated eye-strain) gone.

Of course, we will still use screens on important text items. And, because readers report certain *colored* screens actually make reading listings easier, we will occasionally use them. But you won't have to work so hard to distinguish a comma from a period because the gray screen gets in the way.

\* \* \* \* \*

A reader called recently to find out where he could buy *Disk EDTASM+*. Helping him reminded me of how important it is to get the word out about Radio Shack's Express Order Software (EOS) system. We get a lot of calls from readers looking for certain pieces of software Radio Shack stopped selling long ago. All discontinued Color Computer software sold in the past by Radio Shack is still available at its closeout price. To order discontinued Radio Shack CoCo software, just call (800) 321-3133. You can also order certain packages sold by other vendors through EOS. This is one resource the CoCo Community shouldn't overlook.

— Cray Augsburg



# OUR LATEST 30 ISSUES

**ISSUE #63, SEP. 1987**  
GENEOLOGIST HELPER  
SMART COPY  
MAINTENANCE  
COCO3 - COCO2 HELP  
DIRECTORY PICTURE  
SUBSTANTIAL ATTACK  
SAVE THE MAIDEN  
CAVIATOR  
ELECTRONICS 6  
MONKEY SHINE

**ISSUE #64, OCT. 1987**  
GARDEN PLANTS  
FORT KNOX  
ELECTRON FORMULAS  
SNAKE IN THE GRASS  
CYCLE JUMP  
GEOMETRY  
WIZARD  
GAME OF LIFE  
ELECTRONICS 7  
FLIGHT SIMULATOR

**ISSUE #65, NOV. 1987**  
TAXMAN  
DAISY DOT  
CHILD STONE ADVENT.  
SIR EGGBERT  
CROWN QUEST  
GYM KHANA  
COCO 3 DRAWER  
FOOTBALL  
ELECTRONICS 8  
CHOP

**ISSUE #66, DEC. 1987**  
ONE ROOM ADVENTURE  
OS9 TUTORIAL  
RIVER CAPTAIN  
SOUNDS  
BETTING POOL  
ADVANCE  
MATH TABLES  
ELECTRONICS 9  
LOWER TO UPPER  
NOIDS

**ISSUE #67, JAN. 1988**  
MEDIA MASTER  
SAVE THE EARTH  
WEIGHTS & MEASURES  
LOW RES GRAPHICS  
COAST TO COAST  
BACCARAT  
BATTLE SHIP  
ELECTRONICS 10  
TAPE CONVENIENCE  
DUEL

**ISSUE #68, FEB. 1988**  
COINFILE  
WORD COUNTER  
SQUIRREL ADVENTURE  
AREA CODES  
DRAW POKER  
TURTLE RACES  
ELECTRONICS 11  
MULTI-SCREEN  
CANON PRINT  
COCO TENNIS

**ISSUE #69, MAR. 1988**  
POLICE CADET  
STAMP COLLECTION  
BARRACKS ADVENTURE  
CITY/TIME  
HI-LO/CRAPS  
OLYMPICS  
HI-RES CHESS  
ELECTRONICS 12  
DOUBLE EDITOR  
DOUBLE BREAKOUT

**ISSUE #70, APR. 1988**  
BLOTTO DICE  
SUPER COMM  
GENESIS ADVENTURE  
PLANETS  
PHKWAR  
SIGN LANGUAGE  
ARX SHOOTOUT  
ELECTRONICS 13  
MAGIC KEY  
SNAP PRINT

**ISSUE #71, MAY 1988**  
SUPER LOTTO  
RODOL ADVENTURE  
MAZE  
YAHTZEE3  
PHASER  
SHAPES/PLATES  
STAR WARS  
ELECTRONICS 14  
PRINTER CONTROL  
MAZE 2

**ISSUE #72, JUNE 1988**  
MARKET WATCHER  
3 STOOGES  
HOSTAGE ADVENTURE  
PROGRAM TRIO  
GLADIATOR  
U.S. & CANADA QUIZ  
JEOPARDY  
ELECTRONICS 15  
COCO 3 PRINT  
CTTY

**ISSUE #73, JULY 1988**  
FOREIGN OBJECTS  
CHESS FUNDAMENTALS  
WATERFOWL QUIZ  
WHAMMY 3  
ADVENTURE TUTORIAL  
CIRCLE 3  
EDUCATION TRIO  
WRITE-UP EDITOR  
PICTURE PACKER  
AIR ATTACK

**ISSUE #74, AUG. 1988**  
VIDEO CAT 3  
1 EYE WILLIE  
JAVA  
GAME TRIO  
CRIONAUT WARRIOR  
ENVELOPE PRINT  
RAM DRIVE 3  
MODE 2  
XMODEM TRANSFER  
CAVE II

**ISSUE #75, SEP. 1988**  
DRACULA ADVENTURE  
HELP TRIO PROGRAM  
SHOWDOWN DICE  
TARZAR 1 ADVENTURE  
ARAKKON  
CASH FLOW REPORTING  
GRAPHICS LETTER  
GRAPHIC EDITOR  
ADDRESS BOOK  
SQUARES

**ISSUE #76, OCT. 1988**  
SUPER BLITZ 3  
CHAMBERS  
TRIO RACE  
EARTH TROOPER  
STARGATE  
BOWLING SECRETARY  
DISK TUTORIAL  
JOYSTICK > KEYBOARD  
KEYBOARD < JOYSTICK  
SAILORMAN

**ISSUE #77, NOV. 1988**  
POLICE CADET #2  
STARSHIP SHOWDOWN  
MUSIC COMPOSER  
COUPONS/REBATES  
PROGRAM LIBRARY  
BOYSCOUT SEMAPHOR  
HOUSEHOLD CHORES  
MAXOMAR ADVENTURE  
CHUCK LUCK3  
BUZZARD BAY

**ISSUE #78, DEC. 1988**  
POLICE CADET #3  
TANK TURRET  
WAR OF THE WORLDS  
SPINSTER CAFE  
COCO-SIZE  
SIGN MAKER  
LEGAL DEDUCTIONS  
BOOK KEEPING  
CAR LEASE 3  
WAREHOUSE MUTANTS

**ISSUE #79, JAN. 1989**  
POLICE CADET #4  
DRAW POKER 3  
TILER TEX  
BATTLE  
INSIDE THE COCO  
COCO BULLETIN BOARD  
HOT DIRECTORY  
VCR TUTORIAL  
PRINTER CONTROL  
THE KING

**ISSUE #80, FEB. 1989**  
SCRABBLE  
SPELLING CHECKER  
SANDSTONE ADVENT.  
THE FAMILY FEUD  
HARNESS3 HANDICAP  
MINIGOLF 3  
ULTIMATE 3  
NETWORKING TUTORIAL  
A-MAZING PLACE  
MONEYOPOLY

**ISSUE #81, MAR. 1989**  
MONSTERS  
SUPER CONCENTRATION  
TEN PROGRAMS COCO3  
FINANCE  
SNOWBALL FIGHT  
RULER  
POP-UP WINDOWS  
TARZAR2 - CASTLE  
SUPER LISTER  
DRACONIAN

**ISSUE #82, APR. 1989**  
DUNGEON MAZE  
DISK TRANSFER  
MAIL MERGE  
SUPER SPREADSHEET  
BLASTER  
TILER TWO  
DREAM TUNNEL  
DISK UTILITY 3  
EDUCATION TRIO  
LUNCHTIME

**ISSUE #83, MAY 1989**  
T&D FIRST 80  
MODEM BATTLESHIP  
CHURCH MANAGER  
SUPER FILE SORT  
BASEBALL STATS  
TARZAR PT. 3  
INVOICE  
CARD SQUEEZE  
SWORDPLAY 1 + 2  
CHEVYMASTER

**ISSUE #84, JUNE 1989**  
CROSSWORD PUZZLES  
MOUNT DEATH  
TERRON  
DISK/TAPE TRANSFER  
PAPER WORKS  
SUPER DATABASE  
CONNECT3  
BUSINESS MODEL  
MASS FORMAT  
CHAMBERS

**ISSUE #85, JULY 1989**  
5 PLAYER POKER  
RESUME WRITER  
CRAZY CHEMIST  
JOURNEY UP  
SUBMAINIA  
WORKBENCH  
VACATION PLANNER  
DISK EDITOR II  
NIGHT OF THE NINJA  
MARIAN CHYPI

**ISSUE #86, AUG. 1989**  
TIME TRAP  
PHONE ACCOUNTANT  
ON TARGET  
NAME THAT TUNE 3  
LASER DEFENCE  
CHECKBOOK BALANCER 3  
KROACH ADVENTURE  
SUPER BAR GRAPH  
EASY LETTER  
DEVIL ASSAULT

**ISSUE #87, SEPT. 1989**  
PURCHASE ORDER  
INVENTORY INVOICE  
AMERICAN TRIVIA  
KROACH2 ADVENTURE  
TETRA  
SOLO POKER  
GALAXY Q3  
IBM PICTURE VIEWER  
RGB PATCH  
KING TUI

**ISSUE #88, OCT. 1989**  
SALES PROSPECTING  
VIRUS 3  
WILL MAKER  
JOURNAL-GEN. LEDGER  
POLICE CADET #5  
RED DOG  
MAD LIBS  
MACINTOSH PICT. SAVER  
FROG  
PST FLIGHT SIMULATOR

**ISSUE #89, NOV. 1989**  
SPEECH INDEXER  
QUEST ADVENTURE  
EDUCATION TRIOS  
BIG LETTER  
PANGO  
ELEMENTS  
GARDEN PLANNER  
VIDEO SHOW  
WARP  
COIN

**ISSUE #90, DEC. 1989**  
MUSIC-4 VOICE  
HONEYCOMB  
POINT OF SALE  
ORBS ADVENTURE  
IBM - COCO  
CIVIL WAR  
LIST UTILITIES  
BREAK-IN COCO III  
LABYRINTH MASTER  
COLOR CAR ACTION

**ISSUE #91, JAN 1990**  
TRENCH FIGHTER  
COCVERT3  
SPEED GAMES  
BUSINESS STARTER  
CAVERN QUEST3 PT. 2  
BUILDERS HELPER  
TARZAR IV  
ADDRESS IT  
ANIMAL GRAPHICS  
SKYWAY

**ISSUE #92, FEB 1990**  
PENTA-SAME  
ROTISSERIE LEAGUE  
NICKS QUEST  
SOLITAIR  
EDUCATION 4  
IBM - BASIC  
BASEBALL CARD ORG.  
MUNCHY 3  
RIVER RAID 3  
CUBER

**ISSUE #93, MAR 1990**  
MR. MOVIE  
INVADERS  
COCO3 RECIPE MACHINE  
SILVERCAPE 3 ADV.  
BABY-SITTER'S BASE  
BIBLE SCRIPTURE  
VOCABULARY QUIZ  
DROP PACK  
DOCTOR WHO 3  
GRABBER

**EACH ISSUE  
CONTAINS 10 PROGRAMS  
READY TO LOAD.**

**AVAILABLE ON TAPE OR DISK.**

## SUPER SAVINGS

SINGLE ISSUE.....	\$ 8.00
2-5 ISSUES.....	\$ 6.00 EA
6-10 ISSUES.....	\$ 5.00 EA
11 OR MORE ISSUES.....	\$ 4.50 EA
ALL 93 ISSUES.....	\$ 245.00

PURCHASE 20 OR MORE ISSUES  
AND RECEIVE A FREE  
6 MONTH SUBSCRIPTION

**VISA**

**MasterCard**

## COCO I, II, AND III

- All Programs Include Documentation.
- We Send 1st Class - No Charge!
- For Information On Other Software,  
Turn to Pages 23 & 45

**ONE YEAR  
SUBSCRIPTION  
ONLY  
\$ 70.00 !**



**TOM MIX PROGRAMS**

**Mail Or Call**



**T&D SOFTWARE**  
2490 MILES STANDISH DR.  
HOLLAND, MI. 49424

**(616) 399-9648**

PLEASE CIRCLE

1	9	17	25	33	41	49	57	65	73	81	89
2	10	18	26	34	42	50	58	66	74	82	90
3	11	19	27	35	43	51	59	67	75	83	91
4	12	20	28	36	44	52	60	68	76	84	92
5	13	21	29	37	45	53	61	69	77	85	93
6	14	22	30	38	46	54	62	70	78	86	
7	15	23	31	39	47	55	63	71	79	87	
8	16	24	32	40	48	56	64	72	80	88	

**TAPE  
OR  
DISK**

Name \_\_\_\_\_

Address \_\_\_\_\_

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

Card # \_\_\_\_\_ Total \$ \_\_\_\_\_



(continued from page 6)

Where can I find a book about writing assembly language programs for OS-9 Level II? I've learned BASIC, BASIC09 and the EDTASM+ style of assembly by myself with books and practice. But I still haven't found a book to help me get started on assembly for OS-9. If you don't know of such a book, why not write one? I volunteer to test it for ease of comprehension.

R. W. Kemper  
491 Elm Street  
Hinesville, GA 31313

You'll find upgrade information in "A PAL for Your CoCo 3" (January 1987, Page 98). Currently, there are no books specifically detailing OS-9 machine-language programming on the CoCo. However, Delphi is a good source for answers to your specific questions.

### Tape-Based Desktop

Editor:

I have a tape-based 64K CoCo 2. I am looking for a tape-based desktop or interfacing programs that will do the job. Any ideas?

Randy Whitehead  
P.O. Box 88  
Mulberry Grove, Illinois 62262

### Lobo to CoCo Interface

Editor:

I purchased a CoCo 3 about a year ago and am using a tape recorder right now. Would the disk drive I use on my LoBo Max-80 computer work on the CoCo? If so, what is required and where can I get the parts to do the job? I'm not very familiar with hooking up a disk drive to the CoCo 3.

Jeff Dobbs  
40 Elliott St.  
London, Ontario  
Canada

### Rave Reviews

Editor:

I have a CoCo 3 with 128K and am planning to upgrade to 512K. I have some serious questions about which upgrade kit is the best in your opinion. I've read all your articles about upgrades, but I still don't understand which upgrade is better. Perhaps with all the CoCo users who write to you, you might have a better idea.

I recently bought *The Works* from Col-orWare and would like to add my rave review for this super word processor. I also have Tandy's *DeskMate* and *Home Publisher*, which are OK, but they can't hold a candle to *CoCo Max 10* and *Max 3!*

Gary L. Williams  
3180 A Meridian Drive (F.V.)  
Great Lakes, IL 60088

As RAINBOW articles have pointed out, each 512K upgrade on the market has its own advantages and disadvantages. And they all seem to work well. We don't recommend any one unit over the others as being "the best."

### Looking for a Bookmark

Editor:

I'm wondering if the American Library Association has a program for inventory of books and pamphlets for home use? I have one single-side (35 track disk) drive with only 150,000 bytes — this is barely adequate byte-wise. Does anyone know of a home library inventory program?

Dale H. Watt  
Route 1, Box 180  
Cleveland, OK 74020

### Double-Sided Drives

Editor:

I have a few questions about disk drives. First, I have a 40-track, single-sided disk drive. Most of my disks can be recorded on both sides, but my disk drive formats and records only on one side of the disk. Why is this? Second, is there a program or a way for my Star NX-1000-2 printer to print text graphics instead of PMODE graphics? Finally, can this printer print screen dump graphics in a smaller size or any size I specify (instead of a full screen dump print-out)?

I'd appreciate any advice you can give on how to solve these problems.

James Ruth  
128 Seymoure Ave.  
Newark, NJ 07108

### Taking on the Bad Guys

Editor:

I will try to keep this brief. The CoCo has taken on IBM, Macintosh and Commodore head-to-head in word processing, graphics and even desk-top publishing applications; moreover, it has proven its cost-effectiveness. Could someone please develop a good genlock and a CoCo-based edit controller so we can take on the bad guys, once again, in the desktop video revolution?

Commodore seems to rule in this area. CoCo would be a perfect alternative for a "prosumer" videographer who wants a decent graphics/titling device without a mega outlay of cash. CoCo could also control an editing VCR, thus eliminating the need for an edit controller. How about it, advertisers?

John Handis  
Pittsburgh

### Kudos

Editor:

I would like to thank you for printing Marty Goodman's two-part article, "Adding a Disk Drive to Your CoCo," in the March and April issues.

I'd just ordered a Drive 1 for my FD-501 case, and the drive — plus the April issue of *Rainbow* — arrived within a few days of each other. The drive was suppose to be an upgrade kit for the FD-501, but it arrived without instructions.

I was able to install the new drive in the case and make all the necessary connections, but I couldn't get it to operate properly. Fortunately, after reading Mr. Goodman's article I located the problem and the drive works fine.

Here is another case of THE RAINBOW making computing a little easier!

Roger L. Owens  
Greenville, South Carolina

### Delphi Member Services

Editor:

I would like to compliment Delphi member services. When I joined Delphi, I decided to use the invoice-direct billing method. I sent in my \$25 prepayment but didn't hear anything from them.

I called and found out that my check had not arrived. They were very considerate and helpful and sent me another membership agreement form, which I completed and returned promptly. After they received it, I was contacted not once but twice by Delphi to give me verification that payment was received and that my account had been opened.

Richard Butler  
Mount Ayr, Iowa

### Please Don't Tell Me What I Need

Editor:

I recently returned an expensive and reputable program because it was missing a couple of important features. Before packing it up, I spent many hours trying to find a way to get it to do what I wanted easily. I could not. Just to be sure (because I really wanted to keep it), I called the company I ordered it from to ask some questions. They confirmed my suspicions. It would not do what I asked. (I did discover a way but it was too troublesome and time consuming).

During my conversation with the company, the person I was speaking with strongly recommended that I invest in an IBM-compatible because the CoCo was not designed to do large jobs! This person said I could call a bulletin board and get more powerful shareware programs for nothing! Is this true? Have I invested in the wrong machine? Have you people been leading me



down the primrose path?

I have a CoCo 3 with 128K. I'd like 512K, but do I need it? Most of the time, no. I also have an FD-501, 5¼-inch, single-sided Drive 0. I'd like a couple of 3½-inch, 1.4-Meg drives. Do I need them? Not really. I've got a CM-8 monitor. I sometimes wish I'd bought a 8CM515, but I'm still doing fine. I could go on and on, but the point is *I didn't make a mistake*. This is a great little personal computer. I use it for me and my family. I like it. It works. Sure, it doesn't run at 20 megahertz and have 256 colors, but it works.

What I need are companies that support me with what I need. Don't tell me I've made a mistake because you don't have what I need. I realize that there are more IBM clones in the world and more money can be found selling to those people, but I neither want nor can afford to pay for more than I need.

Hampton Thomas  
White Post, Virginia

### Disk Copy Problem

Editor:

I have typed in a program by William F. Medlock from the "Novices Niche" col-

umn (RAINBOW, January '90). The name of the program is *Disk Copy Utility*. It is an excellent program, and I recommend it highly to anyone.

I use ADOS-3, which is configured to format disks in 40 tracks. I quickly found that there was a problem trying to copy a 35-track disk to 40 tracks. This disk drive hangs up. I found that when I loaded *Disk Copy* into ADOS-3, I could copy 35 to 40 tracks without a hitch.

I have made a minor change in the *Disk Copy* program so that instructions are printed on the screen for placing the disks in the drive before the copy utility begins. This prevents me from making mistakes that could wipe out a disk. Here are the changes I have made:

```
900 CLS:PRINT"PLACE SOURCE DISK IN #-
0"
920 PRINT"PLACE DESTINATION DISK IN
#-1"
930 PRINT"PRESS ANY KEY TO BEGIN"
940 X$=INKEY$:IF X$=""THEN 940
1000 * COPYRIGHT 1989 FALSOFT, INC.
```

I have a problem with ADOS-3 and wonder if anyone could help me with it. While

in fast mode I cannot format a disk. The drive hangs up. I have to press CTRL-2 to switch back to slow before I can format the disk.

James E. Parsons  
2915 Warren Avenue  
Granite City, IL 62040

THE RAINBOW welcomes letters to the editor. Mail should be addressed to: Letters to Rainbow, The Falsoft Building, P.O. Box 385, Prospect, KY 40059. Letters should include the writer's full name and address. Letters may be edited for purposes of clarity or to conserve space.

Letters to the editor may also be sent to us through our Delphi CoCo SIG. From the CoCo SIG> prompt, type RAI to take you into the Rainbow Magazine Services area of the SIG. At the RAINBOW> prompt, type LET to reach the LETTERS> prompt and then select Letters for Publication. Be sure to include your complete name and address.

## Exclusive!

### CHI PagesE v. 2.0

Desktop Publishing, Greeting Card Designer, Calligrapher or CAD for the CoCo3. Page size 640x384. Pull-down menus, icons and dialog boxes. Import ASCII text or enter from keyboard, mix text with graphics, flow text around irregular shapes. Magnify, flip, enlarge, reduce, stretch and slide screen in seconds. Page preview, select printers from the pull-down menu. Req. CoCo3, Tandy Hi-Res interface, RGB/CM monitor, joystick/mouse, Epson, Star, Panasonic, NK1000, IMP105/106 printer... still only \$49.95

### CHI Clipart Set 1 Set 2

Each Set contains 672 clipart pieces for all versions of CHI Pages only. Stunning and detailed... each Set: only \$29.95

### CHI Fonts

59 "TAX" like fonts for the ColorMax, Newspaper series and RAT... only \$19.95

### CHI Lettrex

Letter-quality text directly from your current software, 14 great MLO text fonts. Req. 64K CoCo 1/2/3, any monitor, 1 drive, mouse, Epson or compatible printer.. \$24.95

### CHI D-Link

Tele File Transfer Program. Graphics interface. Req. CoCo3, RGB or CM monitor, 1 Drive, joystick/mouse... only \$24.95

UPGRADE POLICY: CHI Pages V.1.0 owners can upgrade to CHI PagesE v.2.0 by sending the original system disk, copy of the sales slip and \$12.00 to the address listed below.

Above programs sold exclusively through

**Goless  
Computer  
Design**

1917 Madera St. #8  
Waukesha, WI 53186  
Phone (414) 549-0750  
Call for a Free Brochure



Sorry, no Credit Cards/COD's - Check or Money Orders only  
All Orders add \$3.00 S&H, WI Residents add 5% Sales Tax

## NORTHERN TECHNOLOGIES

6038 North 43 Road, Nantux, NJ 09663  
(616)824-6633 BRS(616)824-6026

### CARD COLLECTION

Keep track of your card collection with this, OS9 Level II, program. List to the screen or printer, by name, team or position. Edit, expand, or shrink files. ONLY \$9.95 + \$2.00 S&H

### PRINTERS

Star Micronics NX-1000 Rainbow, 7 color printing, 144 cps draft/36 cps MLO, 6.5k print buffer, "paper parking", friction and tractor feed, Hi Res graphics. ONLY \$260.00 + \$12.00 S&H

### MODEMS

Avatex 1200e, 300/1200 transmission speed, auto dial/auto answer, 8 front panel lights, two year manufacturer's warranty. ONLY \$80.00 + \$3.00 S&H

SmartTeam 2400AT, 300/1200/2400 transmission speed, auto dial/auto answer, call progress detection, 6 self test modes, 8 indicator lights, AT command set, two year manufacturer's warranty. ONLY \$175.00 + \$3.00 S&H

Smart One 2400X, 300/1200/2400 transmission speed, auto dial/auto answer, 8 indicator lights, two year manufacturer's warranty, Hayes compatible, made in the U.S.A.

ONLY \$160.00 + \$3.00 S&H

### DISKS

5 1/4" DSDD.....\$4.80 ea  
5 1/2" DSDD.....\$1.30 ea  
5 1/4" DSHD.....\$4.80 ea

All disks please include \$2.00 shipping and handling.

### DISK FILES

5 1/4" Disk Holder, holds 75 5 1/4" disks.....ONLY \$8.75 ea  
5 1/2" Disk Holder, holds 45 5 1/2" disks.....ONLY \$7.50 ea  
5 1/4" Locking Holder, holds 75 5 1/4" disks, keep your disks away from unauthorized users. ONLY \$12.50 ea  
Copy Holder, w/top copy clip, non skid feet, detachable line guide. Only \$12.95 ea

### DISK CLEANER KITS

5 1/4" kit.....Only \$6.95 ea  
5 1/2" kit.....ONLY \$6.50 ea  
All above items add \$2.00 S&H.

Cash, Check or Money Order. No COD's please.....

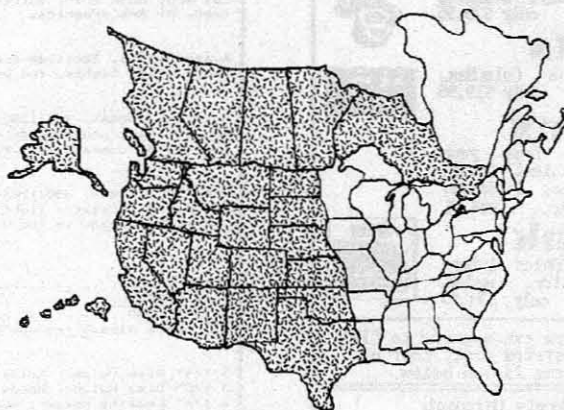
# Advertisers Index

*We encourage you to patronize our advertisers — all of whom support the Tandy Color Computer. We will appreciate your mentioning THE RAINBOW when you contact these firms.*

Burke & Burke .....	49	Granite Computer Systems .....	77	Perry Computers .....	37
C.B. Games .....	43	Gravity Studio .....	39	r3 Systems .....	60
CoCo Pro .....	60	Hawksoft, Inc. ....	87	Rainbow Binder .....	52
CoCosoft .....	53	Howard Medical .....	98	Rainbow CoCo History Book ....	88
Coless Computer Design .....	95	Hypertech Software .....	53	Rainbow on Tape and Disk .....	18
Color Systems .....	57	JWT Enterprises .....	55	Ramco Computer Supplies .....	61
Colorware .....	89	Kenneth Leigh Enterprises .....	31	Robert Offerman .....	85
Computer Island .....	87	Metric Industries .....	59	Spectrosystems .....	51
Computer Plus .....	BC	Microcom Software .....	7	SPORTSWARE .....	33
Constellation Computer .....		Microcom Software .....	9	Sugar Software .....	75
Consultants .....	85	Microcom Software .....	13	Sundog Systems .....	IFC
CRC/Disto .....	41	Microcom Software .....	15	Supersoft, Inc. ....	27
Danosoft .....	29	Microcom Software .....	17	T & D Software .....	23
Dayton Associates .....		Microcom Software .....	19	T & D Software .....	45
of W.R. Hall, Inc. ....	79	Microdeal .....	IBC	T & D Software .....	55
Delphi .....	84	Microtech Consultants Inc. ....	81	T & D Software .....	93
Dick Williams Enterprises .....	51	Northern Technologies .....	95	Tepco .....	38
Dorsett Education Systems .....	57	Owl-Ware .....	69	True Data Products .....	63
Dr. Preble's Programs .....	35	Owl-Ware .....	70	Wasatchware .....	43
Eversoft Games, Ltd .....	21	Owl-Ware .....	71	William Barden Jr. ....	21
Frank Hogg Laboratories .....	97	P & M Products .....	61	Zebra Systems .....	73
Gimmesoft .....	5	PCM .....	3		



 **Call:**  
Belinda Kirby  
Advertising Representative  
(502) 228-4492



 **Call:**  
Kim Vincent  
Advertising Representative  
(502) 228-4492

**The Falsoft Building**  
9509 U.S. Highway 42, P.O. Box 385, Prospect, KY 40059  
**FAX (502) 228-5121**



# Tomcat™

The Tomcat is a major improvement over the CoCo 3. The Tomcat's TC9 6809 CPU is over 25% faster! It uses a PC AT compatible keyboard, has two 'real' serial ports, supports a serial mouse, has a parallel printer port, has provision for 512K on board RAM or it can use a CoCo 3 512K memory upgrade, can be upgraded to 1 megabyte with the Disto 1 Meg upgrade with no soldering, it has 8 bit D to A and 8 bit A to D. 8 bit provides better sound and a higher resolution joystick, 256 verses 64, it supports an internal speaker, has the standard CoCo bus so that CoCo cartridges can be used (Disto, Eliminator, Burke&Burke Etc.), is powered by a PC style power supply. This also allows installing the board in most PC clone cases, will work with most, if not all OS9 software, will have RSDOS compatibility, and is K-Bus compatible! Whew!!!

K-Bus capability allows interfacing the Tomcat to the 68000 and even the 68030! By installing a 68000 CPU, the Tomcat becomes a dual-processing system! When in OS9 Level II mode the 68000 becomes a co-processor to the Tomcat, like an accelerator to Level II with a 2 or 3 fold improvement in performance!

When the 68000 is the master under OS9/68K, the TC9 acts as a co-processor to 68K. Switching back and forth between systems will be easy and will allow a smooth transition from OS9 to OSK. It is not necessary to have OSK to get the benefits of the 68000, but it provides a smooth transition when and if you decide to make the move. You go at your own pace, upgrading as you desire, and at each point you get a significant improvement in performance, for a very slight cost.

## Expansion

The world of 68K is open to you. The logical first step is to add a 68000 CPU which will immediately speed up Level II operations by several factors and opens the door to running OSK. No other additions are needed to run OSK, as OSK will run in the TC9 memory and use TC9 I/O. For further performance increases additional boards, memory, I/O etc. can be added to the Tomcat. It is even possible to have several TC9's in the Tomcat for a multi-processing system! Memory limits are 16 Megabytes of which more than 14 Megabytes can be RAM! Because of the bus concept upgrades to future CPUs only requires adding that CPU to accomplish it. For example, you could start with a 68000 and later replace that with a 68030 and still use ALL of your other cards. When new cards such as the 68040 become available, you could add those too.



This is upgrading without having to throw anything away. Even if you eventually switched over to 68K completely the TC9 still functions as a multi-function graphics co-processor. Because of the wide variety of K-Bus boards available and those under development, the possibilities for the future are unlimited. The TC9 Tomcat truly is the CoCo 4 that Tandy should have made, for that matter it could well be the CoCo 5, 6, 7, 8.....

## Should you get one?

If you currently own a CoCo 3 and use it for either RSDOS or OS9 Level II the TC9 Tomcat is your road to the future. It will run your current software faster and give you powerful new features and performance at modest cost. You get the ability to expand at your own pace, at low cost, the way you want to do it, for your future.

## The future.

FHL, in business since 1976, has been manufacturing 680x0 based computers for over 6 years! The Tomcat is the computer for the 90's. We have put all of our knowledge and experience into the creation of the Tomcat. We believe it is the best choice for you and for us. We create computers because we like to use them, not because we like to sell them. Every computer we've made has been one we've wanted for ourselves. The Tomcat is the best we've done... so far.

## I Want One!

We will start deliveries in late June of 1990. You can reserve a place on the waiting list by simply calling or sending in your request. No deposit is required, you will be contacted before delivery to confirm your order. There is no obligation.

For a system with case, power/supply, TC9 and keyboard, prices start at only \$499.95. The TC9 board alone is only \$299.95. Many other options and configurations are available. Please call or write for a complete brochure.



Tomcat™ by...

USER-FRIENDLY  
SERVICE SINCE 1976!

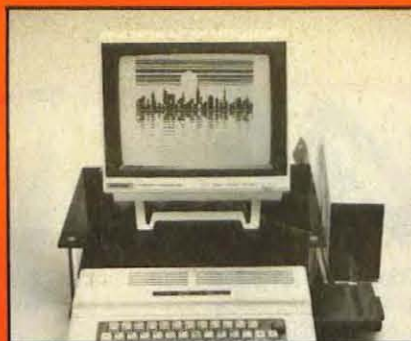
Frank Hogg  
**LABORATORY**  
INC.





### KEYBOARD

- 101 Keys with tactile touch
  - Coiled cable with RF filter
  - can be used with CoCo, Tandy or IBM and auto senses XT or AT
- |       |                   |          |
|-------|-------------------|----------|
| KB-1  | Keyboard          | \$98.00  |
| KB-A  | CoCo Adaptor      | \$89.50  |
| KB-1A | Keyboard & Adapt. | \$149.00 |



### MAGNAVOX 7622 AMBER

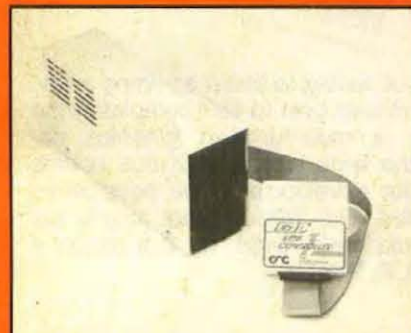
- 80 Column **OR 7652 GREEN**
- Built in Speaker **\$98 (7 ship)**

### DISTO BOX

DC-7	Mini Controller	\$ 75.00
DC-3	Super Controller	\$ 98.00
DC-6	No Halt Controller	\$129.00
MBA-1	3 in 1 Board	\$ 69.45
MEB	Mini Expansion Bus	\$ 30.00
RS232	RS-232 Port	\$ 49.95
DC-3C	Clock and Parallel Port	\$ 40.00

### PRINTERS

STARNX-1000R	COLOR	\$249.00
STARNX-1000II		\$189.00
VA-1	Video Converter for CoCo 1&2	\$29.45
HR-2	Dual Hi-res adapter	\$39.45



### DRIVE 0 PLUS

- Double sided 360K MPI 52
  - Disto DC-7 controller and cable **\$158.45**
  - **Double Drive 0+** **\$268.45**
- Drive 0 + Drive 1 (TEAC)



### MEMORY

- 512K Bare Board **\$40**
  - Populated 512K & Software **\$89**
  - 1 MEG Bare Board **\$160\***
  - Populated 1 MEG **\$200\***
- \*requires 512K upgrade

### FLOPPY DRIVES

52	MPI 5 1/4 Full Height 40 track Double Sided 360K	\$39.45
92	MPI 5 1/4 Full Height 80 track Double Sided 720K	\$78.45
55B	TEAC 5 1/4 Half Height 40 track Double Sided 360K	\$98
53B	TEAC 5 1/4 Half Height 80 track Double Sided 720K	\$108
235	TEAC 3 1/2 Half Height 80 track Double Sided 720K	\$89
FR-35	Frame Fits 3 1/2 into 5 1/4 space	\$12
502-C	Power Cable for 502	\$12



### SLOT-PACK II by Chris Hawks

- replacement for multipack
- 3 slots, 2 switchable
- X slot for RS-232 for modem (specify)
- middle slot can take disk controller or ROM cartridge
- 12 Volt adaptor required so power is not drawn from CoCo

MP-II	slot pack II	\$89.45
AC-12	12 volt adaptor	\$14.95



### HARD DRIVE

20,000,000 Bytes or the equivalent to 125 R.S. 501's on line are packed into this hard drive, pre installed and ready to run. This complete easy to use package includes a Seagate 20 Meg Hard Drive, a DTC 5150 Controller and interface, \* a heavy duty case, power supply and fan and a 1 year warranty. This 20 Meg Hard Drive will also work with Tandy and IBM clones.

RSB Access Basic thru OS-9 \$39.45  
FILE REPACK Un-Fragments disc \$29.45

See Rainbow Reviews 8/89

HD-1	10 Meg**	\$349
HD-2	20 Meg	\$499
HD-3	30 Meg	\$549
HD-4	40 Meg	\$598
HD-8	80 Meg	\$1,090

\*Burke & Burke

\*\*reconditioned



### MAGNAVOX 1CM135

- new analog with stereo sound and high grade composite screen
  - 640 X 240 resolution @ 12 MHz with .42 dot pitch
- |                  |           |                          |
|------------------|-----------|--------------------------|
| CC-3             | RGB Cable | \$19.95                  |
| Shipping 6/16/90 |           | <b>\$298 (\$14 ship)</b> |

### 30 Day Money Back Guarantee

Howard Medical's 30-day guarantee is meant to eliminate the uncertainty of dealing with a company through the mail. Once you receive our hardware, try it out; test it for compatability. If you're not happy with it for any reason, return it in 30 days and we'll give your your money back (less shipping.) Shipping charges are for 48 states. APO, Canada and Puerto Rico orders are higher.



**Howard Medical Computers**

1690 N. Elston  
Chicago, Illinois 60622

Order Status and Inquiries  
**312-278-1440**

Master Card • Visa • Discover  
American Express  
C.O.D. • School P.O.'s

Order Line  
**800-443-1444**

**FLOPPY SALE \$39.45 each MPI 52**



# Slots & Cards

VGA Graphics Depicted



**microdeal**

576 S. Telegraph  
Pontiac, MI 48053  
(313) 334-5700

Did you ever dream of visiting VEGAS, but you weren't sure what to expect — or if you would be able to afford it? Well, now you can play your favorite slot machine, or sit down at the blackjack table without even leaving the comfort of your home. Browse through different style slot machines (many different Multiplier slots). Visit the change booth if - or is that when? - you run out of cash, without feeling a pain in your wallet. Walk around the corner and sit down at any of a number of different style card games. Enjoy video five card draw poker - where it takes jacks or better to win. Or play Blackjack against the ever treacherous house dealer. Play Hi-Low and wager the max every chance you get. Do you like Keno? If so, choose your numbers, then sit back and wait to see if they are drawn!

All versions display vivid true to VEGAS graphics. Whatever your game, Slots & Cards has it for you! Slots & Cards is available for the IBM PC & Compatibles, Commodore Amiga, Atari ST and the CoCo III.

*See your local dealer for orders and information or call us directly*



From Computer Plus to YOU...

# PLUS after PLUS after PLUS



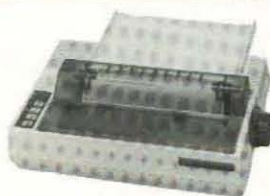
Tandy 1400 FD \$869\*  
Tandy 102 32K \$439\*  
Tandy WP-2 \$279



Color Computer 3  
w/128K Ext. Basic \$115\*



Tandy 1000 SL/2 \$799\*  
Tandy 1000 TL/2 \$999\*



DMP-133 \$199\*



Color Computer Disk Drive  
Drive 0 \$239 Drive 1 \$149



TandyFax \$839

## BIG SAVINGS ON A FULL COMPLEMENT OF RADIO SHACK COMPUTER PRODUCTS

### COMPUTERS

Tandy 1000 HX 1 Drive 256K	259.00*
Tandy 2500 XL 1 Drive 1 Meg	1119.00
Tandy 3000 NL 1 Drive 512K	869.00*
Tandy 2800 HD 1 Drive 1 Meg	2529.00
Tandy 1100 FD 1 Drive 640K	779.00

### PRINTERS

Radio Shack DMP-107 120 CPS	219.00
Radio Shack DMP-442 300 CPS	539.00
Radio Shack DMP-133 160 CPS	199.00*
Radio Shack DWP-230 Daisy Wheel	179.00*
Tandy LP-1000 Laser Printer	1899.00
Tandy DMP-240 192 CPS 8 color	399.00
Star Micronics NX-1000 Rainbow	269.00
Panasonic KXP 1180 192 CPS	219.00*
Panasonic KXP 1191 240 CPS	259.00*
Panasonic KXP 1124 192 CPS	329.00*
Okidata 320 300 CPS	369.00
Okidata 390 270 CPS 24 Wire HD	515.00
OKI Laser 400 4PPM	999.00

### MODEMS

Radio Shack DCM-6	52.00
Radio Shack DCM-7	85.00
Practical Peripheral 1200 Baud	149.00
Practical Peripheral 2400 Baud	179.00

### COLOR COMPUTER MISC.

Radio Shack Drive Controller	79.00*
Extended Basic Rom Kit(28 pin)	14.95
64K Ram Upgrade Kit(2 or 8 chip)	39.00
Radio Shack Deluxe Keyboard Kit	24.95
HI-RES Joystick Interface	8.95
Color Computer Deluxe Mouse	44.00
Multi Pak Pal Chip for COCO 3	14.95
COCO 3 Service Manual	29.95
Serial to Parallel Converter	59.95
Radio Shack Deluxe Joystick	19.95
Magnavox 8515 RGB Monitor	299.00
Magnavox Green or Amber Monitor	99.00
Radio Shack CM-8 RGB Monitor	249.00
Radio Shack VM-4 Green Monitor	99.00
PBJ OK COCO 3 Upgrade Board	24.95
PBJ 512K COCO 3 Upgrade	139.00
Tandy OK COCO 3 Upgrade Board	29.95
Tandy 512K COCO 3 Upgrade	149.00

### COLOR COMPUTER SOFTWARE

	TAPE	DISK
The Wild West(COCO3)		25.95
Worlds Of Flight	34.95	34.95
Mustang P-51 Flight Simul.	34.95	34.95
Flight 16 Flight Simul.	34.95	34.95

COCO Util II by Mark Data	
COCO Max III by Colorware	
Max 10 by Colorware	
AutoTerm by PXE Computing	29.95
TW-80 by Spectrum (COCO3)	
TeleWriter 64	49.95
TeleWriter 128	
Elite Word 80	
Elite Calc 3.0	
CoCo 3 512K Super Ram Disk	
Home Publishing by Tandy (CoCo3)	
Sub Battle Sim. by Epyx (CoCo3)	
Thexder by Sierra (CoCo3)	
Kings Quest III by Sierra (CoCo3)	
Flight Sim.II by SubLogic (CoCo3)	
OS-9 Level II by Tandy	
OS-9 Development System	
Multi-View by Tandy	
VIP Writer (disk only)	
VIP Integrated Library (disk)	

Prices are subject to change without notice.  
Please call for shipping charges. Price  
tail store may be higher. Send for  
catalog

\*Sale prices through 7/31/90

**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 (508) 486-3193