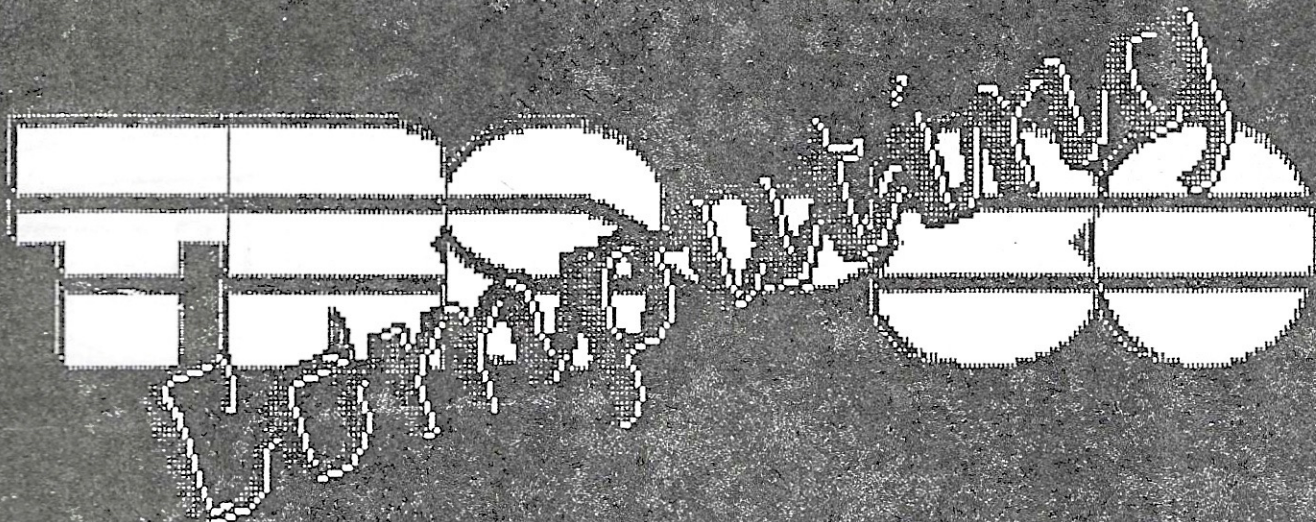


OCTOBER 1990

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CANADIAN \$2.75

VOLUME 4
NUMBER 3



THE BI-MONTHLY MAGAZINE FOR COLOR COMPUTER USERS

OUR ANNUAL HALLOWEEN ISSUE

- a look at the different types of printers and how they print characters.
- explore OS-9's SHELL command in our OS-9 column
- a halloween art gallery

ALSO:
The start of our *NEW* column on ML routines



When Your Worst
Nightmare Comes True...

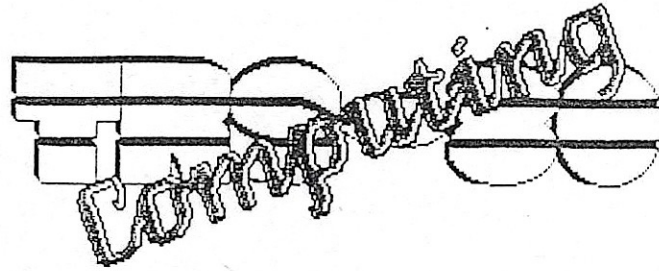


TABLE OF CONTENTS

Feature Articles

Product Reviews

DRAWING CIRCLES ON THE SET/RESET SCREEN PART II 12
by David McNally

SUPER BOOT / C. ENGLAND 20
EDUCATIONAL PROGRAMS PACKAGE --

DSKI\$ AND DSKQ\$: CRACKING INTO A DISK THROUGH THE BACK DOOR PART 2 15
by Anton Milardovic

HONONYMS, SPELLING, ETC.) / SEBASTIAN LASPADA 21

The Shell

COMPUTER VIRUSES -- WHEN YOUR WORST NIGHTMARE COMES TRUE! 18
by David McNally

EXPLORING THE SHELL 23
by Bob van der Poel

The Programmer

Columns and Departments

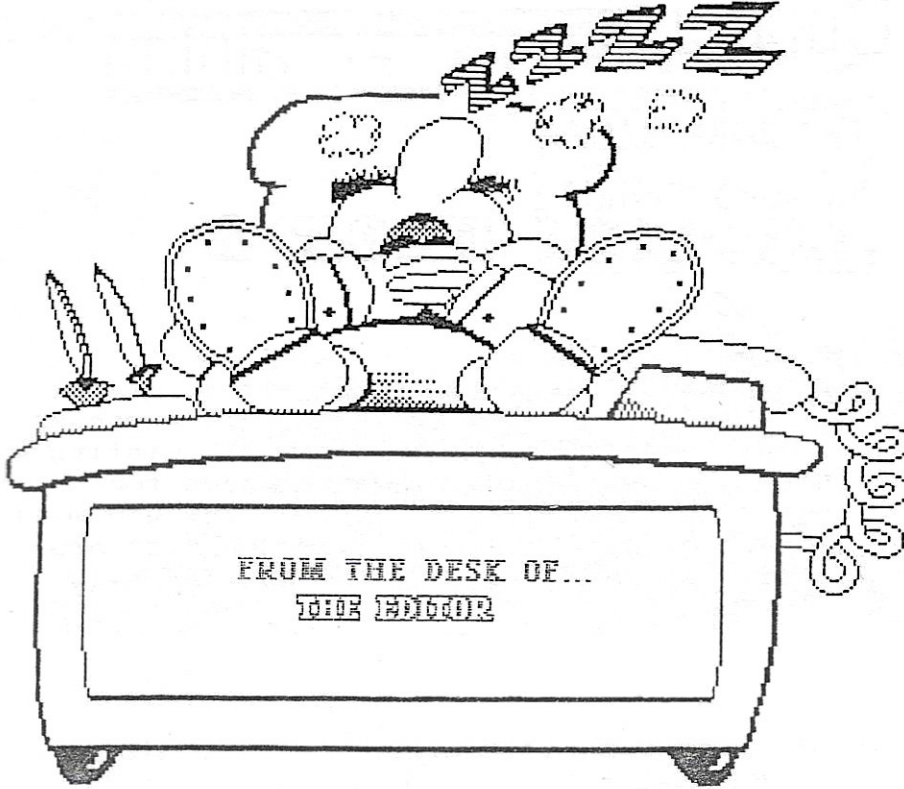
PUZZLE MADNESS 7
by David McNally

A HALLOWEEN MASK 9
by Richard Butler

FROM THE DESK OF THE EDITOR	3
COCO GRAPHICS CORNER	3
SPECIALS - PRINTERS	4
PROGRAMMING PUZZLE	6
COCO HALLOWEEN GRAPHICS	11
THE INS AND OUTS OF MACHINE LANGUAGE	13
SUBSCRIPTION FORM	22
BACK ISSUES FORM	24
CORRECTIONS/COMPUTER TRIVIA	27
PRINTER TIP	28
TRS-80 COMPUTING SURVEY#2	29
ADVERTISER'S INDEX	30

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FROM THE DESK OF...
THE EDITOR

For the past three years we've been printing TRS-80 Computing, our October issue has always been devoted to halloween. It is nice to take one issue out of the six issues printed per year and liven it up with all kinds of halloween programs, songs, and graphics. I feel that this theme has worn out its welcome to our readers, and really doesn't fit the slot as an appropriate topic to an issue of a computer magazine. There are a variety of themes we have to choose from (such as home finance, music, hardware, etc.) and one of them will be replacing the halloween topic in the October 1991 issue.

We have a lot in store for the upcoming issue of TRS-80 Computing. Along with our usual celebration of the holidays, we will be starting a small column for the new MultiMedia I computer from Interactive Media Systems. An experienced CoCoer, Boisy Pitre from Jackson, Mississippi will be the writer of the new column. Donot think that we are going to leave the CoCo world and get right into the further developments right away; we will always support our favorite computer. Next comes a report that will be printed in our Specials section telling all about the Atlanta CoCoFEST that was held on the weekend of October 6-7th. There were many demonstrations, displays, informative seminars, and the introduction of new CoCo products at the show. Finally, we are going to take a new step in the layout of TRS-80 Computing, by including photography (black-and-white photos) throughout some of the pages of the magazine. Rather than printing screen dumps of what's on the CoCo's monitor, we will take photographs instead. I can't guarantee that this will start in the December issue, merely because it is an idea that we haven't tested yet.

Speaking about changes, we have printed "part 2" of the reader's survey that appeared in the June '90 issue. It will be found on page 29 of this issue. Please take the time to fill it out and send it back to us, as it is a big help for planning out our future issues.

Over this summer, two CoCo magazines have ceased publication. Many of you may have been thinking, "Is TRS-80 Computing next?" The answer is: probably not. With all the support we've gotten from the CoCo community since we began, our future looks to be a bright one. Continue your support, renew your subscription when it expires, spread the word, and you'll have a magazine around for your computer for years to come. And most of all, keep on CoCoing!!

TRS-80 COMPUTING
SINCE 1987

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CORP. AND MOTOROLA, INC.

- Joe Ahern

THE WIDE GLOBE

by David McNally
Program Editor

The following graphics program will really **STRETCH** your imagination. It draws a 3-D globe, and using animation, stretches it out and then pushes it back in again. There are two versions of this program: Listing 1 is the PMODE 4 version, which uses two graphics pages. Listing 2 is the low resolution version, which uses all eight graphics pages for smoother animation. After typing in the listing and entering RUN, you will have to wait for a few minutes (please be patient) while the graphics are drawn out on each page. Then you will see how flexible the earth really is!

LISTING 1: GLOBELR

```

1 ' THE WIDE GLOBE -- LOW RES.          100 PCLEAR 8
2 ' COPYRIGHT (C) 1990                 105 V=57.29577951
3 ' BY TRS-80 COMPUTING                110 A=90
4 PCLEAR 8                              115 PMODE 4,5:PCLS:SCREEN 1,1
5 V=57.29577951                         120 GOTO 155
10 A=90                                  125 FOR M=1 TO 10
11 PMODE 4,1:PCLS:SCREEN 1,1           130 FOR T=0 TO 360 STEP 6
13 GOTO 30                               135 O=(F+M)*COS((A+T)/V)+128:P=-
15 FOR M=1 TO 10                        W*SIN((A+T)/V)+96
20 FOR T=0 TO 360 STEP 6                140 PSET(O,P)
25 O=(F+M)*COS((A+T)/V)+128:P=-W       145 NEXT T,M
*SIN((A+T)/V)+96                        150 RETURN
27 PSET(O,P)                             155 F=15:W=75:GOSUB 125
28 NEXT T,M                              160 F=40:W=75:GOSUB 125
29 RETURN                                165 F=65:W=75:GOSUB 125
30 F=25:W=75:GOSUB 15                   170 F=90:W=75:GOSUB 125
32 F=50:W=75:GOSUB 15                   172 FOR H=1 TO 200:NEXT H:PMODE
34 F=75:W=75:GOSUB 15                   4,1:SCREEN 1,1:FOR H=1 TO 200:NE
36 F=100:W=75:GOSUB 15                  XT H:PMODE 4,5:SCREEN 1,1:GOTO 1
38 F=0:W=75:GOSUB 15                    72

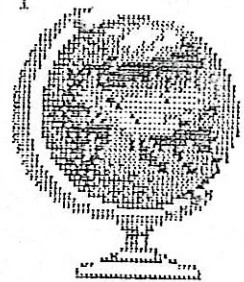
```

LISTING 2: GLOBEHR

```

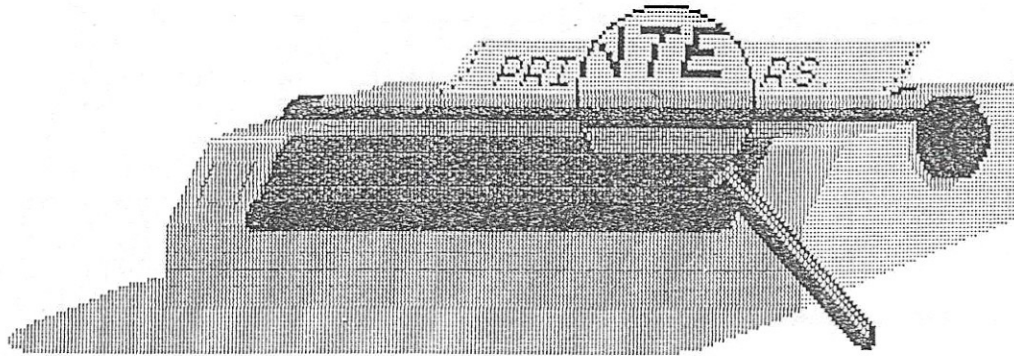
1 ' THE WIDE GLOBE -- HIGH RES.
2 ' COPYRIGHT (C) 1990
3 ' BY TRS-80 COMPUTING
4 PCLEAR 8
5 V=57.29577951
8 CLS:PRINT"PLEASE WAIT..."
10 A=90:W=75
11 PMODE 1,1:PCLS
13 GOTO 30
161 GOTO 160
162 PMODE 1,5:PCLS
164 F=0
166 GOSUB 15:F=F+15:IF F>75 THEN
170
168 GOTO 166
170 PMODE 1,7:PCLS
172 F=0

```



(CONTINUED ON PAGE 11)

A CLOSER LOOK AT...



by

Joe Ahern
PUBLISHER

Since word processing is a primary function of personal computers, a printer is a vital component of any system.

A printer, by simple definition, is a hardware device that is used to make a printed copy of information that is stored in the computer's memory. The cost of printers can range from \$200-\$1300, depending on which type of printer you have. There are many different types of printers -- each with its own advantages in terms of speed, print quality, graphics capabilities, and so on. In this article, I am going to outline the five kinds of printers used most in the desktop publishing world today, explain to you how each printer works, and the features found on most of them.

DOT MATRIX—Dot-matrix printers are one of the most common types of printers around. They create characters by making tiny dots close together on a grid (or matrix). The closer together the dots, the better quality the print will be. The best quality dot-matrix printers use 24 pin printheads; while most others use 9 pin.

Dot matrix printers are fast, printing from 80 characters per second (cps) to almost 500 cps (such as the new DMP-2130 from Radio Shack). They are compact and relatively inexpensive (prices range from \$220-\$1200; if you buy the printer brand new).

DAISY WHEEL—These printers use a rotating plastic print wheel that resembles a daisy, with a character at the end of each "petal". The wheel spins until it is in the right position for a character to be hit against the ribbon. One disadvantage of this type of printer is you can't change typestyles (such as italics, elongated, condensed) by sending CHR\$ codes to the buffer. Instead you have to change the daisy wheel every time.

Daisy wheel printers print documents similar to those printed by electronic typewriters. Although they are relatively slow, and prints 15 to 40 cps.

THERMAL PRINTERS — This type of printer has an interesting way of forming characters -- it burns dots onto a special heat sensitive paper. Although any hard copies you make using thermal printers donot last that long -- after about 2 or 3 weeks you'll notice the text on the printout starting to fade away. These printers aren't too common

anymore since the print quality is much lower than that of other printers. The only thermal printer really sold for the CoCo was the Radio Shack TP-10. The TP-10 was discontinued several years ago.

LASER PRINTERS—Now these are definitely the printers for the '90s! Laser printers produce high quality documents at speeds of almost 500 characters per second. Many magazines, newsletters, and documents are done out on laser printers. For example, the editorial staff box on page 2 was done on this type of printer. Somewhat similar to thermal printers, these printers direct a highly focused beam of laser light at photographic paper, burning the characters into the paper. Prices have been decreasing lately -- some laser printers can be bought for under \$1000. Unfortunately, there aren't any laser printer drivers available for the CoCo for use with any of the popular desktop publishing programs.

INK JET PRINTERS—These printers, used mainly for making color graphics printouts, operates by the printhead spraying tiny ink particles on the paper to form the characters. The text/graphics may be slightly distorted, since the printer cannot precisely control where the ink drops are sprayed. Ink jet printers are fast (up to 150 cps), quiet, and has high quality graphics printing capabilities.

If you are looking into buying a printer for your CoCo, you may want to consider some features such as speed (also known as the printer's baud rate), print quality (this is important!), a variety of character sets, capable of printing graphics, a storage buffer of at least 4K, and a reasonable cost.

With these further developments on the Color Computer lately, hopefully there will be some fine printers compatible with them also.

FOR SALE

1-TRS-80 COLOR COMPUTER 2--Includes both factory manuals, RF converter and all connection cables including Cassette. Also included FREE is a book of BASIC computer games especially written for the COCO.

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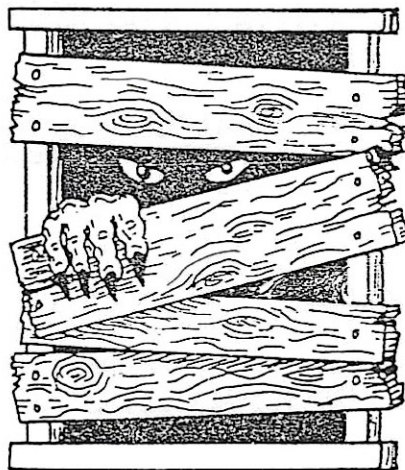
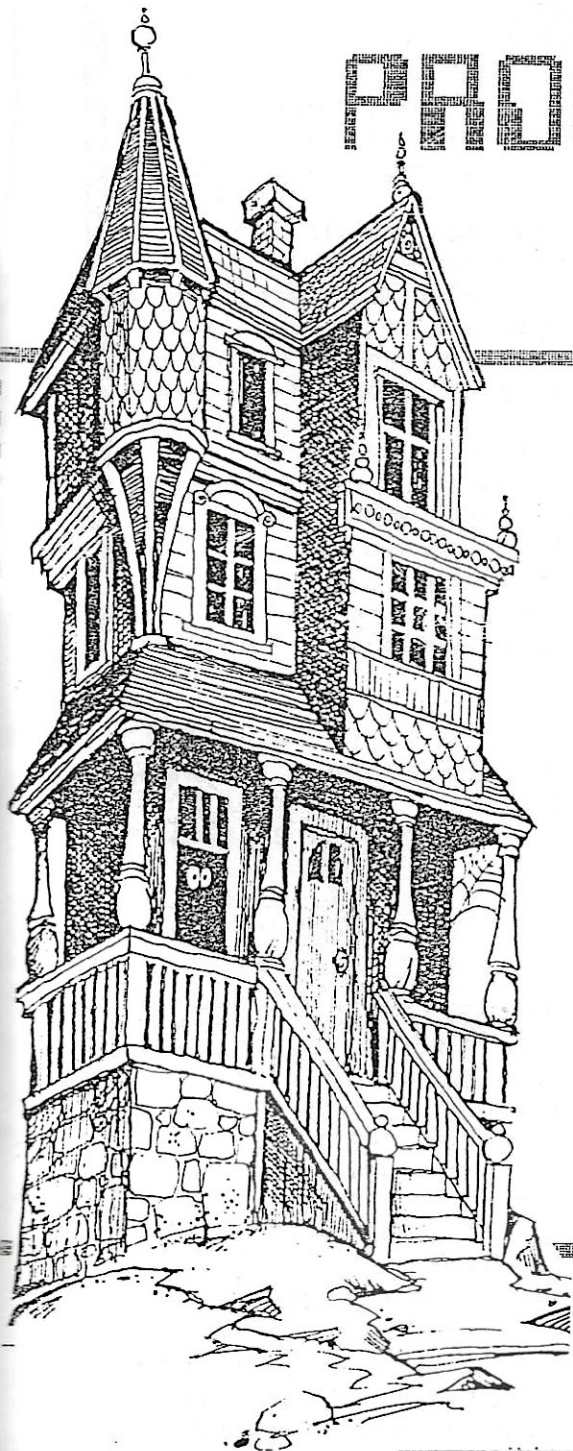
\$8.00

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Make all checks payable to Richard Heiser

Richard Heiser, P.O. Box 576, Nutting Lake, MA. 01865

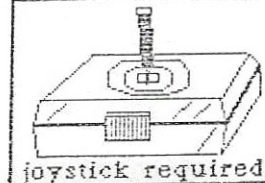
THE PROGRAMMER



THE PROGRAMMER OCTOBER '90

THIS MONTH...

1. Puzzle Madness.....7
CAN YOU UNSCRAMBLE YOUR FAVORITE
COCOMAX PICTURE?
2. A Halloween Mask.....9
HERE'S A GOOD ONE FOR HALLOWEEN NIGHT!



**PUZZLE
MADNESS**
by David McNally
PROGRAM EDITOR

For those masterminds out there who like puzzles, here's another one! Puzzle Madness loads in COCO MAX (or binary) pictures, scrambles them up, and challenges you to put them back together.

First key in the listing, save it, and then type RUN. At the prompt, type in the filename of the picture to scramble, then insert the picture disk and press <ENTER>. The computer loads the picture and then scrambles it up (please be patient). When the blinking cursor appears, the madness begins. In order to move a puzzle piece, position the cursor on one of the pieces next to the blank square using the right joystick. Then push in the fire button and hold it until the piece slides over into place. There are no diagonal moves allowed. If you want to see the original picture, make sure you insert a disk that has at least three (3) granules and press <BREAK>. The computer then saves the puzzle, loads in the original picture and displays it. Press any key to go back to your puzzle. (The computer kills the saved puzzle after it loads it.)

NOTE: For best results, use a picture that has very little blank space. Also, don't attempt to load a picture longer than one graphics page or the program will jam.



THE LISTING: PUZLEMAD

```

0 * PUZZLE MADNESS
1 * WRITTEN BY DAVID McNALLY
2 * COPYRIGHT (C) 1990 // TRS-80
  COMPUTING
3 ON BRK GOTO 1050
4 CLS:PRINT"USE WHAT PICTURE";:I
  NPUT NA$
5 DIM A(16),PL(64,48),L(25),F(4,
  4)
10 FOR L=1 TO 16:A(L)=L:NEXT L
15 PMODE 4,1:PCLS:LOADM NA$+"/MA
  X":SCREEN 1,1
20 COLOR 1,0
25 LINE(0,0)-(256,192),PSET,B
30 LINE(64,0)-(64,192),PSET:LINE
  (128,0)-(128,192),PSET:LINE(192,
  0)-(192,192),PSET
35 LINE(0,48)-(256,48),PSET:LINE
  (0,96)-(256,96),PSET:LINE(0,144)
  -(256,144),PSET
40 DATA 1,1,63,47,65,1,127,47,12
  9,1,191,47,193,1,255,47,1,49,63,
  95,65,49,127,95,129,49,191,95,19
  3,49,255,95
45 DATA 1,97,63,143,65,97,127,14
  3,129,97,191,143,193,97,255,143,
  1,145,63,191,65,145,127,191,129,
  145,191,191,193,145,255,191
50 FOR U=1 TO 16:READ W,X,Y,Z:NE
  XT U:RESTORE:LINE(W,X)-(Y,Z),PSE
  T,BF
55 Q=16
60 H=1
65 L(H)=RND(4)
70 IF L(H-1)=1 AND L(H)=2 THEN 6
  5 ELSE IF L(H-1)=2 AND L(H)=1 TH
  EN 65 ELSE IF L(H-1)=3 AND L(H)=
  4 THEN 65 ELSE IF L(H-1)=4 AND L
  (H)=3 THEN 65 ELSE GOTO 75
75 ON L(H) GOSUB 90,105,120,135
80 H=H+1:IF H>25 THEN GOTO 85 EL
  SE GOTO 65
85 GOTO 155
90 IF Q<5 THEN GOTO 65
95 FOR U=1 TO Q:READ W,X,Y,Z:NEX
  T U:RESTORE:FOR U=1 TO Q-4:READ
  W1,X1,Y1,Z1:NEXT U:RESTORE

```



```

100 GOSUB 150:B=A(Q):A(Q)=A(Q-4)
:A(Q-4)=B:Q=Q-4:RETURN
105 IF Q>12 THEN 65
110 FOR U=1 TO Q:READ W,X,Y,Z:NE
XT U:RESTORE:FOR U=1 TO Q+4:READ
W1,X1,Y1,Z1:NEXT U:RESTORE
115 GOSUB 150:B=A(Q):A(Q)=A(Q+4)
:A(Q+4)=B:Q=Q+4:RETURN
120 IF Q=4 OR Q=8 OR Q=12 OR Q=1
6 THEN 65
125 FOR U=1 TO Q:READ W,X,Y,Z:NE
XT U:RESTORE:FOR U=1 TO Q+1:READ
W1,X1,Y1,Z1:NEXT U:RESTORE
130 GOSUB 150:B=A(Q):A(Q)=A(Q+1)
:A(Q+1)=B:Q=Q+1:RETURN
135 IF Q=1 OR Q=5 OR Q=9 OR Q=13
THEN 65 ELSE 140
140 FOR U=1 TO Q:READ W,X,Y,Z:NE
XT U:RESTORE:FOR U=1 TO Q-1:READ
W1,X1,Y1,Z1:NEXT U:RESTORE
145 GOSUB 150:B=A(Q):A(Q)=A(Q-1)
:A(Q-1)=B:Q=Q-1:RETURN
150 COLOR 1,0:GET(W1,X1)-(Y1,Z1)
,PL,G:PUT(W,X)-(Y,Z),PL,PSET:LIN
E(W1,X1)-(Y1,Z1),PSET,BF:RETURN
155 J=1:FOR U=1 TO J:READ W2,X2,
Y2,Z2:NEXT U
158 ON BRK GOTO 1000
160 RESTORE:COLOR 1,0:LINE(W2-1,
X2-1)-(Y2+1,Z2+1),PSET,B:FOR U=1
TO J:READ W2,X2,Y2,Z2:NEXT U:CO
LOR 4,1:LINE(W2-1,X2-1)-(Y2+1,Z2
+1),PSET,B
162 RESTORE
165 K=JOYSTK(0)
170 K1=JOYSTK(1)
172 P=PEEK(65280)
174 IF K1<2 AND J>5 THEN J=J-4:G
OTO 160

```

```

176 IF K1>61 AND J<13 THEN J=J+4
:GOTO 160
178 IF K<2 AND J-1>0 THEN J=J-1:
GOTO 160
180 IF K>61 AND J+1<17 THEN J=J+
1:GOTO 160
182 IF P=126 OR P=254 THEN GOSUB
2000
184 GOTO 160
1000 SAVEM"PUZZLE/DAT",PEEK(186)
*256+PEEK(187),PEEK(183)*256+PEE
K(184),PEEK(186)*256+PEEK(187):P
CLS:LOADM NA$+"/MAX":EXEC 44539:
PCLS:LOADM"PUZZLE/DAT":KILL"PUZZ
LE/DAT":GOTO 160
1050 RUN
2000 COLOR 0,1:IF J+1=Q OR J-1=Q
OR J+4=Q OR J-4=Q THEN 2002 ELS
E RETURN
2001 COLOR 1,0
2002 IF J+4=Q AND Q>4 THEN GOSUB
90:GOTO 2050 ELSE GOTO 2004
2004 IF J-4=Q AND Q<13 THEN GOS
UB 105:GOTO 2050 ELSE GOTO 2006
2006 IF J+1=Q AND Q<>1 AND Q<>5
AND Q<>9 AND Q<>13 THEN GOSUB 13
5:GOTO 2050 ELSE GOTO 2008
2008 IF J-1=Q AND Q<>4 AND Q<>8
AND Q<>12 AND Q<>16 THEN GOSUB 1
20:GOTO 2050 ELSE GOTO 2010
2010 GOTO 160
2050 FOR BB=1 TO 16:IF A(BB)<>BB
THEN GOTO 160 ELSE NEXT BB
2052 CLS:SCREEN 0,1:PRINT"YOU WI
N!":END

```

END OF PROGRAM

Programming Puzzle

Write a program that allows you to type a five digit number, using only INKEY\$ as a way of inputting the numbers. The variable B should hold the result.

ANSWER to Programming Puzzle (from August issue)

In order to convert percentage to degrees in a circle, your program should be similar to this:

```

10 CLS
15 INPUT "WHAT PERCENT":P
20 DEGREES=(P/100)*360
25 PRINT P;"% OF THE CIRCLE IS":
DEGREES;" DEGREES."
30 GOTO 15

```



A HALLOWEEN MASK

BY: RICHARD BUTLER

Here's a short graphics program for Halloween. This one draws a black mask (similar to the one seen on the Lone Ranger) on a yellow background, using CHR\$ graphics strings. After a short pause, you see a pair of eerie eyes appear on the mask; moving slowly back and forth -- back and forth. You might even want to place your CoCo's monitor in the window on Halloween night -- so the mask can keep a close watch on all the trick-or-treaters!

THE LISTING: HALMASK

```

1 ' A HALLOWEEN MASK
9 REM --INITIALIZE VARIABLES AND
  CLEAR SCREEN--
10 P1=8
20 P2=23
30 V=1
40 Q=0
50 FL=0
60 CLS(2)
69 REM --DRAW LEFT AND RIGHT SID
  ES OF MASK--
70 FOR X=9 TO 22 STEP 13
80 P=5
90 FOR Y=2 TO 13
100 FOR Z=X-P TO X+P
110 PRINT@Z+32*Y,CHR$(128);
120 NEXT Z
130 IF Y<3 THEN P=P+1
140 IF Y>8 THEN P=P-1
150 NEXT Y,X
159 REM --DRAW WHITES OF EYES--
160 KO=159
170 GOSUB 1000
179 REM --PRINT PUPILS--
180 PRINT@P1+224,CHR$(175);
190 PRINT@P2+224,CHR$(175);
199 REM --PAUSE (LONG IF PUPILS
  CENTERED OR CROSSED)--
200 IF P1=8 OR (P1=1 AND P2=19)
  THEN Q=1000
210 FOR D=1 TO RND(500)+Q
220 NEXT D
230 Q=0
239 REM --ERASE PUPILS--
240 PRINT@P1+224,CHR$(159);
250 PRINT@P2+224,CHR$(159);
259 REM --BLINK SOMETIMES--
260 IF P1<>8 OR RND(0)<0.7 THEN
  320
270 KO=191
280 GOSUB 1000
290 FOR D=1 TO 600
300 NEXT D
310 GOTO 160
319 REM --COMPUTE NEW POSITIONS
  (P1,P2) FOR PUPILS--
320 IF P1=5 OR P1=11 THEN V=-V
330 IF FL=1 AND P1=8 THEN FL=0:G
  OTO 350
340 IF P1=8 AND RND(0)<0.2 THEN
  FL=1:V=1
350 P1=P1+V
360 IF FL=0 THEN P2=P2+V
370 IF FL=1 THEN P2=P2-V
380 GOTO 180
999 REM --FILL EYES WITH CHARACT
  ER KO--
1000 PRINT@229,STRING$(7,KO);
1010 PRINT@244,STRING$(7,KO);
1020 RETURN

```



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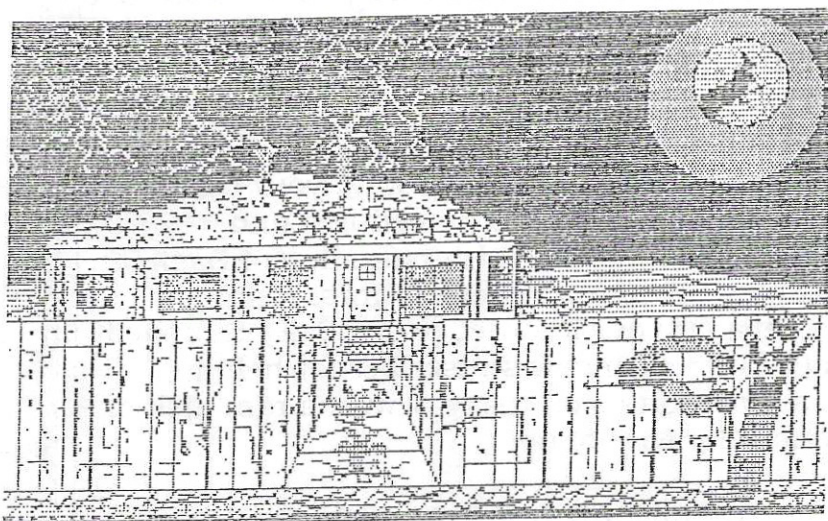
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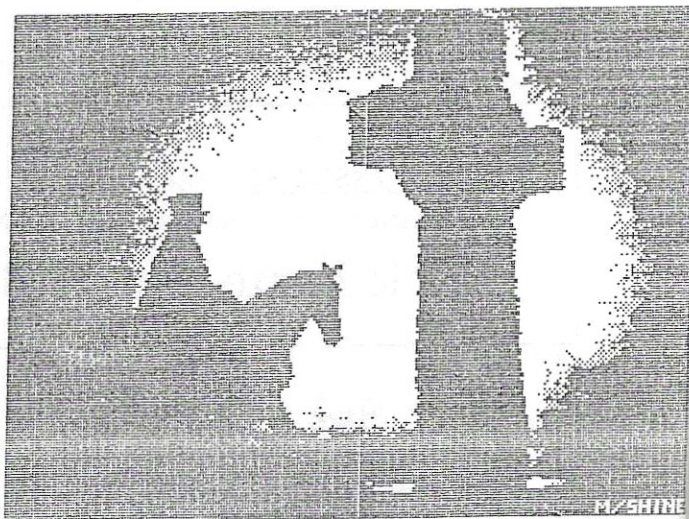
**HALLOWEEN
GAMES**



THE Haunted House on Haunted Ave

*by Thomas Sinclair
(drawn on COLOSSAL 3)*

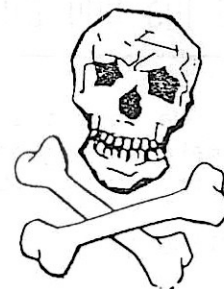
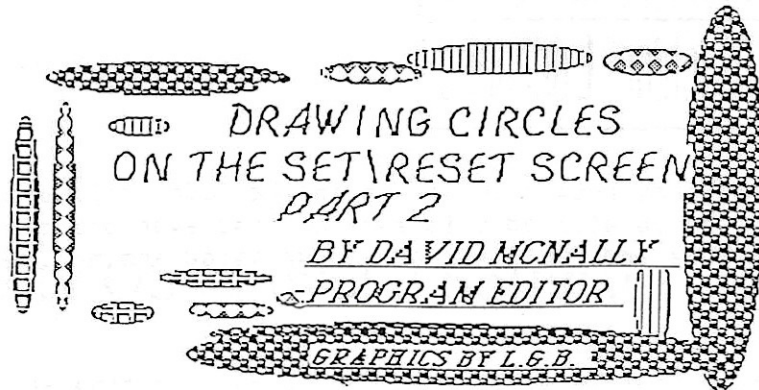
A Haunted GRAVEYARD



COCO GRAPHICS CORNER (CONTINUED FROM PAGE 3)

```
15 FOR M=1 TO 2
20 FOR T=0 TO 360 STEP 16
25 O=(F+M)*COS((A+T)/V)+128:P=-W
  *SIN((A+T)/V)+96
27 PSET(O,P)
28 NEXT T,M
29 RETURN
30 F=0
31 GOSUB 15:F=F+5:IF F>25 THEN 1
  15
32 GOTO 31
115 PMODE 1,3:PCLS
155 F=0
160 GOSUB 15:F=F+10:IF F>50 THEN
  GOTO 162
```

```
174 GOSUB 15:F=F+20:IF F>100 THE
  N GOTO 180
176 GOTO 174
180 REM ANIMATE CIRCLE
182 FOR T=1 TO 20
184 K=1
186 PMODE 1,K:SCREEN 1,1:FOR H=1
  TO 50:NEXT H:K=K+2:IF K>7 THEN
  190
188 GOTO 186
190 K=K-2:IF K<1 THEN NEXT T:END
  ELSE PMODE 1,K:SCREEN 1,1:FOR H
  =1 TO 50:NEXT H
192 GOTO 190
```



After looking through my old tape files, I found a few programs that creates pictures using characters such as X and O. For example: A face would be drawn as a square with a nose and a pair of eyes, but obviously it would look better if a circle was used instead. I then decided to transfer the circle program that was in last month's issue to the text screen. After going over the program thoroughly (which is relisted for you in listing 1), I decided that I could convert it to the text screen by transferring the X and Y coordinates to TAB commands. This can be done by first computing the X and Y coordinates. Then divide each by two. Add the results together and multiply by 32. The line would look something like this:

```
PRINT@0+INT(X/2)+INT(Y/2)*32,"0";
```

Listing 2 shows this example put to use.

LISTING 1

```
1 ' COPYRIGHT (C) 1990 BY
2 ' TRS-80 COMPUTING MAGAZINE
5 CLS
10 V=57.29577951
15 PRINT"INPUT RADIUS OF WIDTH";
:INPUT A
20 IF A<0 THEN CLS:GOTO 15
25 PRINT"INPUT RADIUS OF HEIGHT"
;:INPUT A2
30 A2=A2-3
35 IF A2<0 THEN CLS:GOTO 25
40 CLS0
45 FOR T=0 TO 360
50 X=32:Y=16
55 X1=A*COS((90+T)/V)+X:Y1=-A2*S
IN((90+T)/V)+Y
60 IF X1<0 OR X1>64 THEN NEXT T
ELSE GOTO 65
65 IF Y1<0 OR Y1>31 THEN NEXT T
ELSE SET(X1,Y1,1)
70 NEXT T
75 GOTO 75
```

LISTING 2

```
1 ' COPYRIGHT (C) 1990 BY
2 ' TRS-80 COMPUTING MAGAZINE
5 CLS
10 V=57.29577951
15 PRINT"INPUT RADIUS OF WIDTH";
:INPUT A
20 IF A<0 THEN CLS:GOTO 15
25 PRINT"INPUT RADIUS OF HEIGHT"
;:INPUT A2
35 IF A2<0 THEN CLS:GOTO 25
37 A2=A2-3
40 CLS
45 FOR T=0 TO 360
50 X=32:Y=16
55 X1=A*COS((90+T)/V)+X:Y1=-A2*S
IN((90+T)/V)+Y
60 IF X1<0 OR X1>64 THEN NEXT T
ELSE GOTO 65
65 IF Y1<0 OR Y1>31 THEN NEXT T
ELSE PRINT@0+INT(X1/2)+INT(Y1/2)
*32,"0";
67 IF T>360 THEN 75
70 NEXT T
75 GOTO 75
```

The Ins and Outs of Machine Language

We know that there are many people out there in the CoCo world who look for things to make their work easier, so we started this section that everyone can benefit from. The following M.L. subroutines and POKES are not copyrighted and may be used by anyone.

LISTING 1:

PURPOSE: The following M.L. routine will clear the screen starting at a specified screen location.

USE: To use this routine, key it in and type RUN <ENTER>. At the OK prompt, POKE the starting @ position into location &H3E8 (1000 decimal). Use A=USR0(20000) to call the routine.

LIMITS: Due to the limits of the POKE command, an @ position greater than 255 can not be used.

EXAMPLE: Key in the listing and type RUN <ENTER>. At the OK prompt type POKE &H3E8,32 <ENTER>. When you type A=USR0(20000) <ENTER>, the screen will be cleared starting at the screen location 32.

THE LISTING:

```
1 CLEAR 50,20000
2 DATA 0,0,17,0,0,134,36,142
3 DATA 4,0,246,3,232,58,167
4 DATA 128,140,5,255,38,249
5 DATA 57,255,0,0,0,0
6 FOR P=20000 TO 20026:READ S
7 POKE P,S:NEXT P
8 DEFUSR0=20000
9 END
```

LISTING 2:

PURPOSE: This POKE is used to see a listing as it loads from the disk drive. It also gives true lowercase letters.

USE: See above.

LIMITS: May disable some disk commands. It does not work with M.L. programs.

THE LISTING:

```
POKE 359,57:POKE 65314,55:LOAD"NAME" <ENTER>
POKE 359,126 Restores to normal
```

LISTING 3

PURPOSE: This M.L. routine allows a user to save only specified lines of a program to tape.

USE: To use, make S the starting line number and E the ending line number.

LIMITS: None

THE LISTING:

```
OPEN "0",#-1,"NAME":POKE 111,255:LIST S-E:CLOSE <ENTER>
```

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CRACKING INTO
A DISK THROUGH
THE BACK DOOR

PART 2

by Anton P. Milardovic
Contributing Editor

In the August issue, I asked you to write a program which would check if a user-inputted file is on the disk. For those of you who attempted it, here is that program:

The Listing: PROGFIND

```

10 CLEAR1000:CLS
20 PRINT:LINEINPUT"PROGRAM TO SEARCH FOR (INCLUDE EXTENSION)? ";F$
30 A=INSTR(F$,".")+INSTR(F$,"/")
40 PRINT:IFA=0THEN20
50 A$=LEFT$(F$,A-1)
60 A$=A$+STRING$(9-A,32)+RIGHT$(F$,LEN(F$)-A)
70 A$=A$+STRING$(11-LEN(A$),32)
80 FORX=3TO10
90 DSKI$0,17,X,S1$,S2$
100 S$=S1$+LEFT$(S2$,112)
110 FORY=0TO7
120 IFMID$(S$,Y*32+1,11)=A$THEN150
130 NEXTY,X
140 PRINT"PROGRAM NOT FOUND.":END
150 PRINT"FOUND IT!"

```

And that was the first part. Now you might be looking at lines 30 to 70 and saying "what is all of that?" I'll try to explain that now.

Line 30 checks for a period (.) or slash (/) to see if you put in an extension using the INSTR function. If you did not include the extension, line 40 returns you to line 20.

Lines 50 to 70 take your input apart, and add spaces to the filename and extension (if necessary) so that the filename is 8 characters long, and the extension 3. It joins the two to make a string of 11 characters long, which is the way DOS saves filenames in the directory.

Lines 80 to 130 search the directory track, sectors 3 to 10, for the string. If it finds it, the program jumps to line 150, otherwise it ends at 140.

If you haven't already, type the program in and run it a few times. Make sure you fully understand it before going to the next part of this article.

The next part of the "challenge" was to tell the user:

- a) if the file is a BASIC program, data file or machine language program;
- b) if the file was saved in ASCII or binary; and
- c) The number of granules in the file.

To do that, just add the following lines to the previous program:

The Listing: PROGINFO

```
160 FT$(0)="BASIC PROGRAM":FT$(1)="BASIC DATA FILE":FT$(2)="M.L. PROGR
AM":FT$(3)="TEXT EDITOR SOURCE FILE"
170 C%=MID$(S%,Y*32+12,3)
180 PRINT:PRINT"THE FILE IS A ";
190 PRINTFT$(ASC(LEFT$(C%,1)))
200 PRINT"SAVED IN ";
210 IFMID$(C%,2,1)=CHR$(0)THENPRINT"BINARY"; ELSEPRINT"ASCII
";
220 DSKI$0,17,2,B$,D$
230 G=ASC(RIGHT$(C%,1))
240 GR=GR+1:G=ASC(MID$(B$,G+1,1)):IFG>69THEN250ELSE240
250 PRINT" AND IS"GR,"GRANULE";:IFGR<>1THENPRINT"S";
260 PRINT" LONG."
```

Line 160 simply fills an array with the different types of files possible on the diskette. Before we continue, though, I would ask that you take out your disk manual, and turn to page 122, Technical Information - Directory Entries.

You got it? Okay, we'll go through this step by step. As you can see, each entry is 32 bytes long. The first eight are the file name, and the next three are for the extension. Line 170 checks for the next item, file type. Lines 180 and 190 take care of printing that information. Line 210 checks for the ASCII flag and tells whether the file is saved in binary or ASCII.

Now comes the tricky part. The next byte contains the number of the first granule of the program. With that information, we now check the File Allocation Table, which is on track 17, granule 2 (line 220). Line 230 checks the byte of the allocation table which contains the information of the granule. If the number produced by line 230 is less than 68, that means the program continues in that granule. Any other number indicates end of file.

Therefore, line 240 repeats itself until it gets a character greater than CHR\$(67), after which it tells you how many granules the program takes (lines 250-260). Got it?

Using this newly found knowledge, how about writing a program which does the same thing as the DIR command in BASIC? I'll have my solution ready in the December issue.

Keep CoCoing, and Happy Hallowe'en!

Questions or comments about this article can be sent directly to the author at 94 Sunrise Place, Kitchener, Ontario, Canada, N2B 3S9. Please be sure to include your full name & address for a prompt reply.

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COMPUTER VIRUSES:

When your worst nightmare comes true!

Written by David McNally, Program Editor

After returning from your friend's house, you sit down at your personal computer to finish typing the last two paragraphs of your college report. You insert the program disk and boot your word processor. The normal start up message fails to appear and the message "Welcome to the Dungeon" appears on the screen. You realize that six months worth of work has mysteriously vanished. You call your friend and ask him if he knows what happened. He said he hasn't used his computer since he downloaded a screen utility program two nights ago. You both then discover that a virus has infected the system. All that work for nothing!

WHAT IS A COMPUTER VIRUS?

A computer virus (also called a WORM) is a small program that, for the most part, attaches itself to larger programs. Copies of the virus infected program are spread to data terminals and BBS's through the use of modems. The virus-infected program is then uploaded by other users. When the infected program is used, the virus hides itself in the computer's memory until it is programmed to go off. (Most viruses have set dates in which they are to begin destruction.) When the set date is reached, the virus starts to scramble or erase all or parts of the computer's data. Fortunately, no real disaster has been reported, but the U.S. military-defense, FBI, and CIA systems have been attacked. Experts say that we haven't seen anything yet. (NOTE: Computer viruses CAN NOT cause a computer to short circuit or blow up as seen in movies.)

Not all viruses are deadly. One virus that went around had to do with the SESAME STREET character named Cookie Monster. Students would be interrupted by the message "I want a cookie." This message became more frequent until the user typed the word COOKIE. This type of virus is not a harmful one, but it can get quite annoying.

HOW WAS THE IDEA OF A COMPUTER VIRUS BORN?

In 1949, a computer pioneer named JOHN NEUMANN wrote a paper entitled "Theory and Organization of Complicated Automata." The theory stated that computer programs might be able to multiply, but back in the early computer days that was only a dream.

Years later a strange hobby called Core Wars was developed at AT&T's Bell Laboratories. Two separate programmers would write programs in the same areas of memory, and then they would have the programs compete against each other to try and destroy one other during a set period of time. After the time was up, the program with the most abundant amount of code would win. Then the programmers would erase the killer programs from the computer's memory, and that was the last of the programs until new ones were developed for the same reason. There was no harm done because the computers were stand alone devices, and there was no threat of a runaway virus. Most Core Wars were played late at night and were never revealed to

the public. After a while, the word did get out, and this form of "computer combat" was recommended to be tried by everyone. Unfortunately, many people were careless and computer viruses were born.

HOW DO I DETECT A VIRUS AND HOW ARE THEY CURED?

Computer vireses mostly occur in more complex computer systems (such as IBM PC'S), and some can be detected by anti-virus software. This kind of software contains a copy of the information of the computer's memory that is likely to hold viruses. The computer matches this information and informs you of any changes in the data which might indicate an intruder. The software then restores these changes back to normal. Not all viruses can be detected this way because of all the different forms of computer viruses, but the majority of them can be prevented. The easiest way to get rid of a virus is just to pull the plug -- this refers to computers that are left on 24 hours a day.

COULD MY COCO GET A VIRUS?

It would be very difficult to program a computer virus using Disk Extended Basic due to the disk drive's built in ROM, which can't be permanently altered unless new code was burned into the ROM chips.

Effective viruses could be programmed in OS-9, but most COCO users have been responsible enough not to create any.



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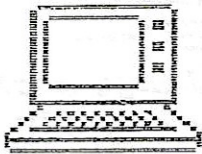
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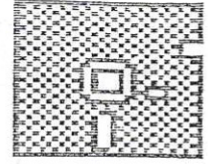
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C O C O



PRODUCT REVIEWS

Software Review

SUPER BOOT

SUPER BOOT is a utility program that allows you to easily load (LOADM) and RUN (EXEC) any program on disk by typing DOS. The program comes with one disk, and a seven page instructional manual.

When you start the program, a main menu appears which allows you to configure your system to the correct baud rate, drive step rate, and numbers of tracks on a disk. The menu also lets you specify the filename of a program so that the program autoboots upon typing DOS. If no file is specified, the computer uses the filename "STARTUP". This information must be saved to the disk. Since this data is saved at a specific location on the disk, the program first checks to see if that location already contains information. If it does, the program warns you before the save.

*"Simply insert
the new disk
and type DOS"*

After the information is saved, the new disk is ready to use. Simply insert it and type DOS. If there was a specified filename, that program will autoboot, otherwise a two column, non-scrolling directory will appear along with a cursor. At this time, you must move the cursor to the filename you want, press <ENTER> and the program will autoboot and start.

One drawback I found with this program is that it's very hard to use when formatting disks. If the disk is empty and you want to format it, the directions tell you to first install the program by typing DOS. After doing so, the computer tells you that there is no other files on the disk and will not continue until a disk is put in that contains files. This means that you must have at least one file on the disk before you can format it. If there were a simpler way of doing it, you'd probably have to find it yourself.

On a scale of one to five, I give this program a four. This is definitely a good utility to add to your collection.

(C. England, 128 Shepherd Drive NE, Calhoun, GA. 30701 - telephone # (404) 629-7197 after 6PM Eastern time; \$15 on disk).

- David McNally

Software Review

EDUCATIONAL PROGRAMS PACKAGE -- *Hononyms, Spelling, etc!*

School has begun last month, and I'm sure there are many children that are already having trouble in the areas of math, reading, and spelling. I have reviewed a collection of educational programs written by Sebastian LaSpada (the same programmer who wrote A Bible Adventure, reviewed in last month's issue) for the CoCo 2 and 3. They are Vocabulary Quiz, Math Quiz, Hononyms, Spelling, and Guess a Number. All five programs come on a neatly-labeled, colored 5 1/4" disk. The documentation included with the programs is a homemade 13-page instruction manual labeled, "Important Information and Instructions for Your Educational Programs". Each program is outlined, and anything you would need to know on using the program is inside the booklet. The only thing the manual lacks is loading instructions. Even though almost every CoCo disk drive user knows how to boot up a program, it is still something every software instruction manual should have regardless if your a novice or an experienced user. <Editor's Note: Mr. LaSpada will be adding loading instructions to his updated manuals.>

Each program in the collection features a colorful title screen, random patterns using block graphics, and many musical tunes throughout all five programs. Most programs have multiple choice answers to the question given. For example, in "A Spelling Quiz", you are given an incomplete sentence and two words to choose from; one word is spelled correctly and the other is spelled incorrectly. In Vocabulary (this program is more for adults than small children since the words are very complicated), you are given a word and four definitions to choose from. Hononyms is written the same way, where you have to choose between two words that sound alike, but are spelled differently, and have different meanings (such as MAIN and MANE, HORSE and HOARSE, etc.) Math Quiz is different, where you have to fill-in the answer instead (questions are phrased like, "What is 720/59?"). All programs let you know if you are right or wrong in your answer, but in better ways rather than the plain 'ol "correct" or "incorrect". You are cheered on by You're Super!, Right On!, etc. At the end of each program you are given a score in percentage, and are also given a suggestion that relates to what your score is. If you got a high score, the computer will congratulate you, if your score was low, you'll be told to keep on trying or "study harder".

As for any bugs, I did find a small one in the Spelling program; at the end you are asked if you would like to review more hononyms, rather than more spelling words. Mr. LaSpada has fixed this minor glitch already.

The last program on the disk is Guess A Number. This is more of a game than a test or quiz (it's an addictive one too!). The computer thinks of a number between 1-100, and you have to guess what number the computer has picked. You are given clues to help you out though, such as if you're number is too high or too low. If you're real close to the number picked, the computer will let you know also.

Overall, I found the package to be of value to a child who needs to be drilled on the subjects given within all the programs. For \$8, you're definitely getting your money's worth.

(Sebastian LaSpada, 531 Main Street, Dunkirk, NY 14048, tel. # (716) 366-5261; \$8 on disk)

-Joe Ahern

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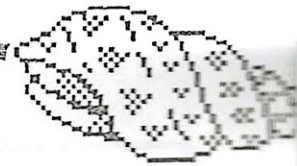
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Exploring the Shell

by Bob van der Poel
Contributing Editor

In the last column we had a brief look at some of the things we can do from the OS9 Shell. This issue we will examine SHELL a bit further and examine the various options (many of which are overlooked) the standard SHELL supplies.

But, first: Just what is SHELL? It is an applications program which permits a user to access OS-9. This program is invoked by the OS-9 system module SYSG0 when you start up OS-9. There is nothing magical about this program. It basically sits there waiting for you to type in a line of data. After each line is typed SHELL examines the line (in computerize this is called parsing) and then does whatever it is instructed. For example, if you type in:

```
ved myfile ENTER
```

SHELL will assume that "ved" is a program and "myfile" is a parameter to pass to the program. If the program cannot be found in memory or in the current execution directory, then SHELL assumes that it is the name of a procedure file (more on these in a later installment!).

Before starting a program SHELL also examines the header of the program. If it finds that the program is a compiled Basic09 program it will actually execute RUNB with the program name as a parameter. SHELL also has built-in logic to execute compiled Pascal and Cobol programs which use the Pacals and RunC run-time modules.

SHELL has a number of built in commands. They are covered in some detail on page 6-85 of the Level II manual.

Command Separators: These permit you to have a single line do more work.

; -- The sequential execution separator permits you to have a number of programs execute sequentially. For example:

```
list myfile; dir /dd; dir x ENTER
```

would cause the three commands to be executed one after the other.

& -- The concurrent execution separator tells OS-9 that you wish to have the specified program execute at the same time as other programs. For example:

```
list myfile>/p & ENTER
```

would cause "myfile" to be printed on the printer as a background task. With the windows available on the CoCo, this command is not used as much as it is on other OS-9 systems. In most cases it is just as easy to have the "background" task run in another window where error

messages, etc. will not interfere with other programs.

! -- The pipeline separator will cause the output of the program to be passed to another program. For example:

```
list myfile ! page ! both >/p ENTER
```

will cause the file "myfile" to be "printed" to another program called "page". In turn the output of page is directed to the input of "both". Finally, "both" will send its output to the printer.

Command Modifiers: This change tells SHELL how you want a program to execute.

The redirection modifiers (<,> and >>) tell OS-9 which paths you wish to use in place of the normal defaults. Normally, input for a program comes from the keyboard; however, you might wish to redirect it from a disk file. Here is a command line which does this:

```
format <formatfile ENTER
```

In this example the command "format" will get its input from the file "formatfile". In this case format would look for the confirmation <y>, the diskname, etc. from the file. This can be handy if you need to format non-standard disks from time to time. Instead of having to remember the various options you just place them in a file.

Redirection modifiers are mostly used to redirect the output of programs. We've already seen how the > modifier can be used to redirect output to the printer; this command redirects the error path to the printer:

```
myprog >>/p ENTER
```

In this case "myprog" might get its input from the keyboard and print to the screen. However, its error reports will go to the printer. This is a handy way to separate error messages from the normal output of a program.

The memory modifiers (#n and #nK) specify the amount of memory to allocate to a program. This will not work with all programs; and in some case it will actually degrade the operation of a program. Have a look at the docs for a specific application if things don't work out as you expect. For example, my text editor VED does dynamic memory allocation as needed--if you give the VED more memory from a command line it will be ignored and will actually have LESS memory to expand into. Other programs, the OS-9 utility COPY is a great example, will work much more quickly with extra memory.

Command Parameters: These tell effect the operation of SHELL itself. For example:

```
shell -p t ENTER
```

will start a shell with no prompt and have all command lines echoed to standard out. The use for this becomes more obvious if you are using procedure files and pipes. By placing a "t" as the first line in a

procedure file each line of the file will be printed as it's passed to a shell for execution. Again, an example:

```
dsave /d1 ! shell -p t ENTER
```

This will cause DSAVE to pipe its output (a listing of procedures to copy all the files on the disk in the current data directory) to another shell. This second shell will accept each line it gets from DSAVE and execute it. If you did not have the "-p" modifier a prompt would be printed for each command line generated by DSAVE; if you omit the "t" the commands will not be echoed to the terminal.

The "x" option is another mostly used in procedure files. Normally, if an error is reported in one line of a procedure file the subsequent lines will not be executed. Including a "-x" in the file over rides this built in rule. Note that even with a "-x" a series of sequential commands will abort after an error in one of them.

The "kill" command will stop the execution of another program. This is really useful for folks like me who write run-away programs. Coupled with this is the "w" command. This will force the current shell to wait for any other processes under its control stop executing. This can be handy when you use the kill command; or when you start a number of concurrent processes.

Usually a shell will terminate when the ESCAPE key is pressed (actually, it is not so much the ESCAPE key but the value representing an EOF). However, we don't always want our shells to disappear so easily. For this reason the "i=" option is present in Level II. A shell created with this option will not terminate with an EOF. It must be explicitly terminated with the "ex" command.

The final shell parameter is the "setpr" command. This permits you to decide how much processor time will be allocated to another process. You can use this to slow down processor hogs--but don't fall into the trap of giving all processes a high priority since this will really have no effect at all.

This discussion really only scratches the surface when it comes to getting the most out of SHELL. Chapter 3 of the Level II manuals give a good discussion of many features. The other thing to do is to play and experiment.



PRINTER TIP (USING RENUM)

I think all disk users have seen the power of the printer when hooked up to the CoCo. A good example of this is in the command:

```
POKE 111,254:DIR
```

which will print the disk directory. This POKE can be used with other functions as well. For instance, have you ever RENUMED a program only to find that you got some UL ERRORS (Undefined Line)? And now that your program is RENUMed it will be impossible to fix that error.

Fortunately, there is a way around this. All you have to do is RENUM your program using line numbers greater than the last one in your program. Try this the next time you're not sure!

```
RENUM 63999,63999
```

This will show you all the UL ERRORS without altering your program. This is where the POKE comes in. If the list is longer than the screen, you can get a printout by typing:

```
POKE 111,254:RENUM a,b
```

where both a and b are numbers bigger than your last line number and smaller than 64000.

Anton P. Milardovic

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TRS-80 COMPUTING

Reader's Survey #2

Below is a survey we are taking for TRS-80 Computing, in order to help us make decisions on more changes we are planning to make in the future. The first few questions are in regards to your computer system. If you have already filled out the survey that appeared in the June '90 issue, then you can skip over those. Write any additional comments or suggestions that you may have on the space provided below, and send this back to us using the address on the back cover. Thank-you!

1. Do you have a: CoCo 1 CoCo 2 CoCo 3
 - a. Does your system have Extended Color BASIC?
 - b. How much memory does your CoCo have?.....
2. Have you made a purchase of the MM/I computer?.....
3. Do you have a disk drive?.....
4. Do you own a printer?..... If so, which one(s)?.....
5. Do you program on your CoCo?.....If so, what languages do you program in more frequently (and to what extent- beginner, intermediate, advanced).....
6. What do you think of TRS-80 Computing?.....
7. We are planning to start a new column on the MultiMedia I computer from Interactive Media Systems, in the December issue. Do you think this is a good idea in terms of keeping up with the latest developments on the Color Computer?.....
8. What would you like to see more of in TRS-80 Computing?.....
9. Do you like the new format of the magazine?.....Why or why not?.....
10. Do you inform others of TRS-80 Computing?.....
11. Do you belong to a CoCo club? If yes, what is the club's name and how can we contact it (we are going to start listing CoCo clubs in a future issue)?.....
12. How often do you use your CoCo?..... Do you have any other computers beside a CoCo?.....
13. We are planning to print a smaller publication called "CoCo Previews" which will contain hints, tips, product reviews, and information about future software. What do you think of this idea? Do you have any suggestions?.....
14. We are planning to choose new editorial themes for the 1991 year. What would you like to have an issue devoted to?.....

ADDITIONAL COMMENTS:

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