

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

November 1984

Canada \$4.95

U.K. £3.35

\$3.95

RAINBOW

THE COLOR COMPUTER MONTHLY MAGAZINE

TELECOMPUTING

Our 'Reach Out' Issue

A Complete Smart Terminal Program

A Comprehensive CoCo BBS List

Auto Answer for your Modem 1

And, Rainboard '84

ALSO

Road Racing

Ham Radio and CoCo

An OS-9 Device Driver

An Easy Line-lister

Jumbo Jinfile and Junk Food, too

With

Dale Puckett, Roger Schrag, Colin J. Stearman, Fred Scerbo, Dan Downard, Ramon Zamora, R. Wayne Day, Joseph Kolar and dozens of other Rainbow writers



COMPUTERWARE
CATALOG INSIDE!

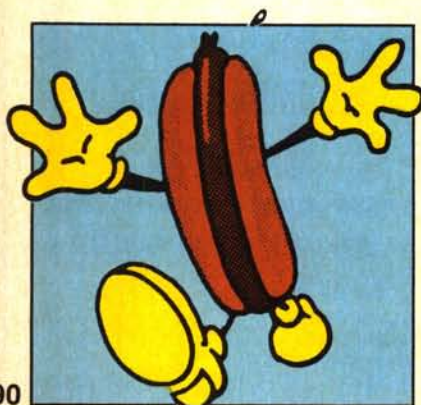
Under The RAINBOW

FEATURES

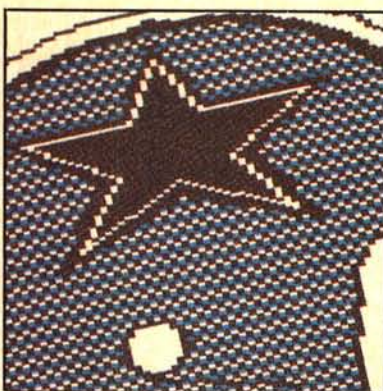
50



90



177



COVER art © by Fred Crawford

NEXT MONTH: December is our ho, ho, holiday issue filled with programs and articles to make your season bright, including Christmas carols, Christmas graphics, Christmas and Hanuka cards, and much more.

We'll also announce the winners of our Second Annual RAINBOW Adventure Contest and include one or two of the finest entries.

As always, there will be a mix of articles, departments and product reviews just for CoCo — more information than is available anywhere! Happy Holidays!

- Adding An Auto Answer/Tony Sharp** _____ 18
DATA COMMUNICATIONS *Building a circuit for the TRS-80 Modem I*
- EZ List/Michael Davidson** _____ 23
UTILITY *A simpler way to list lines one at a time*
- File It With The Message Center/Jim Schmidt** _____ 28
COMMUNICATIONS *Bulletin board for your home*
- Road Race/Shane Franklin** _____ 36
GAME *Start your engines*
- RAINBOARD 1984/Lane Lester Ph.D.** _____ 44
DATA COMMUNICATIONS *An update on last year's BBS*
- CC-Talk — A Smart Terminal Package/Frank Gossette** _____ 50
DATA COMMUNICATIONS *Begin exploring telecomputing*
- BBS Wrap-Up/R. Wayne Day** _____ 66
DATA COMMUNICATIONS *A comprehensive listing of bulletin board systems*
- RS-232 Interface Cable For DCE/Helene M. LaBonville** _____ 89
DATA COMMUNICATIONS *Make your own cable connection*
- Junk Food/D. Taylor** _____ 90
GAME *Be a 'chompion'*
- The Diskette Directories Handler System/Marvin E. Swan** _____ 100
DISK UTILITY *An easy, efficient diskette file organization*
- CLOAD Command Fixer/Curt Chadwick** _____ 116
TAPE UTILITY *Finding the end of that file*
- Home Financial Management/Edward W. Carson** _____ 132
FINANCE *A personal savings and loan calculation program*
- A Special Use For The DOS Command/Roger Schrag** _____ 140
DISK UTILITY *Make your disk system more useful*
- Cooking With CoCo/Colin J. Stearman** _____ 146
EXPANDING BASIC *Part V, adding code to new commands*
- Everything To Know About CoCo/Andy Kluck** _____ 157
TUTORIAL *The peculiarities of Disk BASIC*
- JINFILE — A Jumbo File Handler/Robert Weir** _____ 162
UTILITY *A special purpose filing program*
- Developing A Database Manager/Bill Nolan** _____ 245
DISK TUTORIAL *The use of direct disk access*
- Ham Radios And CoCo/Dan Downard** _____ 250
COMMUNICATIONS *CoCo's uses in communications*
- OS-9 Device Driver/Steve Den Beste** _____ 259
OS-9 UTILITY *Using the RS-232 Pak with OS-9*

COLUMNS

BASIC Training/Joseph Kolar _____	151
<i>Simple Programs: A learning experience for all</i>	
Bits And Bytes Of BASIC/Richard White _____	126
<i>Rainbow checkbook II</i>	
Building November's Rainbow/Jim Reed _____	16
<i>Thoughts on telecomputing</i>	
CommLink/R. Wayne Day _____	72
<i>Modeming across America</i>	
Earth To Ed/Ed Ellers _____	190
<i>Beam up those "tech" questions</i>	
Education Notes/Steve Blyn _____	254
<i>Using guide words</i>	
Education Overview/Michael Plog, Ph.D. _____	252
<i>The 'system' and its important procedures</i>	
Game Master's Apprentice/George Firedrake and Art Canfil _____	120
<i>Playing the game of Heroic Fantasy</i>	
Print#-2/Lawrence C. Falk _____	12
<i>Editor's notes</i>	
School Is In The Heart Of A Child/Bob Albrecht and Ramon Zamora _____	81
<i>'Guess my word' game</i>	
Turn Of The Screw/Tony DiStefano _____	130
<i>Forcing a hardware cold start</i>	
Wishing Well/Fred Scerbo _____	177
<i>It's time for football fever</i>	
R. Bartley Betts' "Byte Master" will return next month.	

RAINBOWTECH

Downloads/Dan Downard _____	268
<i>Answers to your technical questions</i>	
Personable Pascal/Daniel A. Eastham _____	271
<i>Procedures and functions</i>	
KISSable OS-9/Dale L. Puckett _____	280
<i>Transportation to hacker heaven and two useful routines</i>	

DEPARTMENTS

Advertiser Index _____	288	Reviewing Reviews _____	198
Back Issue Information _____	269	Scoreboard _____	186
Corrections _____	244	Scoreboard Pointers _____	188
Letters To Rainbow _____	6	Submitting Material _____	
The Pipeline _____	136	To Rainbow _____	115
Received And Certified _____	195	Subscription Information _____	115
		These Fine Stores _____	286

PRODUCT REVIEWS

Product Review Contents _____	193
--------------------------------------	------------

RAINBOW

November 1984 Vol. IV No. 4

Editor and Publisher

Lawrence C. Falk

Managing Editor James E. Reed

Senior Editor Courtney Noe

Technical Editor Dan Downard

Copy Editor Susan Remini

Submissions Editor Jutta Kapfhammer

Reviews Editor Monica Dorth

Editorial Assistants Valarie Edwards,
Wendy Falk, Suzanne Benish Kurowsky,
Greta Martin-Eneje, Lynn Miller, Shirley Morgan,
Kevin Nickols, Tamara Solley

Technical Assistant Ed Ellers

Contributing Editors Bob Albrecht, R. Bartly Betts

Steve Blyn, R. Wayne Day, Tony DiStefano,

Dan Eastham, Frank Hogg, Don Inman,

Joseph Kolar, Michael Plog, Dale Puckett,

Fran Saito, Paul Searby, Fred Scerbo,

Richard White

Art Director Sally Gellhaus

Assistant Art Director Jerry McKiernan

Designers Peggy Henry, Neal C. Lauron,

Kevin Quiggins

Advertising Coordinator Charlotte Ford

Advertising Representative Kate Tucci

Advertising Assistant Debbie Baxter

(502) 228-4492

General Manager Patricia H. Hirsch

Asst. General Manager for Finance Donna Shuck

Bookkeeper Diane Moore

Advertising Accounts Doris Taylor

Dealer Accounts Judy Quashnock

Administrative Assistant to the Publisher

Marianne Booth

RAINBOWest Site Management Willo Falk

Director of Fulfillment Services Bonnie Shepard

Asst. Customer Service Manager Deidra Henry

Customer Service Representative Sandy Apple

Word Processor Manager Lynda Wilson

RAINBOW ON TAPE Subscriptions Monica Wheat

Research Assistants Laurie Falk,

Debbie Leake, Loretta Varda

Dispatch Janice Eastburn

Production Assistant Melba Smith

Advertising and Marketing Office for the Western states and provinces: Cindy Shackelford, director, 12110 Meridian South, Suite 8, P.O. Box 73-578, Puyallup, WA 98373-0578. Phone: (206) 848-7766. Territories included: AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY, Canadian Provinces of Alberta, British Columbia, Saskatchewan.

THE RAINBOW is represented in the Eastern United States by Garland Associates, Inc., P.O. Box 314, S.H.S., Duxbury, MA 02331, (617) 934-6464 or 934-6546. Advertisers east of the Mississippi may contact them for further information. Territories included: AL, CT, DE, DC, FL, GA, IL, IN, KY, ME, MD, MA, MI, MS, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA, VT, WV, WI, Canadian Provinces of Ontario, Quebec.

THE RAINBOW is published every month of the year by FALSOFT, Inc., 9529 U.S. Highway 42, P.O. Box 385, Prospect, KY, 40059. Phone (502) 228-4492. THE RAINBOW and THE RAINBOW logotypes are ® trademarks of FALSOFT, Inc.

Second class postage paid Prospect, KY and additional offices. USPS N. 705-050 (ISSN No. 0746-4797). POSTMASTER: Send address changes to THE RAINBOW, P.O. Box 385, Prospect, KY 40059. Forwarding Postage Guaranteed. Authorized as second class postage paid from Hamilton, Ontario by Canada Post, Ottawa, Ontario, Canada.

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

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

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

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



RAINBOARD

By Lane Lester

Are you the SYSOP of a RainBoard? Have you called a RainBoard yet? Do you know what a RainBoard is? Last November's issue of THE RAINBOW was also a data communications issue, and I was pleased to present a set of programs to enable you to run your own bulletin board system. The RainBoard provides not only the usual functions such as message exchange, text files to read, and programs to download; it also, in keeping with its name, provides color graphics and begins each session with a picture of a rainbow ending in a pot of gold with the message, "WELCOME TO THE RAINBOARD, WITH A RAINBOW OF COLOR AND A POT OF GOLD IN GOOD TIMES!" Also included in that same issue was Dan Downard's machine language program that interfaced my BASIC programs to the CoCo's RS-232 port.

Almost as an afterthought, I placed at the end of the article an offer of a disk with all of the programs and files needed to run your own RainBoard. The price of \$20 was what I figured would take care of the nuisance and expense of

(Lane Lester is professor of biology at Liberty Baptist College and holds the M.S. in ecology and the Ph.D. in genetics.)

printing a cover letter, copying the RainBoard disk, and mailing it. In addition to the hundreds of copies of RAINBOW ON TAPE that were sold for that issue, I have now sent out over 80 copies of the RainBoard disk, and the orders continue to come in. I have also been besieged by telephone calls from all over the United States and Canada from folks who have typed in the programs and either had problems or just want to chat about running a bulletin board. Evidently BBSing is one of the hottest new uses for personal computers.

In addition to the RainBoards scattered all over the United States, including one in Hawaii being SYSOPed by a retired longshoreman, the most colorful BBS in the world has now gone international. Somewhere in the Pacific, a U.S. Navy ship's computer users are communicating colorfully. Known RainBoards are in Canada and Australia, and not only in English-speaking countries. In August, I received a disk from Dr. Joao Araujo, Rio de Janeiro, Brazil, containing a Portuguese version. They have a 200-member CoCo club and have translated the software (the text portions — the programs are still in BASIC) for a BBS to support their club.

I think one of the major attractions of the RainBoard was that it provided a

breakthrough in the cost of starting up one's own board. In the past, prospective SYSOPs had to plan on spending several hundred dollars for an auto-answer modem, about a thousand on two or more disk drives, and over a hundred on BBS software. The RainBoard software is inexpensive (only the back-issue price of THE RAINBOW, if you feel like doing some typing), it only requires one drive, and auto-answer modems are now available for about \$100. [Look elsewhere in this issue for a hardware project to convert your Modem I to auto-answer.]

Has a program ever been written without bugs? Not any of mine, and RAINBORD/BAS was no exception. Most of the bugs were cornered before the November 1983 issue was published, but one particularly troublesome one got through. Another RainBoard SYSOP had to call it to my attention, and it was the result of my fondness for eight-character filenames. The routines that search the disks for files use DSK1\$ to look at the directory track, and would not find any files with shorter names. So at the end of lines 1030 and 1160 one needs to add:

```
FILES = LEFT$(FILES+
STRING$(7,32),8)
```

to pad out the filename with as many blank spaces as needed. There are plenty of ways this could be accomplished, but I'm indebted to Mel Hefter, the genius behind Custom Software Engineering, for this elegant approach. Another bug that was corrected in a later RAINBOW

was a single byte in Dan Downard's REMOTE/BIN, which set the Baud rate incorrectly in the machine language driver. The correct value at \$3F01 is \$B8, and the easiest way to handle this if you get it on a back issue of RAINBOW ON TAPE is to LOADM the program, enter POKE &H3F01,&HB8, and then SAVEM the corrected program.

"I think one of the major attractions of the RainBoard was that it provided a breakthrough in the cost of starting up one's own board."

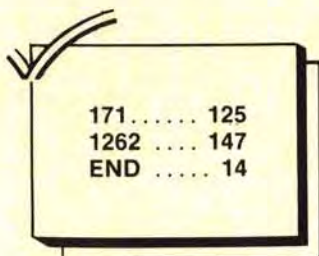
Although I did, at one time, operate a RainBoard I had to do it with my only CoCo and on a shared telephone line. So, when our town got a 24-hour BBS, I closed the RainBoard down, and have continued to enjoy BBSing as a caller of that board and others around the country. I would love to give you the phone number of our local board in hopes of communicating with some of you, but we have had a phenomenal run of bad luck with the equipment. In addition to the usual kinds of glitches, the equipment was once totally destroyed by lightning. We are also plagued by a "cracker," one of those perverts who derive pleasure from destroying other people's systems. Anyway, I'm afraid

that any number I might give you would no longer be in operation. If you would like to see a RainBoard in action, you may call either (813) 321-0397 or (412) 654-0445.

For jaded RainBoard SYSOPs, or for anyone who needs a little more encouragement, here's a new feature that can be added to the RainBoard. The original version kept the entire membership list in RAM, limiting the size. The patch (called PATCH/BAS) which follows provides for a direct access member file of up to 300 members. INITMEMB/BAS initiates the file, EDITOR/BAS edits the file, and SYSOP2/BAS replaces the original SYSOP/BAS. These new routines are the products of my computing colleague, Erik Gavriluk, who helped me immensely in getting the original RainBoard in shape.

In case you've decided you'd like to operate your own RainBoard, you can send \$20 to Lane Lester, 413 Woodland Circle, Lynchburg, VA 24502 for a disk containing all the programs you need, plus documentation and text files to show the kinds of things that are usually included. Alternately, if you weren't a RAINBOW subscriber last year, back issues of both the November 1983 magazine and the companion RAINBOW ON TAPE are available from THE RAINBOW and, together, these contain the bare necessities you need to set up your own bulletin board.

Either way, you can quickly and easily become the SYSOP of your own system.



Listing 1

```
0 * PATCH, BY ERIK GAVRILUK
1 * ENABLES RANDOM ACCESS MEMBER
SHIP FILE FOR THE RAINBOARD.
2 * REMARK FOLLOWING THE LINE EX
PLAINS WHAT SHOULD BE DONE,
3 * ,E.G., CHANGED = CHANGE T
HIS LINE TO READ...ETC.
4 * IF NOTHING ELSE IS LISTED AF
TER A LINE, INSERT THAT LINE.
5 * THIS FILE CAN BE MERGED WITH
THE EXISTING RAINBORD/BAS.
6 * RUN INITMEMB/BAS BEFORE USIN
```

```
G THIS NEW MODIFIED RAINBOARD.
20 GOTO 1700'CHANGED
70 CLEAR5000:DIMDISPLAY$(46),TEX
T$(70)'Modified line
100 CLS:PRINT"RAINBOARD IS READY
TO RECEIVE!'"Replace
131 LINE INPUT"ARE YOU USING A T
RS-80 COCO (Y/N)?"CC$:IF CC$="N
" OR CC$="n" THEN BITS=7:GOTO 15
0'Insert line
132 IF CC$="Y" OR CC$="y" THEN 1
40 ELSE 131'Insert line
170 CLOSE:PRINT"PRESS ENTER TO B
ECOME A MEMBER":LINE INPUT"OR TY
PE YOUR LOGON NUMBER:"LN$:IF LN
$="" THEN 1500 ELSE V=VAL(LN$):I
F V<1 THEN 170 ELSE IF V>300 THE
N 170'Replace
171 OPEN"D",#1,"MEMBERS/TXT",25:
FIELD 1,16 AS NM$,6 AS PW$,3 AS
IN$:GET #1,V'INSERT
```



```

172 I$=IN$:LINE INPUT"ENTER YOUR
PASSWORD:";P$:IF P$=PW$ THEN NA
ME$=NM$:PRINT"HELLO, "NAME$" ("I
$")":GOTO 210 ELSE 170'INSERT
210 INIT$=I$:CLOSE:PRINT"CHECKIN
G FOR MESSAGES.":C=1:GOSUB650:GO
TO360'Modified line
700 MSG$="WOULD YOU LIKE"+CHR$(1
3)+"TO REPLY TO THIS (Y/N)? ":GO
SUB40:IFC$="Y"THENGOSUB740'MODIF
IED
710 NEXTL,K:IFCD THENRETURNELSEP
RINT"SORRY, NO MESSAGES FOUND.":
RETURN'CHANGED
770 PRINT"WE NEED 3 LETTERS.":GO
TO 760'CHANGED
810 IFLEN(S$)>8THENPRINT"8 LETTE
R MAXIMUM, "NAME$:GOTO 800'CHANG
ED
820 IFINSTR(S$,".")ORINSTR(S$,"0
")ORINSTR(S$,"/")ORINSTR(S$,".")
THENPRINT"PLEASE DO NOT USE: .
: /":GOTO 800'CHANGED
900 PRINTSTRING$(3,7)"THAT LINE'
S TRUNCATED TO:"'CHANGE
1260 PRINTTAB(6)"***THE RAINBIRD
S***"CHANGED
1261 OPEN"D",1,"MEMBERS/TXT",25:
FIELD 1,16 AS NM$,6 AS PW$,3 AS

```

```

I$'INSERT
1262 FOR X=1 TO 300:GET #1,X:IF
PW$=STRING$(6,32) THEN CLOSE:RET
URN ELSE PRINTNM$;"("I$;")":NEX
T X:CLOSE:RETURN:'INSERT
1410 MBR=0:OPEN"D",1,"MEMBERS/TX
T:0",25:FIELD 1,16 AS NM$,6 AS P
W$,3 AS IN$:FOR X=1 TO 300:GET #
1,X:IF PW$=STRING$(6,32) THEN CL
OSE:RETURN ELSE IF I$=IN$ THEN M
BR=-1:CLOSE:RETURN ELSE NEXT:CLO
SE:RETURN
1420 NEXT:CLOSE:RETURN
1450 PCLEAR1:GOTO 70'DELETE
1500 OPEN"D",1,"MEMBERS/TXT",25:
FIELD 1,16 AS NM$,6 AS PW$,3 AS
IN$
1501 LINE INPUT"ENTER YOUR FULL
NAME:";N$
1502 LINE INPUT"ENTER 3 INITIALS
WE SHOULD ADDRESS MAIL TO:";I$:
IF LEN(I$)<>3 THEN PRINT"THREE L
ETTERS":GOTO 1502
1503 PRINT"WORKING .. PLEASE WAI
T"
1504 FOR X=1 TO 300:GET #1,X:IF
LEFT$(NM$,LEN(N$))=N$ THEN 1509
ELSE IF IN$=I$ THEN 1510 ELSE IF
PW$=STRING$(6,32) THEN 1505 ELS

```

Rainboard In Brazil

This is a photo of our Rainboard BBS setup which is on the air from 8 p.m. to 12 p.m. by phone (021) 246-2938, daily.

The system is actually made by two TEAC 80-track double density drives with a J & M disk controller, J-Cat Bell Auto-Answer modem and a 64K Color Computer ('F' Board).

We're over 30 users up today, spread all over the country, but we're hoping to increase this number a lot after this, since THE RAINBOW is the most known CoCo magazine in Brazil and is undoubtedly the CoCo user's bible all over the world.

Joao Roberto Amin Araujo
Rua General Polidoro 288 Casa 9
Botafogo, Rio De Janeiro, 22280
Brazil




```

E NEXT X
1505 LINE INPUT"ENTER SIX LETTER
S FOR A PASSWORD:";P$
1506 IF LEN(P$)<>6 THEN PRINT"SI
X LETTERS PLEASE":GOTO 1505
1507 LSET NM$=N$:LSET PW$=P$:LSE
T IN$=I$:PUT #1,X:CLOSE:PRINT"YO
UR LOGON NUMBER IS";X
1508 NAME$=N$:GOTO 210
1509 PRINT"SOMEONE ALREADY HAS T
HIS NAME":GOTO 1511
1510 PRINT"SOMEONE CURRENTLY HAS
THESE INITIALS"
1511 PRINT"PLEASE TRY AGAIN":GOT
O 1501
1700 PCLEAR 1:GOTO 70

```

Listing 2

```

10 ' Program to initialize rando
m access
20 ' Membership file for RAINBOR
D/BAS
30 ' BY ERIK GAVRILUK
40 CLS:PRINT"INITIALIZING MEMBER
S/TXT FILE."
50 OPEN"D",#1,"MEMBERS/TXT:0",25
60 FIELD 1,16 AS NM$,6 AS PW$,3
AS IN$
70 FOR X=1 TO 300:LSET NM$=STRIN

```

```

G$(16,32):LSET PW$=STRING$(6,32)
:PUT #1,X:NEXT X
80 CLOSE #1
90 PRINT"FILE INITIALIZED.. YOU
HAVE ROOM FOR 300 USERS"

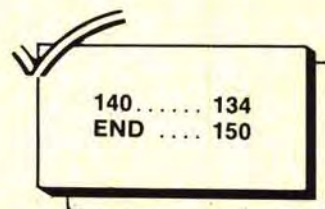
```

Listing 3

```

5 'EDITOR - BY ERIK GAVRILUK
10 CLS:PRINT"USERSLOG EDITOR FOR
RAINBOARD"
20 OPEN"D",#1,"MEMBERS/TXT",25:F
IELD 1,16 AS NM$,6 AS PW$,3 AS I
N$
30 REC=1
40 CLS:PRINT"RECORD #"REC:GET #1
,REC
50 PRINT"NAME:"NM$:PRINT"PASSWOR
D:"PW$:PRINT"INITIALS:"IN$
60 PRINT:PRINT"1.NAME,2.PW,3.INI
T,4.NEXT,5.END"
70 LINE INPUT A$:ON VAL(A$) GOTO
100,200,300,400,500
80 GOTO 60
100 LINE INPUT"NAME:";N$:LSET NM
$=N$:PUT #1,REC:GOTO 40
200 LINE INPUT"PASSWORD:";P$:LSE
T PW$=P$:PUT #1,REC:GOTO 40
300 LINE INPUT"INITIALS:";I$:LSE
T IN$=I$:PUT #1,REC:GOTO 40
400 REC=REC+1:GOTO 40
500 CLOSE:END

```



Listing 4

```

10 'SYSOP PROGRAM
20 CLEAR5000:DIMNAME$(50)
30 CLS:PRINT"ENTER NUMBER OF FUN
CTION:", "1. DISPLAY ACTIVITY FIL
E", "2. PRINT ACTIVITY FILE", "3.
INITIATE ACTIVITY FILE"
40 PRINT"4. DISPLAY MEMBER FILE"
, "5. PRINT MEMBER FILE", "6. STAR
T MEMBER FILE", "7. REMOVE MEMBER
S", "8. KILL OLD MESSAGES", "9. EN
D
50 INPUTK:IFK<1ORK>9THEN30ELSEON
K GOSUB60,60,100,110,110,140,160
,210,250:GOTO30
60 IFK=1THENDV=0ELSEDV=-2
70 OPEN"D",1,"ACTIVITY":L=LOF(1)
:PRINT#DV,"CALLERS ="L
80 FORI=1TOL:GET#1,I:INPUT#1,ACT

```

ORDER TOLL FREE

1-800-437-4757 EXT. 241

HERE IT IS...

The Standard BASIC Dictionary for Programming

JOHN P. STEINER

Here are all the definitions, sample commands and information on functions, statements and operations you need to quickly adapt and run a BASIC language program.

*Covers virtually ALL versions of BASIC.

*Quick reference syntax guide.

*Includes graphics & file commands.

*Each word is cross referenced to other words with identical or similar functions.

PLUS:

A complete appendix includes programming techniques, graphics, file handling, many useful charts, references and more. 230 pages in book.

ONLY

\$19.95

Plus \$2.00
Shipping & Handling

**Computer
Associates**

Dept. R
Box 683
West Fargo, ND 58078

Send SASE for CoCo
Support catalog.




```

$:FORJ=255TO0STEP-1:IFMID$(ACT$,
J,1)=" "THENNEXTJ ELSEACT$=LEFT$(
ACT$,J)
90 PRINT#DV,ACT$:NEXTI:CLOSE:LIN
INPUT"PRESS ENTER TO CONTINUE";
K$:RETURN
100 KILL"ACTIVITY/DAT":RETURN
110 IFK=4THENDV=0ELSEDV=-2
120 OPEN"D",#1,"MEMBERS/TXT",25:
FIELD 1,16 AS NM$,6 AS PW$,3 AS
IN$
121 FOR I=1 TO 300:GET #1,I:IF P
W$=STRING$(6,32) THEN 130 ELSE P
RINT#DV,NM$;"{";IN$;"}"==">";P
W$:NEXT I
130 CLOSE:LINEINPUT"PRESS ENTER
TO CONTINUE";K$:RETURN
140 CLS:LINE INPUT"SYSOP NAME:";
NA$:LINE INPUT"INITIALS:";I$:LIN
E INPUT"PASSWORD:";P$:OPEN"D",#1
,"MEMBERS/TXT",25:FIELD 1,16 AS
NM$,6 AS PW$,3 AS IN$
141 LSET N$=NA$:LSET PW$=P$:LSET
IN$=I$:PUT #1,1:LSET PW$=STRING
$(6,32):PUT #1,2:CLOSE
150 RETURN
160 K=4:GOSUB110
170 LINE INPUT"ENTER INITIALS OF
MEMBER TO REMOVE, X TO RETU
RN:";I$:OPEN"D",#1,"MEMBERS/TXT",
25:FIELD 1,16 AS NM$,6 AS PW$,3
AS IN$
171 FOR X=1 TO 300:GET #1,X:IF I
N$=I$ THEN 175 ELSE NEXT X:CLOSE
:PRINT"NOT FOUND":RETURN
175 LSET PW$="....."+CHR$(255):P
UT #1,X:CLOSE:RETURN
180 WRITE#1,NUM:FORI=1TONUM:WRI
TE#1,NAME$(I):NEXT:CLOSE:RETURN
190 J=1:FORI=1TONUM:IFLEFT$(NAME
$(I),3)=INITS$THENI=I+1:NUM=NUM-
1
200 NAME$(J)=NAME$(I):J=J+1:NEXT
:GOTO170
210 'Kill Old Messages
220 CLS:PRINT"ENTER NUMBER OF CU
RRENT MONTH:":INPUTMONTH
225 FORI=3TO11:DSKI$1,17,I,A$,B$
:A$=A$+LEFT$(B$,120):FORJ=0TO7:S
BJECT$=MID$(A$,J*32+1,8):EXT$=MI
D$(A$,J*32+9,3)
230 A=ASC(SBJECT$):IFA=255THENJ=
7:I=11:GOTO240ELSEIFA=0THEN240
235 IFMID$(EXT$,2,1)="*"OR(LEFT$(
EXT$,1)="A"ANDVAL(RIGHT$(EXT$,2
))<MONTH-1)THENKILLSBJECT$+" "+E
XT$+"":1"
240 NEXTJ,I:RETURN
250 END

```

PRODUCTS FOR THE TRS-80 COLOR COMPUTER®

EDITRON®

Full-Screen BASIC Program Editor
WILL SAVE YOU TIME!

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

EDITRON performs these functions:

CURSOR-CONTROL

- ★ Directional Movement
- ★ Screen Scrolling
- ★ Home the Cursor
- ★ Limit the Cursor
- ★ Down Page
- ★ Up Page
- ★ Search a Line
- ★ Call a Line
- ★ Find a String
- ★ Repeat Find

SCREEN-EDITING

- ★ Change Characters
- ★ Extend a Line
- ★ Kill a Line
- ★ Insert Characters
- ★ Delete Characters
- ★ Move a Line
- ★ Split a Line
- ★ Copy a Line
- ★ Merge Two Lines
- ★ Auto-Numbering

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

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

CASSETTE.....\$ 30

DISKETTE.....\$ 35

MACHINE LANGUAGE UTILITIES

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

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

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

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

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

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

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

HARDWARE PRODUCTS

ROMs

- BASIC ROM 1.1\$45**
- BASIC ROM 1.2\$35**
- E.C.B. ROM 1.1\$60**
- D.E.C.B. ROM 1.1\$35**

RAMs

- 4164—64K RAM\$6**
- Set of Eight\$50**
- 4116—16K RAM\$1**
- Set of Eight\$8**

I.C.s

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

SERIAL SWITCHERS

These bi-directional switchers allow you to expand your serial port to two or three peripherals or to connect one peripheral to two or three computers. They are a compact 2 x 3 x 1 1/2 inches and are available with a mounted pilot light.

2 Ports\$25**

3 Ports\$30**

Add \$5** for Pilot Light

MISC

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

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

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



VIDTRON

★ FREE ★
CATALOG

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

November 1983

\$3.95

U.K. £2.55

The

RAINBOW®

THE COLOR COMPUTER MONTHLY MAGAZINE

Two Great Simulations . . .

Announcing the Winners
of Our Contest

DATA COMMUNICATIONS

**RAINBOARD
SET UP
YOUR OWN
BULLETIN BOARD!**

**COMPOSE
OFFLINE MESSAGES**

**BULLETIN BOARDS
ACROSS AMERICA**

**BECOME A
'PRINTER ARTIST'**

**STORE A YEAR'S
APPOINTMENTS**

PLUS . . .

**AN AUTOMATIC
PHONE DIALER**

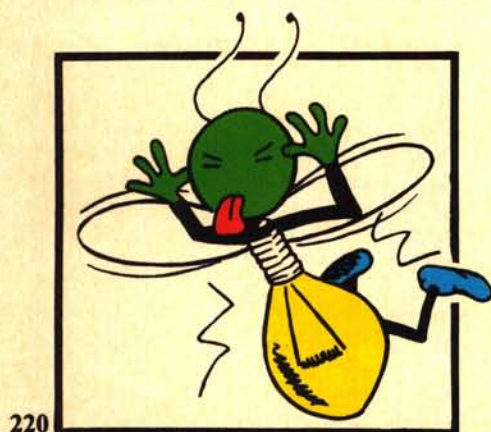
**... AND MORE THAN
30 PRODUCT REVIEWS**



Under the Rainbow

Feature Articles

You Are The SYSOP/ Lane Lester, Ph.D.	20
Data Communications Operate your own BBS with <i>RainBoard</i>	
Remember Those Dates/ Program by Bill Bruck	33
Utility Store your appointments for a whole year	
Message Master/ Alan Davenport	42
Data Communications Write messages offline and reduce connect time	
CoCo Caller/ Jorge Mir	53
Data Communications Here's an automatic phone dialer for the Modem II	
The Vote Is In/ Charles Springer	68
Simulation Contest Report Announcing the results of our Simulation Contest	
And The Winner Is/ Bob Tyson, Ph.D.	74
Game Election '84 is one heck of a campaign and our Grand Prize Winner	
Game Without Winners/ Thomas G. Weber	90
Game WarGame receives our Graphics Best of Show award	
Long Distance Operator/ Dan Downard	118
Utility Remote operation of your Color Computer	
Bulletin Boards Are For Calling/ Ric Manning	122
Data Communications A sampling of BBS's from around the country	
Printer Mysteries/ Michael Himowitz	126
Graphics Upgrading a popular old typewriter game	
Johann Sebastian CoCo/ Tommy and Gail Pollock	152
Music A digitized ditty by Christian's daddy	
Color Your Text Screen/ Rich Dersheimer	158
Graphics A colorful graphics utility	
E-Z Graphics/ Fred B. Scerbo	160
Graphics An easy-to-use graphic screen DATA compiler	
A Million Bits Per Second?/ Harry Hardy	173
Data Communications An introduction to synchronous data transmission	
Fast Talker/ Richard A. White	186
Tutorial "C" may become the language of the '80s	
CoCoCommunicating/ Bob Rosen	192
Data Communications Expanding the horizons of your CoCo	
Interfacing the Gemini-10/ William R. Hall	202
Utility Interfacing CoCo to the Gemini-10 and -15	
How? That's How!/ Henry Portela	204
Graphics Good graphics, good for kids	
A Glowing Tail Of Battle/ Joseph A. Laake	220
Game A warring worm bent on insecticide	
MegaBoard/ Alexander B. Trevor	288
Data Communications An inside look at CompuServe	
A Computometer?/ Paul S. Hoffman	292
Utility Measure your vacation route with X-Pad	
Is It Off?/ Richard S. Ellis	296
Project An on/off indicator for your disk drives	
Dry-Clean Your Disks/ David and Thomas Szlucha	308
Disk Utility No more diskpan hands	
A Buncha BBSs/ Staff	325
Data Communications A state-by-state list	
Love At First Byte/ Charlotte Bish	328
Commentary A computer widow's lament	



Departments

Letters To Rainbow/Our Readers.....	6
PRINT #2./Lawrence C. Falk	13
Editor's Notes	
Building November's Rainbow/Jim Reed	16
A many-hued preview to this month's issue	
KISSable OS-9/Dale L. Puckett	58
Looking into the heart of OS-9 operation	
Education Overview/Dr. Michael Plog	115
Phasing in the computer revolution	
Game Master's Apprentice/Bob Albrecht	140
A champion-building program	
The Pipeline/Staff	156
The Dragon's Byte/Bill Nolan	168
A grand system for fantasy gamers	
About Your Subscription	196
Bits And Bytes Of Basic/Richard White	198
Stringing along with Dick and the BASICS	
CoCo Counsel/Tom Nelson	212
Steps to copyrighting your software	
Rainbow Scoreboard	226
Turn Of The Screw/Tony DiStefano	230
Building a speaker/amplifier	
Reviewing Reviews	237
Readers' comments on Rainbow reviews	
Back Issue Information	276
Submitting Material To Rainbow	285
Assembly Corner/Dennis Lewandowski	298
A couple of quickies save the day	
Greetings From Uncle Bert/Dale Peterson	300
Some state-of-the-art art	
Basic Training/Joseph Kolar	306
Waste not, and other tips on frugality	
Education Notes/Steve Blyn	314
Educational possibilities of synthesized speech	
Corrections	319
RAINBOW Info	320
Received And Certified	322
CoCo Clubs	330
Advertiser Index	338
Don Inman's <i>Using Graphics</i> will return in December.	

Product Reviews

Amortization	274	Fundfile	262
Arex	244	Gorilla Monitor	284
Atari Joysticks	270	Grand Slam	260
Blackjaq	250	Guardian	277
C.C. Dialer	254	Label III	255
Color Finance	238	Line Cross Reference	256
Color Ink Jet Printer	242	Pigskin Predictions	258
Color Term+Plus+	246	Quicksort	283
Color Zap	286	Reactoid	282
The Companion	273	Remote Reset	268
Cosmic Clones	286	Sonar Search	281
Deprec	272	Super Color Speller	266
Derby	285	That's INTERESTing	264
Disasm	248	3-D Tic-Tac-Toe	272
Disk Manager	275	Voicepak	278
Elciran	280	Video Plus	284
Flexi Filer	282		

NEXT MONTH: December is our holiday issue month, with a special sackful of stocking stuffers that includes Christmas graphics, Christmas carols, cards and more.

We will also be featuring articles and programs by some of our best-known and most-called-for contributors, including Jorge Mir, Roger Schrag, Larry Konecky and others, as well as our regular cluster of informative tutorials by *Rainbow's* contributing editors.

Plus... well over 300 pages of articles, program listings, software and hardware reviews and advertising of products just for CoCo—more information on your Color Computer than is available anywhere else. Happy Holidays!

The Rainbow

November 1983 Vol. III No. 4

Editor and Publisher
Lawrence C. Falk

Managing Editor James E. Reed

Senior Editor Courtney Noe

Technical Editor Dan Downard

Copy Editor Susan Remini

Submissions Editor Jutta Kapfhammer

Editorial Assistants Valarie Edwards,
Wendy Falk, Suzanne Kurowsky,
Noreen Morrison, Joyce Paig

Contributing Editors Bob Albrecht, Steve
Blyn, Tony DiStefano, Don Inman, Joseph
Kolar, Dennis Lewandowski, Bill Nolan,
Dale Peterson, Michael Plog, Ph.D.,
Charles Roslund, Dick White

Art Director Sally Nichols

Assistant Art Director Jerry McKiernan

Designers Peggy Henry, Neal C. Lauron

Advertising Manager Charlotte Ford

Advertising Assistant Lynda Wilson
(502) 228-4492

General Manager Patricia H. Hirsch

Assistant General Manager for Finance
Donna Shuck

Billing Clerk Monica Wheat

Administrative Assistant to the Publisher
Marianne Booth

Customer Service Manager Ivanka Kleier

Research Assistants Laurie Falk,
Deidra Henry, Tanya Holder, Wanda Perry
Dispatch Mark Herndon

Garland Associates, Inc., is the advertising representative for the RAINBOW in the eastern United States. Advertisers east of the Mississippi may contact them for further information. Garland Associates, Inc., P.O. Box 314, S.H.S., Duxbury, MA 02331, (617) 934-6464 or 934-6546.

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

Second class postage pending at Louisville, KY. POSTMASTER: Send address changes to Rainbow, P.O. Box 209, Prospect, KY 40059. Forwarding Postage Guaranteed.

Entire contents © by FALSOFT, Inc., 1983. The RAINBOW is intended for the private use and pleasure of its subscribers and purchasers and reproduction by any means is prohibited. Use of information herein is for the single end use of purchasers and any other use is expressly prohibited. All programs herein are distributed in an "as is" basis, without warranty of any kind whatsoever.

TRS-80, Color Basic, Extended Color Basic, Scriptit and Program Pak are ® trademarks of the Tandy Corp. CompuServe is a ® Trademark of CompuServe Inc.

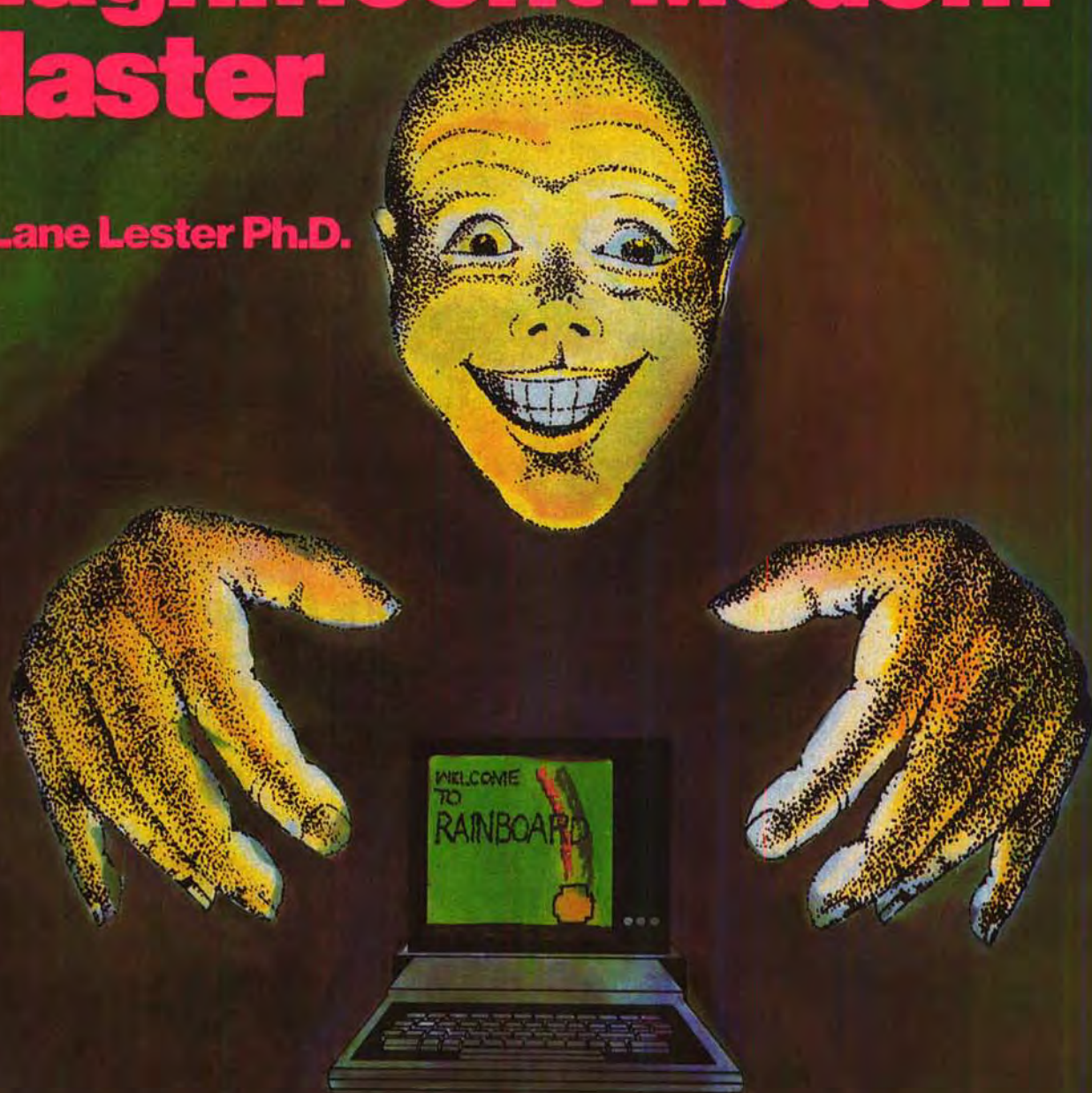
Subscriptions to the RAINBOW are \$22 per year in the United States. Canadian and Mexican rates are U.S. \$29. Surface mail to other countries is U.S. \$57, air mail U.S. \$85. All subscriptions begin with next available issue.

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

Now! After a lifetime of lusting for power, prominence, charisma, clout and godlike celebrity, you, too, can become a . . .

Supreme Sysop and Magnificent Modem Master

by Lane Lester Ph.D.



Have you bought your CoCo a modem yet? Have you sampled the joys (and the telephone bills) of roaming through the Network Nation? All over the country there are BBS's (bulletin board systems), computers waiting to take your call, systems dedicated to the interests of Color Computer owners. Here in the small town of Lynchburg, Va., there are very few Color users as dedicated (euphemism for "freaked out") as I, and communications capability allows me to reach out with telephone tentacles to like-minded individuals around the country. Some of my most valuable exchanges of information have come from Kent Meyers in LeRoy, Minn., by way of the Color Connection in Elgin, Texas. (By the way, Kent has supplied much of the information appearing in *the Rainbow*'s listing of BBS's elsewhere in this issue.) In addition to your modem, you'll also need a terminal program, several of which have been reviewed in *the Rainbow*.

But this article is really aimed at those who have already come to appreciate both the enjoyment and edification that comes from communicating with other Color users via the bulletin board systems supporting our machine. To many of us, the SYSOP (System Operator, manager of the bulletin board) is a godlike creature, sitting like a spider in the middle of its web. The mighty SYSOP receives our transmissions from everywhere, answering our questions, and controlling what messages, files, and programs are available to us lower sorts. The aspiration to be like God led to Satan's downfall and many of us have lusted in our hearts to be a SYSOP, with all the adoration and power that accompanies that position.

I must confess to you that I have long had a secret desire to operate my own BBS. Of course, one very serious hindrance to such a project is that while the computer is running the board it can't do anything else. For the most part, only those who have an extra computer to spare can be a SYSOP. One day it occurred to me that since the CoCo in my office at school is alone all night long, it could run a BBS at night! Then I looked at the prices of bulletin board software, almost all in the neighborhood of \$100 an up. Another blow to my ambition. One day I purchased for \$19.95 a very interesting machine language program, *RemoTerm* by Star-Kits. I could load and execute this program in my office CoCo, go home and use my home CoCo by telephone to load and run programs in my office. It occurred to me that I could use *RemoTerm* to run a BBS; all I had to do was write a BASIC program to manage the system.

RainBoard, "With a Rainbow of Color and a Pot of Gold in Good Times," is now a reality, and I'm having a great time. Perhaps you would enjoy operating your own board; the following programs will allow you to find out without a great expenditure in cash, only in time. As far as hardware is concerned you'll need a 32K CoCo with Disk BASIC, one disk drive, and an auto-answer modem. A price breakthrough for this last item came with the development of the *Novation J-CAT*, which is discounted for a little over \$100. But as important as is the right hardware, it's the software that makes a BBS the special thing it is, so the rest of this

article will be devoted to describing the use of the programs that follow.

There are four programs accompanying this article which are included on *Rainbow on Tape*. *Remote* is the BASIC program that I run just before I go home each evening. It first loads *RemoTerm*, and then changes it to disable the callers' [BREAK] key. The modified *RemoTerm* is executed, and finally *RAINBORD* the BBS program, is run. This version of *REMOTE* also sets some parameters on my *Hayes SmartModem*, and would have to be changed if you have a different unit. A timer turns off the system at midnight and then turns it on at 7:30 a.m., so that it's warm and waiting when I get to the office. *SYSOP* is the first program I run, displaying the activity on the *RainBoard* the previous night. It has some other functions that are self-explanatory and aid in the maintenance of the board. *GRAFMESS*, which I downloaded from the Color Connection and modified considerably, allows me to create the color graphics screens that I believe add a nice touch to the *Rainboard*. *RAINBORD* supports the following BBS functions:

- Help with BBS functions,
- Bulletins of interest to callers,
- Scan message subjects for possible retrieval,
- Read messages,
- Leave messages,
- Programs available for downloading,
- Text files on various subjects,
- Art gallery of graphics
- Member list
- Goodbye — leaves the *RainBoard* ready for the next caller.

Perhaps the most logical way to describe the use of *RAINBORD* is to relate my comments to particular sections of the program. Line numbers will be shown in parentheses. This should both help you see what's going on and aid you in customizing it for your own use. An immediate jump (20) to the bottom of the program avoids the notorious *PCLEAR* bug. The Lower/Upper Case Input Routine (3) is called at various times in the program and allows the caller to use either lower or upper case responses to prompts. Single letter responses produce a colored stripe across the screen which provides part of the *RainBoard*'s promise of "a rainbow of color." Three arrays are dimensioned (70), *DISPLAY\$* (for graphics, 15/picture), *NAMES* (BBS members), and *TEXT\$* (for message entry). Next (80) I load the three graphic screens that I'm currently using which were created with the graphics message program *GRAFMESS*. The first two are displayed in lines 150 and 390, respectively, and the third is in the Art Gallery (1220). If you add pictures to the Art Gallery, you'll need to change in line 1240 the number 45 to 15 more for each picture. The list of current members of the BBS is then loaded (100). Because the graphics and member list are displayed often, they are kept in RAM to minimize disk use. The disk file of members is, however, updated whenever a new member joins the board.

RAINBORD refers to disk drives either by default or as D1. By making all of them 0 (110) only one drive is required, and the only limitation is on the number of text, program, and message files that can be online. Once way to maximize

(Lane Lester is professor of biology at Liberty Baptist College and holds the M.S. in ecology and the Ph.D. in genetics.)

space is to keep the four BBS programs *RAINBORD*, *REMOTE*, *SYSOP*, and *GRAFMESS* plus the graphics files *WELCOME*, *HELP*, and those in the Art Gallery on one disk which is only used at the time the *RainBoard* is started. All other files can be on a second disk which stays in the drive as long as the BBS is online. Text files always go on the default drive (0), but because I am blessed with a Radio Shack drive 0 and a double-sided MPI drive wired as drives 1 and 2, my own version of line 110 reads: D1=1: 1\$="1":D2=2:D2\$="2."

When someone calls the *RainBoard*, program line 130 is waiting for a carriage return [ENTER]. The caller is given a chance (140) to request 7 or 8 bits, which will determine at various places in the program whether text or graphics will be displayed. For callers who are using the smart terminal program *ColorCom/E* the CHR\$(27)"G4" sets the program to 8 bits. To speed logging on, the caller is asked for initials only (170) which are checked against the member list (190) and if a match is found, the caller is asked for verification (200). New member callers go through the "New Member Signup" section (220-340), while for members the message files are checked and any new messages addressed to the caller displayed.

You'll notice throughout the program that a string, ACT\$, is constantly growing. This is the record of the caller's ACTivity which is recorded when the caller logs off. FL is another variable whose purpose may not be immediately obvious. It serves as a FLa g to allow the program to hang up on at least some mischief-makers. CHR\$(13) is used where commas would ordinarily do so that callers with other

than 32-character displays will see a decent screen. The last step in new member signup is the display of the text file "NEWMEMBER" (340) which provides information for beginners.

The Main Menu (350) consists of only a single line to speed communication. If a person responds with an invalid character, an "H," or simply a carriage return [ENTER], an expanded menu is displayed (380-440). After they are selected, most of the individual functions have available complete help files on the disk. As each function is selected, the *GOSUB1300* keeps track of both the type and amount of the caller's activity.

The "Scan Messages" function (480-560) next needs comment. Each message occupies a separate granule on the disk, and the scan function displays both the filename and extension. Filenames indicate the subject of the message and extensions the initials of the intended recipient. Messages to "All" have extensions such as "A09" to indicate the month entered. The caller can request Help, a Complete scan, Initials to scan, or Return to Main Menu.

The "Read Messages" function (570-720) offers similar options with the ability to retrieve selected Subjects or Initials. A directory search subroutine (640-710) serves all options as well as the initial message search when a member first calls the *Rainboard*. The ability to create private messages is provided when the subject specified is "PERSONAL" so that only the intended recipient can retrieve them (670). When a caller reads one of his or her messages, an asterisk replaces the middle initial in the file extension (690), making possible the display of only new message while leaving old ones for others to read. An opportunity to reply is immediately provided the recipient (700).

The caller's options in the "Leave Messages" function are different in that three letters are expected (740). A lengthy series of checks and prompts insure that only valid disk file specifications are given by the caller, and that duplicate filenames do not erase other messages. Because most CoCo terminal programs have word-wrap prevention, a 63-character line length for those who print their messages after going offline. A "." printed above each line helps the caller keep track of the line length, but if he or she exceeds 63 characters an error message is displayed and the line truncated to the proper length (900-910).

The remaining functions do not require much comment. For both BASIC programs to download and text files to read, the caller can get a List or Descriptions (950 and 1090). The Art Gallery (1220) is a nice idea that I lack the artistic talent to fully exploit. The Goodbye function writes the caller's activity to a file (1280), says a personal goodbye (1290), and hangs up the *SmartModem* (1300-1320) before jumping back to the beginning for the next caller. If you use the *Novation J-CAT*, you can delete lines 1300-1301; it will hang up after the caller.

The Display File routine (1330) is called whenever an ASCII file of any type is to be transmitted to the caller. This includes messages, text files, and programs. The Activity Length Test (1360) keeps track of each caller's use of the *Rainboard* and helps to prevent someone's monopolizing the system. If a caller is having trouble using the BBS, you can usually see what's wrong when you display the activity file using the program *SYSOP*. Several places in *RAINBORD* the membership list is checked (1400), and each graphic screen created by *GRAFMESS* is loaded by the last routine (1420). In line 80, the values of Y and Z determine the location of each graphic in the single array.

PAY WHAT YOU WANT

for home and business software
RS CoCo and TDP-100

16/32K Disk or Cassette
Extended Color Basic Required

BUDGET RECORD

Income & outlay by 99 categories. Great for taxes. 32k.

MAILING LIST

Makes labels, printouts and alphabetized lists. M/L sort.

APPOINTMENT BOOK

Print a calendar with any number of memos/day. (32k. Requires printer with compressed characters)

GRADE BOOK

Make rolls & grade sheets, complete with stats and totals.

ALSO AVAILABLE

Phone Book, Sales Record, Car Repairs, Diet Delight, Grocery List.

The Fine Print:

Order two programs maximum. Send shipping/handling in advance (1—\$4.00; 2—\$6.00). After using the program, pay only what the program is worth to you. Let's try applying right livelihood to the software industry!

Specify 16/32K and type of printer.

Bruck Associates
6609 Westmoreland Ave.
Takoma Park, MD 20912
(301) 270-5822



Free catalogue on request

Rainboard Procedures

The following is a step-by-step list of things to do to get the *Rainboard* up and running:

1. Use *DSKINI0* to erase and format two disks. We'll call them Disk 1 and Disk 2 in the following steps.
2. Put on Disk 1 the four BASIC programs *REMOTE*, *RAINBORD*, *SYSOP*, and *GRAFMESS*. You can either type them in from the magazine, get them on *Rainbow on Tape*, or best of all, send me \$20 for a disk also containing supporting text and graphics files. Also *SAVEM* to this disk either *RemoTerm* or the machine language program written by *Rainbow* Technical Editor Dan Downard and appearing elsewhere in this issue. Edit *REMOTE* to contain the name of the program you decide to use.
3. Run *GRAFMESS* (described below) and create the graphic files *WELCOME*, *HELP*, and any that you would like to display in the Art Gallery. Save these to Disk 1.
4. Run *SYSOP* (described below) and select menu option 6 to create the *MEMBERS* file. Save this to Disk 2.
5. On Disk 2 place the text files (described below) *TEXTDESC*, *PROGDESC*, *BULLETIN*, *NEWMEMBR*, *SCAN*, *READ*, *LEAVE*, *PROGRAMS*, and *TEXT*. Also add any text files that you want callers to be able to read with the Text option of *RAINBORD*.
6. Save on Disk 2 the BASIC programs you want callers to be able to download to their computers. These must be in ASCII format and should be given extensions as follows for lines 980-990 of *RAINBORD*
POU-Utility
POA-Application
POG-Game
POO-Other types of programs.
Example command: *SAVE" MILE MON/POA",A*
7. Now you're ready to go! Turn on the modem, and be sure that it, rather than your printer, is hooked to the RS-232 outlet. Place Disk 1 in your drive and *RUN"REMOTE."* After the files on Disk 1 are loaded, you will be prompted to remove it and insert Disk 2. Pressing [ENTER] will load the *MEMBERS* file, and you will receive the message, "RAINBOARD IS READY TO RECEIVE!"
8. The *Rainboard* is now waiting for callers, and requires no further attention from you.
9. Each day at a time convenient to you, you should first "call" the *Rainboard* yourself, either from another computer or directly by pressing [ENTER] on the *Rainboard* keyboard. This will allow you to read messages addressed to you and to reply to them. Then, turn the computer off and back on, insert Disk 1, and run *SYSOP*. Use either menu options 1 or 2 to view the activity file. If a caller seems to have had trouble, you may want to leave him or her a message about it.
10. Use *SYSOP* MENU option 3 to kill the old activity file. Periodically, you will also want to use option 8 to remove messages that have been read by their recipients.
11. Return to step 7.

Text Files

The subject of text files deserves further comment. There

are two types of text files used by the *Rainboard*, one of which provides information to the caller on the use of the BBS and the other type on various topics of interest which can be read through the Text function of *RAINBORD*. In this latter category, I currently have the following: *DSK-BASIC/073*, a memory map of the new 1.1 Disk BASIC ROM; *COCO BBS/083*, a list of CoCo boards; *PROGTIPS/053*, programming tips; and *FOR SALE/073*, sources of good buys. The extension gives the date of entry, e.g. 093 = September, 1983. When a caller requests a list of text files, *RAINBORD* (1080) displays only the filenames that have numerical extensions. The following text files, all of which have the extension "DAT," are displayed at different times in the use of the BBS:

TEXTDESC — descriptions of the text files that can be read by the caller;

PROGDESC — descriptions of the programs available to callers;

BULLETIN — news of meetings, etc. Note that line 460 of *RAINBORD* has to be edited whenever you update this file.

NEWMEMBR — explains use of the bulletin board; automatically displayed when a caller first joins the *RainBoard*;

SCAN, READ, LEAVE, PROGRAMS, TEXT — help files for each function of the BBS. Just as the Help function explains each of the Main Menu choices, these files contain descriptions of submenus and other aid in the use of the particular function. As an example, the *SCAN* file is listed below.

Text files can be created most conveniently with any word processor program that is capable of producing ASCII disk files. Several of these are advertised in *the Rainbow*. If you don't already have one, the cheapest way to produce your text files is to *RUN"RAINBORD"* and use the Leave message function to create the files as messages. You'll have to enter your own initials as the recipient, but they can be *RENAMED* later with the date extension needed for *RAINBORD*'s text file function. The example file *SCAN* will indicate the necessary characteristics of *RainBoard* text files. The line length should be set to 31 characters/line, and only capital letters should be used. It is best not to use hyphens to divide words. Some callers will have other computers and will want to later print what they receive with a longer line length.

Disk File SCAN

THIS FUNCTION LISTS THE SUBJECTS AND RECIPIENTS OF MESSAGES ON FILE. YOU CAN THEN READ ANY THAT INTEREST YOU. THE MENU OPTIONS ALLOW YOU TO SCAN ALL OF THE MESSAGE HEADINGS OR THOSE ADDRESSED TO SELECTED INITIALS.

MESSAGES DIRECTED TO 'ALL' MUST BE SPECIFIED AS 'A' PLUS TWO DIGITS FOR THE MONTH DESIRED, E.G., 'AO8'.

OPTIONS AT THE PROMPT ARE:

H (THIS SCREEN)

C (COMPLETE SCAN)

I (SCAN FOR INITIALS)

R (RETURN TO MAIN MENU)

GRAFMESS

The *GRAFic MESS*age generator program is used for the creation of the graphic screens displayed by the *RainBoard*. Instructions for the use of *GRAFMESS* are displayed when the program is run. The user is prompted to select the creation of a new graphic or the editing of one already in a file. After indicating either disk or tape storage, a filename is requested. If one is editing an existing graphic, it is then loaded from the disk or tape. There is a delay while the graphic array is processed for editing, and then a blinking cursor indicates that the program is ready for keyboard input. If a new graphic is being created, the user is asked for a *CLS* value which clears the screen to that color.

The arrow keys are used to move the cursor to desired locations. To select a particular graphic character, the [CLEAR] key is pressed. Then two key presses are used to enter the hexadecimal value of the desired character. These values are listed on page 14 of the *Nanos* reference card. Each time the "@" key is pressed, the selected character will be displayed. Pressing the back arrow also displays the character, and this allows rapid erasing of areas. Text characters are simply typed as usual. When the graphic is complete, pressing [SHIFT][CLEAR] will store both the ASCII file for *RAINBORD* and the binary file for later editing.

NOTE

The four programs, *RAINBORD*, *REMOTE*, *SYSTO-P*, and *GRAFMESS*, and the supporting text and graphics files are available on disk for \$20 from the author, 413 Woodland Circle, Lynchburg, Va. 24502.

KEYBOARD "BEEPER" CARTRIDGE

- ▷ ON BOARD SPEAKER
produces feedback, reducing entry errors
- ▷ "IN-LINE" TRANSPARENT
operation does not "use up" expansion capability
- ▷ NO MODIFICATIONS
(hardware or software) to install or use
- ▷ SWITCHED INTERRUPT LINE
allows power up into BASIC or game pack
- ▷ POWER INDICATORS
monitor 5V, 12V and -12V supplies
- ▷ ACCESSIBLE RESET SWITCH
ends "feeling around" behind computer



ENG SYSTEMS
LABORATORIES
8203 SPRINGFIELD
VILLAGE DRIVE
SPRINGFIELD, VA
22152
(703) 569 8660

SATISFACTION
GUARANTEED

Listing 1

```
10 'REMOTE
20 CLEAR800,&H7F00:LOADM"REMOTER
M"
30 'Disable Break (Control-C)
40 POKE&H7F50,&H86:POKE&H7F51,&H
2A:POKE&H7F52,&H12:EXEC
50 'Enable SmartModem
60 PRINT"AT EO M0 Q1 S0=1 S5=130
S10=20"
70 RUN"RAINBORD
```

100....0205
280....03B6
430....0739
END....0921

Listing 2

```
10 'GRAFMESS: Graphic Message Ed
itor
20 'Original version from The Co
lor Connection (512)285-5028, ed
ited by Lane Lester
30 CLEAR5000:DIMLL$(15,32):GOSUB
370:AD=&H400:KEY*=CHR$(8)+CHR$(9
)+CHR$(10)+CHR$(12)+CHR$(64)+CHR
$(92)+CHR$(94):LS=&H80
40 ST=PEEK(AD):POKEAD,&H2E:J=1
50 K*=INKEY$:IFK*=""THENPOKEAD,
ST:S=ST:GOSUB520:GOTO90ELSEJ=J+1
:IFJ<5THEN50
60 POKEAD,ST:S=ST:GOSUB520:J=1
70 K*=INKEY$:IFK*=""THENJ=J+1:IF
J<25THEN70ELSEGOTO40
80 'Decipher Keys
90 K=INSTR(KEY*,K*):ONK GOTO170,
140,230,260,300,320,200
100 A=ASC(K*):IFA<64ANDPEEK(&H11
A)THENA=A+64ELSEIFA<64ANDNOTPEEK
(&H11A)THENA=LS ELSEIFA>96THENA=
A-96
110 POKEAD,A:S=A:GOSUB520:IFAD<&
H5FF THENAD=AD+1
120 GOTO40
130 'Right Arrow
140 IFAD<&H5FF THENAD=AD+1ELSEAD
=&H400
150 GOTO40
160 'Left Arrow
170 IFAD>&H400 THENAD=AD-1ELSEAD
=&H5FF
180 ST=LS:GOTO60
190 'Up Arrow
200 IFAD>&H41F THENAD=AD-&H20
210 GOTO40
220 'Down Arrow
230 IFAD<&H5E0 THENAD=AD+&H20
240 GOTO40
250 'Enter New Shape Value
260 L*=INKEY$:IFL*=""THEN260ELSE
L=ASC(L*):IFL>96THENL*=CHR$(L-32
)
```



```

270 S$=INKEY$:IFS$=""THEN270ELSE
S=ASC(S$):IFS>96THENS$=CHR$(S-32
)
280 LS=VAL("&H"+L$+S$):GOTO40
290 ' Display Shape in Memory
300 ST=LS:GOTO60
310 'Write to Transmit File
320 OPEN"O",DV,F$:LL$="":LL=VARP
TR(LL$):POKELL,32:FORI=0TO15:LO=
&H0E00+I*32:MSB=INT(LO/256):POKE
LL+2,MSB:POKELL+3,LO-MSB*256
330 WRITE#DV,LL$:NEXT:CLOSE
340 'Write to Edit File
350 IFDV=1THENSAAVEMF$,&H400,&H60
0,&H400:SOUND200,2:GOTO40ELSECSA
VEMF$,&H400,&H600,&H400:SOUND200
,2:GOTO40
370 'Instructions
380 CLS:PRINT"***GRAPHIC MESSAGE
GENERATOR*** @ KEY DISPLAYS GRA
PHIC SHAPE. CLEAR KEY TRIGGERS
NEW SHAPE:"
390 PRINT" ENTER HEX VALUE FRO
M NANS CARD WITH TWO KEY P
RESSES.", "ARROW KEYS MOVE CURSOR
, LEFT AR-";
400 PRINT"ROW DISPLAYS SHAPE SET
BY CLEAR.SHIFT CLEAR STARTS SAV
E OF ASCIIAND BINARY FILES. USE
ASCII TO TRANSMIT, BINARY TO";
410 PRINT" EDIT WITH THIS PROG
RAM.", "CHARACTERS ARE TYPED AS
USUAL, EXCEPT THAT INVERTED SYM
BOLS DO NOT PRINT."
420 PRINT"PRESS 1 TO START NEW G
RAPHIC OR 0 TO LOAD EXISTI
NG FILE.";
430 K$=INKEY$:IFK$<"O"ORK$>"1"TH
EN430ELSESEOUND200,2:ER$=STRING$(
63,32):PRINT@448,ER$;
440 PRINT@448,"PRESS 1 FOR TAPE"
," 0 FOR DISK";
450 L$=INKEY$:IFL$<"O"ORL$>"1"TH
EN450ELSEPRINT@448,ER$;PRINT@48
0,"ENTER FILE NAME(8 CHAR. MAX.)
";PRINT@448,"";LINEINPUTF$
460 IFL$="1"THENDV=-1ELSEDV=1
470 IFK$="1"THENPRINT@448,"PRESS
CLS VALUE":GOTO490ELSECL90:IFDV
=1THENLOADMF$ELSECLOADMF$
480 FORAD=&H400 TO&H5FF:S=PEEK(A
D):GOSUB520:NEXT:SOUND200,2:RETU
RN
490 K$=INKEY$:IFK$<"O"ORK$>"8"TH
EN490ELSEIFK$="O"THENS=&H80 ELSE
S=&H70+VAL(K$)*&H10+&HF
500 FORI=&H400 TO&H5FF:POKEI,S:P
OKEI+&HA00,S:NEXT:RETURN
510 'Transfer Edit Array to Tran
smit Array

```

```

520 IF S<27THENS=S+96ELSEIFS>95A
NDS<128THENS=S-64
530 POKEAD+&HA00,S:RETURN

```

Listing 3

```

10 'SYSOP PROGRAM
20 CLEAR5000:DIMNAME$(50):POKE15
0,1
30 CLS:PRINT"ENTER NUMBER OF FUN
CTION:", "1. DISPLAY ACTIVITY FIL
E", "2. PRINT ACTIVITY FILE", "3.
INITIATE ACTIVITY FILE"
40 PRINT"4. DISPLAY MEMBER FILE"
,"5. PRINT MEMBER FILE", "6. STAR
T MEMBER FILE", "7. REMOVE MEMBER
S", "8. KILL OLD MESSAGES", "9. EN
D
50 INPUTK:IFK<1ORK>9THEN30ELSEON
K GOSUB60,60,100,110,110,140,160
,210,250:GOTO30
60 IFK=1THENDV=0ELSEDV=-2
70 OPEN"D",1,"ACTIVITY":L=LOF(1)
:PRINT#DV,"CALLERS ="L
80 FORI=1TOL:GET#1,I:INPUT#1,ACT
$:FORJ=255TO0STEP-1:IFMID$(ACT$,
J,1)=" "THENNEXTJ ELSEACT$=LEFT$(
ACT$,J)

```

80.....0308
160....047C
END....0637

THE FATE OF THE FREE WORLD IS IN YOUR HANDS!

There's a double-agent
in The Organization
code named...

Ockywoky
your job —
identify Ockywoky
...but it won't be easy! You
don't have much time and it can
be any one of 32 suspects! Travel to
exotic capitals, contact informants, scrutinize
dossiers ...all in your quest to identify Ockywoky!

32 K EXTENDED COLOR BASIC CASSETTE \$22.95
DISK \$24.95

Ockywoky 100% COTTON T-SHIRTS \$8.95
WHITE ON NAVY BLUE • SPECIFY S, M, L, XL

PRICES INCLUDE HANDLING AND SHIPPING (WITHIN THE U.S. AND CANADA)
Outside the U.S. and Canada add \$7.50 per order • All prices in U.S. funds
California residents add 6% sales tax • Sorry no C.O.D.'s or credit cards
Orders paid by cashier's check (or money order purchased from a bank or post office) are shipped
within 2 days. Allow 2-4 weeks delivery on all other forms of payment.



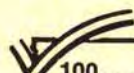
**SHOOTING STAR
SOFTWARE**

**POST OFFICE BOX 24
CHICO, CA. 95927**


```

90 PRINT#DV,ACT$:NEXT I:CLOSE:LIN
INPUT"PRESS ENTER TO CONTINUE";
K$:RETURN
100 KILL"ACTIVITY/DAT":RETURN
110 IFK=4THENDV=OELSEDV=-2
120 OPEN"I",1,"MEMBERS":INPUT#1,
NUM:FORI=1TONUM:INPUT#1,NAME$(I)
:PRINT#DV,LEFT$(NAME$(I),3)" "RI
GHT$(NAME$(I),LEN(NAME$(I))-3):N
EXT
130 CLOSE:LINEINPUT"PRESS ENTER
TO CONTINUE";K$:RETURN
140 CLS:PRINT"ENTER SYSOP INITIA
LS AND NAME, FOR INSTANCE: LPL
ANE LESTER":LINEINPUTSYSOP$
150 OPEN"O",1,"MEMBERS":WRITE#1,
1:WRITE#1,SYSOP$:CLOSE:RETURN
160 K=4:GOSUB110
170 INPUT"INITIALS OF MEMBER TO
REMOVE, X TO RETURN";INIT$:IF
INIT$<>"X"THEN190ELSEOPEN"O",1,
"MEMBERS"
180 WRITE#1,NUM:FORI=1TONUM:WRIT
E#1,NAME$(I):NEXT:CLOSE:RETURN
190 J=1:FORI=1TONUM:IFLEFT$(NAME
$(I),3)=INIT$THENI=I+1:NUM=NUM-
1
200 NAME$(J)=NAME$(I):J=J+1:NEXT
:GOTO170
210 'Kill Old Messages
220 FORI=3TO11:DSKI$1,17,I,A$,B$
:A$=A$+LEFT$(B$,120):FORJ=0TO7:S
BJECT$=MID$(A$,J*32+1,8):EXT$=MI
D$(A$,J*32+9,3)
230 A=ASC(SBJECT$):IFA=255THENJ=
7:I=11ELSEIFA<>0THENIFMID$(EXT$,
2,1)="*"THENKILLSBJECT$+ "/" +EXT$
+"":1"
240 NEXTJ,I:RETURN
250 END

```



100.... 039C	790.... 153B
200.... 0655	900.... 18A1
260.... 080A	1010... 1B89
380.... 0B1C	1130... 1E63
520.... 0E20	1280... 216F
680.... 1277	END... 23CE

Listing 4

```

10 'RAINBOARD - Copyright 1983 b
y Lane Lester, 413 Woodland Circ
le, Lynchburg, VA 24502
20 GOTO1450
30 'Lower/Upper Case Input Routi
ne
40 PRINTMSG$;:LINEINPUTC$:LN=LEN
(C$):IFLN>1THEND$=C$:E$="":FORI=
1TOLN:C$=MID$(D$,I,1):GOSUB50:E$
=E$+C$:NEXT:C$=E$:RETURN
50 IFC$>"@"THENC$=CHR$(ASC(C$)O
R32)-32)

```

```

60 IFLN=1ANDBITS=8THENPRINTSTRIN
G$(32,RND(7)*16+143);:RETURNELSE
RETURN
70 CLEAR5000:DIMDISPLAY$(46),NAM
E$(20),TEXT$(70)
80 FILE$="WELCOME":Y=1:Z=15:GOSU
B1440:FILE$="HELP":Y=16:Z=30:GOS
UB1440:FILE$="COLDSTRT":Y=31:Z=4
6:GOSUB1440
90 CLS:LINEINPUT"IF A SINGLE-DRI
VE SYSTEM, REMOVE STARTUP DISK AN
D INSERT ONLINE DISK. PRESS ENT
ER TO CONTINUE.";C$
100 OPEN"I",1,"MEMBERS":INPUT#1,
NUM:FORI=1TONUM:INPUT#1,NAME$(I)
:NEXT:CLOSE:CLS:PRINT"RAINBOARD
IS READY TO RECEIVE!
110 D1=0:D1$="O":D2=0:D2$="O" 'M
essage (D1) and Program (D2) Dri
ve Numbers
120 'Logon Procedure
130 LINEINPUTSTART$:FORI=1TO100:
NEXT
140 LINEINPUT"DO YOU WANT 7 BITS
FOR TEXT ONLY OR 8 BITS FOR COL
OR, TOO? ";BITS$:IFBITS$<"7"ORBI
TS$>"8"THEN140ELSEBITS=VAL(BITS$
)
150 FL=0:IFBITS=8THENPRINTCHR$(2
7)"G4":FORI=1TO15:PRINTDISPLAY$(
I);:NEXT:GOTO170
160 PRINT"WELCOME TO THE RAINBOA
RD..."CHR$(13)CHR$(13)"WITH A RA
INBOW OF COLOR AND A"CHR$(13)"PO
T OF GOLD IN GOOD TIMES."CHR$(13
)
170 MSG$="YOUR THREE INITIALS, P
LEASE:":GOSUB40:I$=C$:ACT$="* "+
I$+" "
180 FL=FL+1:IFLEN(I$)<>3THENIFFL
=3THENAME$="FRIEND":GOTO1280ELS
E170
190 GOSUB1410:IFMBR THENN$=NAME$
(I):S=INSTR(N$," ") -4:NAME$=MID$
(N$,4,S):INIT$=LEFT$(N$,3)ELSE2
30
200 MSG$=RIGHT$(N$,LEN(N$)-3)+",
"+CHR$(13)+"RIGHT(Y/N)? ":GOSUB4
0:IFC$<>"Y"ANDC$<>"N"THEN200
210 IFC$="Y"THENPRINT"CHECKING F
OR MESSAGES.":C=1:GOSUB650:GOTO3
60
220 'New Member Signup
230 LINEINPUT"PLEASE TELL ME YOU
R FIRST NAME: ";NAME$:LINEINPUT"
AND NOW YOUR LAST NAME: ";LAST$:A
CT$=ACT$+" "+NAME$+" "+LAST$+" "
240 IFLEN(ACT$)<13THEN1280ELSEMS
G$="YOU ARE NOT YET A MEMBER OF
THE RAINBOARD."+CHR$(13)+"WOULD

```



```

YOU LIKE TO BELONG? (Y/N)"
250 GOSUB40: IF LEFT$(C$,1) <> "Y" THEN 360
260 PRINT "GREAT! TO WHAT THREE INITIALS" CHR$(13) "SHOULD YOUR MESSAGES BE" CHR$(13) "ADDRESSED? "; : LINEINPUT INITS$: FL=0
270 FL=FL+1: IF FL=6 THEN 1280 ELSE FOR I=1 TO NUM: IF LEFT$(NAME$(I),3) <> INITS$ THEN NEXT: GOTO 300
280 PRINT "I'M SORRY, " NAME$, " ANOTHER" CHR$(13) "MEMBER HAS THE SAME INITIALS." CHR$(13) "PLEASE MAKE UP THREE OTHERS"
290 LINEINPUT "FOR THE RAINBOARD: "; INITS$: GOTO 270
300 IF LEN(INITS$)=3 THEN FOR I=1 TO 3: A=ASC(MID$(INITS$,I)): IFA>64 AND A<91 THEN NEXT: GOTO 330
310 ACT$=ACT$+" "+INITS$: FL=FL+1: IF FL=6 THEN 1280 ELSE PRINT "WE NEED THREE INITIALS." CHR$(13) "FOR INSTANCE, MINE ARE 'LPL'."
320 LINEINPUT "WHAT ARE YOURS? "; INITS$: GOTO 270
330 PRINT "JUST A MOMENT WHILE I ADD YOU" CHR$(13) "TO THE MEMBERSHIP LIST.": NUM=NUM+1: NAME$(NUM)=INITS$+NAME$+" "+LAST$

```

```

340 OPEN "O",1,"MEMBERS.O": WRITE#1, NUM: FOR I=1 TO NUM: WRITE#1, NAME$(I): NEXT: CLOSE: FILE$="NEWMEMBR": GOSUB 1340
350 'Main Menu
360 MSG$="ENTER H,B,S,R,L,P,T,A,M,N,G: ": GOSUB40: GOSUB 1370
370 C=INSTR("HBSRLPTAMNG",C$)+1: ONC GOSUB 390,390,460,490,580,740,950,1090,1230,1260,1280,1280: GOTO 360
380 'Help
390 IF BITS=8 THEN FOR I=16 TO 30: PRINT DISPLAY$(I);: NEXT: RETURN
400 PRINT "(H)ELP-THIS SCREEN" CHR$(13) "(B)ULLETIN-LATEST NEWS" CHR$(13) "(S)CAN MESSAGE TITLES" CHR$(13) "(R)EAD MESSAGES FROM MEMBER S"
410 PRINT "(L)EAVE MESSAGES TO MEMBERS" CHR$(13) "(P)ROGRAMS TO DOWNLOAD" CHR$(13) "(T)EXT FILES TO READ"
420 PRINT "(A)RT GALLERY-VIEW THE GRAPHICS" CHR$(13) "(M)EMBER LIST-SEE WHO'S ON"
430 PRINT "(N)AME ENTRY-IF YOU CAME ON IN" CHR$(13) "THE MIDDLE OF THE PROGRAM" CHR$(13) "(G)OODBYE-BEFORE HANGING UP"
440 RETURN
450 'Bulletin
460 MSG$="THE CURRENT BULLETIN IS DATED"+CHR$(13)+"9/1/83." +CHR$(13)+"DO YOU WANT TO READ IT (Y/N)?" : GOSUB40: IF C$ <> "Y" THEN RETURN
470 FILE$="BULLETIN": GOSUB 1340: RETURN
480 'Scan Messages
490 MSG$="ENTER H,C,I,R: ": GOSUB40: GOSUB 1370: C=INSTR("HCIR",C$)+1: IF C=5 THEN RETURN ELSE ONC GOTO 490,500,510,530
500 FILE$="SCAN": GOSUB 1340: GOTO 490
510 I$="XXX": GOTO 540
520 I$=INITS$: GOTO 540
530 MSG$="FOR WHICH 3 INITIALS WOULD YOU" +CHR$(13) "LIKE TO SCAN, "+NAME$+"? ": GOSUB40: I$=C$: IF LEN(I$) <> 3 THEN 530
540 CK=0: FOR I=3 TO 11: DSKI$D1,17,I,A$,B$: A$=A$+LEFT$(B$,120): FOR J=0 TO 7: SUBJECT$=MID$(A$,J*32+1,8): EXT$=MID$(A$,J*32+9,3): A=ASC(SUBJECT$)
550 IFA=255 THEN J=7: I=11 ELSE IF (EXT$=I$ OR I$="XXX") AND EXT$ > "A00" AND EXT$ <> "DAT" AND LEFT$(EXT$,2) <> "PO" AND A <> 0 THEN PRINT SUBJECT$/"EXT$":

```




ADVANCED MATH PROGRAMS **for** **ENGINEERS • PHYSICISTS • STUDENTS**

FUNCTION GRAPHING MODULE 16K EXT-\$19.95

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

CALCULUS MATH MODULE 32K EXT-\$34.95

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


CALCSORT
 P.O. BOX 401
 ST. ANN, MO 63074

CHECK OR MONEY ORDER — \$1.00 for shipping


```

CK=1
560 NEXTJ,I:IFCK THEN490ELSEPRIN
T"SORRY, "NAME$","CHR$(13)"NO ME
SSAGES FOUND.":GOTO490
570 'Read Messages
580 MSG$="ENTER H,S,I,R:":GOSUB4
0:GOSUB1370:C=INSTR("HSIR",C$):I
FC=4THENRETURNELSEONC+1 GOTO580,
590,610,630
590 FILE$="READ":GOSUB1340:GOTO5
80
600 GOSUB650:GOTO580
610 PRINT"WHICH SUBJECT WOULD YO
U LIKE TO READ, "NAME$"?":LINEI
NPUTS$:L=LEN(S$):IFL>8THEN720
620 S$=S$+STRING$(8-LEN(S$)," ")
:GOSUB650:GOTO580
630 PRINT"FOR WHICH 3 INITIALS W
OULD YOU"CHR$(13)"LIKE TO READ M
ESSAGES? ":LINEINPUTI$:IFLEN(I$
)<>3THEN630ELSEGOSUB650:GOTO580
640 'Directory Search
650 CD=0:FORK=3TO11:DSKI=D1,17,K
,AD$,BD$:AD$=AD$+LEFT$(BD$,120):
FORL=0TO7:SBJECT$=MID$(AD$,L*32+
1,8):EXT$=MID$(AD$,L*32+9,3)
660 AC=ASC(SBJECT$):IFAC=255THEN
L=7:K=11:GOTO710
670 IFAC=0OR(C=1ANDEXT$<>INITS$)
OR(C=2ANDSBJECT$<>S$)OR(C=3ANDEX
T$<>I$)OR(SBJECT$="PERSONAL"ANDE
XT$<>INITS$)THEN710
680 CD=1:FILE$=SBJECT$+ "/" +EXT$:
PRINTCHR$(13)FILE$:FILE$=FILE$+
"+D1$:GOSUB1340
690 IFEXT$<>INITS$THEN710ELSEF$=
LEFT$(FILE$,10)+"*"+RIGHT$(FILE$
,3):RENAMEFILE$TOF$
700 MSG$=NAME$+", WOULD YOU LIKE
"+CHR$(13)+"TO REPLY TO THIS (Y/
N)? ":GOSUB40:IFC$="Y"THENGOSUB7
40
710 NEXTL,K:IFCD THENRETURNELSEP
RINT"SORRY, "NAME$","CHR$(13)"NO
MESSAGES FOUND.":RETURN
720 FILE$="READ":GOSUB1340:GOTO5
80
730 'Leave Messages
740 MSG$="ENTER 3 LETTERS:"+CHR$
(13)+"INITIALS OF RECIPIENT,"+CH
R$(13)+"MEM-BER LIST,"+CHR$(13)+
"INS-TRUCTIONS, OR"+CHR$(13)
750 MSG$=MSG$+"RET-URN TO MAIN M
ENU.":GOSUB40:I$=C$
760 IFLEN(I$)=3THENFORI=1TO3:A=A
SC(MID$(I$,I,1)):IF(A>64ANDA<91)
OR(A>47ANDA<58)THENNEXT:GOTO780
770 PRINT"WE NEED 3 LETTERS.":RE
TURN
780 IFI$="MEM"GOSUB1260:GOTO740E

```

```

LSEIFI$="INS"THENFILE$="LEAVE":G
OSUB1340:GOTO740ELSEIFI$="RET"TH
ENRETURN
790 IFRIGHT$(I$,1)>"9"THENGOSUB1
410:IFNOTMBR THENPRINT"SORRY, "N
AME$", ONLY MEMBERS"CHR$(13)"CAN
RECEIVE MESSAGES.":GOTO740
800 PRINT"WHAT IS THE MESSAGE'S
SUBJECT?":LINEINPUT"(8 LETTERS M
AXIMUM):";S$
810 IFLEN(S$)>8THENPRINT"8 LETTE
R MAXIMUM, "NAME$:RETURN
820 IFINSTR(S$,".")ORINSTR(S$,"0
")ORINSTR(S$,"/")ORINSTR(S$,".")
THENPRINT"PLEASE DO NOT USE: 0 .
: /":RETURN
830 PRINT"CHECKING FOR DUPLICATE
FILE."CHR$(13)"ONE MOMENT, PLEA
SE.":FILE$=S$+STRING$(8-LEN(S$),
32)+ "/" +I$+": "+D1$:CS=0
840 FORI=3TO11:DSKI=D1,17,I,A$,B
$:A$=A$+LEFT$(B$,120):FORJ=0TO7:
PRINT".":SBJECT$=MID$(A$,J*32+1
,8):EXT$=MID$(A$,J*32+9,3)
850 IFASC(SBJECT$)=255THENJ=7:I=
11:GOTO870
860 F$=SBJECT$+ "/" +EXT$+": "+D1$:
IFF$=FILE$ORF$=LEFT$(FILE$,10)+
"*"+RIGHT$(FILE$,3)THENC$=1:J=7:I
=11
870 NEXTJ,I:PRINT:IFCS THENPRINT
"SORRY, "NAME$", THAT FILE"CHR$(
13)"NAME IS ALREADY IN USE."CHR$
(13)"PLEASE TRY AGAIN.":GOTO800
880 PRINT"BEGIN MESSAGE ENTRY."C
HR$(13)"PRESS 'ENTER' BY ITSELF
TO END.":I=-1:C$=FILE$:GOSUB1370
890 I=I+1:PRINT".":LINEINPUTTEXT
$(I):IFTEXT$(I)=""OR I=70THEN920E
LSELT=LEN(TEXT$(I)):IFLT<64THEN8
90
900 PRINTCHR$(7)CHR$(7)CHR$(7)"T
HAT LINE'S TOO LONG, "NAME$". "CH
R$(13)"IT NOW READS:"
910 FORJ=LT TO18STEP-1:IFMID$(TEX
T$(I),J,1)<>""ORJ>65THENNEXTELS
ETEXT$(I)=LEFT$(TEXT$(I),J-1):PR
INTTEXT$(I):GOTO890
920 MSG$="ENTER 'S' TO SAVE; 'R'
FOR"+CHR$(13)+"ANOTHER REQUEST:
":GOSUB40:IFC$<"R"ORC$>"S"THEN9
20
930 IFC$="R"THENRETURNELSEOPEN"O
",1,FILE$:FORJ=0TOI-1:PRINT#1,TE
XT$(J):NEXT:CLOSE:PRINT"YOUR MES
SAGE IS SAVED, "NAME$".":RETURN
940 'Programs
950 MSG$="ENTER H,L,D,P,R:":GOSU
B40:GOSUB1370:C=INSTR("HLDPR",C$
)+1:IFC=6THENRETURNELSEONC GOTO9

```



```

30,960,970,1010,1020
960 FILE$="PROGRAMS":GOSUB1340:G
OTO950
970 FORI=3TO11:DSKI$D2,17,I,A$,B
$:A$=A$+LEFT$(B$,120):FORJ=0TO7:
SBJECT$=MID$(A$,J*32+1,8):EXT$=M
ID$(A$,J*32+9,3)
980 A=ASC(SBJECT$):IFA=255THENJ=
7:I=11:GOTO1000ELSEIFA<>0ANDLEFT
$(EXT$,1)="P"ANDMID$(EXT$,2,1)="
0"THENPRINTSBJECT$ " ;ELSE1000
990 T$=RIGHT$(EXT$,1):IFT$="U"TH
ENPRINT"UTILITY"ELSEIFT$="A"THEN
PRINT"APPLICATION"ELSEIFT$="G"TH
ENPRINT"GAME"ELSEPRINT"OTHER"
1000 NEXTJ,I:GOTO950
1010 FILE$="PROGDESC":GOSUB1340:
GOTO950
1020 I$=INITS$:GOSUB1410:IFNOTMB
R THENPRINT"SORRY, "NAME$", ONLY
MEMBERS"CHR$(13)"CAN DOWNLOAD P
ROGRAMS.":RETURN
1030 PRINT"WHICH PROGRAM WOULD Y
OU LIKE TO GET?":LINEINPUTFILE$
1040 FORI=3TO11:DSKI$D2,17,I,A$,
B$:A$=A$+LEFT$(B$,120):FORJ=0TO7
:SBJECT$=MID$(A$,J*32+1,8):EXT$=
MID$(A$,J*32+9,3)
1050 IFASC(SBJECT$)=255THENJ=7:I
=11ELSEIFSBJECT$=FILE$THEN1070
1060 NEXTJ,I:PRINT"SORRY, "NAME$
", "CHR$(13)"I CAN'T FIND THAT FI
LE.":GOTO950
1070 FILE$=SBJECT$+ "/" +EXT$+ ". "+
D2$:GOSUB1340:GOTO950
1080 'Text Files
1090 MSG$="ENTER H,L,D,T,R:":GOS
UB40:GOSUB1370:C=INSTR("HLDTR",C
$)+1:IFC=6THENRETURNELSEONC GOTO
1090,1100,1110,1140,1150
1100 FILE$="TEXT":GOSUB1340:GOTO
1090
1110 FORI=3TO11:DSKI$0,17,I,A$,B
$:A$=A$+LEFT$(B$,120):FORJ=0TO7:
SBJECT$=MID$(A$,J*32+1,8):EXT$=M
ID$(A$,J*32+9,3)
1120 A=ASC(SBJECT$):IFA=255THENJ
=7:I=11ELSEIFEXT$<"AAA"ANDA<>0TH
ENPRINTSBJECT$+ "/" +EXT$
1130 NEXTJ,I:GOTO1090
1140 FILE$="TEXTDESC":GOSUB1340:
GOTO1090
1150 I$=INITS$:GOSUB1410:IFNOTMB
R THENPRINT"SORRY, "NAME$", ONLY
MEMBERS"CHR$(13)"CAN RECEIVE TE
XT FILES.":RETURN
1160 PRINT"WHICH FILE WOULD YOU
LIKE TO READ (DO NOT INCLUDE
EXTENSION)?":LINEINPUTFILE$
1170 FORI=3TO11:DSKI$0,17,I,A$,B

```

```

$:A$=A$+LEFT$(B$,120):FORJ=0TO7:
SBJECT$=MID$(A$,J*32+1,8):EXT$=M
ID$(A$,J*32+9,3)
1180 IFASC(SBJECT$)=255THENJ=7:I
=11ELSEIFSBJECT$=FILE$ANDEXT$<"9
99"THEN1200
1190 NEXTJ,I:PRINT"SORRY, "NAME$
", "CHR$(13)"CAN'T FIND THAT FILE
.":GOTO1090
1200 FILE$=FILE$+ "/" +EXT$:GOSUB1
340:GOTO1090
1210 FILE$="TEXT":GOSUB1340:GOTO
1090
1220 'Art Gallery
1230 IFBITS=7THENPRINT"SORRY, YO
U MUST RECEIVE 8 BITS"CHR$(13)"T
O VIEW GRAPHICS.":RETURN
1240 FORI=31TO45:PRINTDISPLAY$(I
);NEXT:CLOSE:GOTO360
1250 'Member List
1260 FORI=1TONUM:PRINTLEFT$(NAME
$(I),3) " RIGHT$(NAME$(I),LEN(NA
ME$(I))-3):NEXT:RETURN
1270 'Goodbye
1280 OPEN"D",1,"ACTIVITY":WRITE#
1,ACT$:PUT#1,LOF(1)+1:CLOSE:IFC$
="N"THEN140
1290 PRINT"GOODBYE, "NAME$!":TI
MER=0
1300 IFTIMER<200THEN1300ELSEPRIN
T"+++";TIMER=0
1310 IFTIMER<200THEN1310ELSEPRIN
T"ATH":TIMER=0
1320 IFTIMER<200THEN1320ELSEFL=0
:GOTO130
1330 'Display File
1340 C$=FILE$:GOSUB1370:OPEN"I",
1,FILE$
1350 IFNOTEOF(1)THENLINEINPUT#1,
TEXT$:PRINTTEXT$:GOTO1350ELSECLD
SE:RETURN
1360 'Activity Length Test
1370 LA=LEN(ACT$)+LEN(C$):IFLA>2
55THENACT$=LEFT$(ACT$,253)+" *":
GOTO1280
1380 IFLA>230THENPRINT"PLEASE FI
NISH UP SOON SO THAT"CHR$(13)"OT
HERS CAN CALL THE RAINBOARD."CHR
$(13)"THANKS, "NAME$".
1390 ACT$=ACT$+C$+" ":RETURN
1400 'Membership Search
1410 MBR=0:FORJ=1TONUM:IFI$=LEFT
$(NAME$(J),3) THENMBR=-1:I=J:J=NU
M
1420 NEXT:RETURN
1430 'Load Graphic Screens
1440 OPEN"I",1,FILE$:FORX=Y TOZ:
INPUT#1,DISPLAY$(X):NEXT:CLOSE:R
ETURN
1450 PCLEAR1:GOTO70

```