DYNAMIC COLOR NEWS

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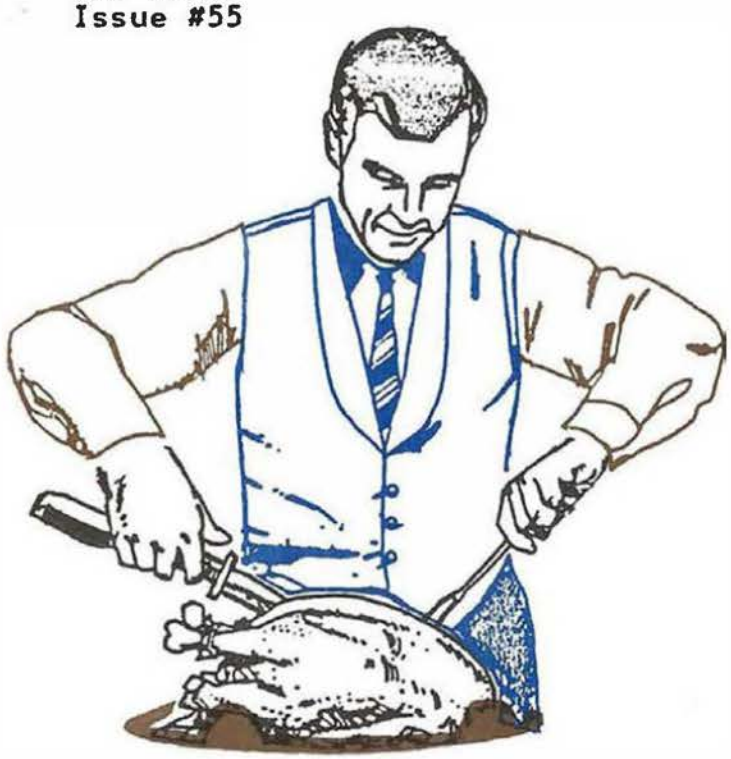
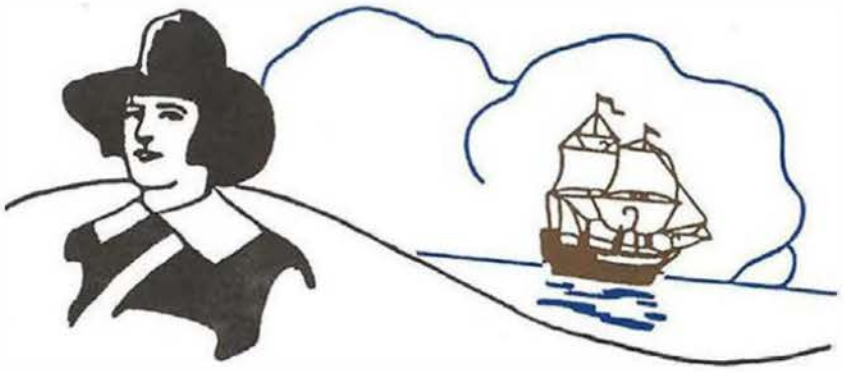


COCO 3

BASIC PROGRAMMING

OS-9 & BASIC 09



PROGRAMS

HAM RADIO

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The purpose of this magazine is to provide instruction on Basic & Machine Language programming, Computer theory, operating techniques, computer expansion, plus provide answers to questions from our subscribers.

The submission of questions, operating hints, and solutions to problems to be published in this magazine are encouraged. All submissions become the property of Dynamic Electronics if the material is used. We reserve the right to edit all material used and not to use material which we determine is unsuited for publication.

We encourage the submission of Basic and Machine Language Programs as well as articles. All Programs must be well documented so the readers can understand how the program works. We will pay for programs and articles based upon their value to the magazine. Material sent will not be returned unless return postage is included. Basic & ML programs should be sent on a tape or disk & comments should be sent as a DAT or TXT file.

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This month we will start by discussing a command that is represented by the > symbol rather than a combination of letters. As we have seen most commands have been shorthand representations of the action that takes place, such as DIR for directory or FORMAT to format a disk.

The > symbol is used to represent redirection and in a way it does represent the action that takes place. In order to understand that let's take a look at how OS-9 generally handles our commands. OS-9 has a standard path for input and output set up in it. The standard input path is the keyboard. This of course makes sense since most of our input comes from commands that we type in from the keyboard.

Just as the keyboard is the standard or default input path, the screen of your TV or monitor is the standard output path. Whenever we have used a command, the results have appeared on the video screen. Again this makes good sense, because sending the output of most commands to a printer would be too slow and waste a lot of paper or sending them to a file would make them hard for us to easily see.

The nice thing about OS-9 is we can, when we so desire, redirect the output of our labors where we need them. The best way to demonstrate this is to create a file and then see if we can redirect it to places other than the screen when we try to LIST it.

First lets BUILD a file called SHOPPING which will consist of a typical shopping list for the grocery store.

```
BUILD SHOPPING
 ? MILK
 ? BREAD
 ? EGGS
 ? TOOTHPASTE
 ? TOOTHBRUSH
 ? BANANAS
 ? SPINACH
 ?
```

If we wanted to print this list out we could redirect its output to the printer. For those of you without printers hang on a minute and you'll be able to see the redirect work. To get a print out of this, type in the command below.

```
LIST SHOPPING >/P
```

If your printer was on, it should have dutifully printed out the shopping list we built above. Now as I promised for those of you without printers let's redirect the output of our listing of the file to another file. We will call this new file WEEKLY figuring it to be a weekly list of things we should get. While that may not be accurate it will serve to demonstrate redirecting the output of one file to another file. Type in the following command:

```
LIST SHOPPING > WEEKLY
```

Did OS-9 carry out our wishes? Do you really have any doubt? Well it never hurts to be sure so type in a DIR command. You should see the file WEEKLY in your directory listing. Does this file contain an exact copy of SHOPPING as we would expect? There are at least two ways to find out. The first is to LIST the two files and do a line by line check of both files. The second way is to let OS-9 do the work for us.

To accomplish this we will use the CMP command. CMP is the compare command and as the name indicates it compares two files and reports their differences or lack thereof. Since we have two files now let's try this command out. Type in the following line.

```
CMP SHOPPING WEEKLY
```

I received a report of 36 bytes compared and 0 bytes different. So without any eyestrain I have compared my two files and found that they are indeed the same.

What if we don't want the file we were redirecting to be placed in the root directory of our disk. (This is the directory that is displayed when we do a DIR command with no qualifiers). When we redirect we can redirect anywhere so long as we specify a pathname. Let's put our shopping file in the CMDS directory using the redirection operator. Type in the following command.

```
LIST SHOPPING >/DO/CMDS/WEEKLY
```

Now if we check our CMDS directory we will see a file called WEEKLY which is the same as SHOPPING. Type:

```
DIR /DO/CMDS/WEEKLY
```

We can see another feature of OS-9 in this demonstration. Despite the fact that a file named WEEKLY existed in the root directory we were able to create another file called WEEKLY on the same disk. We were able to do this because even though the two files have the same filename they have two distinctly different pathnames. /DO/WEEKLY vs. /DO/CMDS/WEEKLY, because of this facts the two files are allowed to co-exist with the same filename. Although we can get away with such things it is not a good practice to do so, so let's eliminate at least one of these files. Type in the following command line.

```
DEL /DO/CMDS/WEEKLY
```

You can check it out with the DIR command, but just by looking at the pathname you know which file was deleted. In addition to being able to redirect anywhere on a disk, we can redirect to other drives if we have them by substituting the drive name, such as /D1, for the /DO in the command line.

Just as the > symbol was the redirection command for output, < is the redirection symbol for redirecting the input. The final redirection command is the >> symbol. This is brought up by just using the > key twice. This will redirect the error messages from the system.

To finish up let's clean up our root directory. If we remember correctly we have two files with the same information in them, but different file names. We will delete both of them with just one command line. Type the following.

```
DEL SHOPPING WEEKLY
```

OS-9 will know enough to delete both files. You can check it out with your DIR command. With everything cleaned up we can relax till next month.

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City:.....St:.....Zip:.....

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```

```
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RUSH!
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BELOW

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```

```
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```
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*                                            *
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**********************************************

Name:.....

Address:.....

City:.....St:.....Zip:.....

Phone:.(.....).....-.....
```

```
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$$MONEY$$
ORDER
THE
DISKS
TODAY!!

**************************
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# here also.  BBS# (704)434-2629   #
####################################
```

BASIC 09

Up till now I've been demonstrating ways to write programs that eliminate the GOTO commands. As I have stated this will make the program easier to follow and keep the need for line numbers down. This does not however mean that I am looking for the total extinction of the GOTO command.

As I noted before the BASIC09 section fo the level II manual does not list the GOTO command in the section on BASIC commands, even though BASIC09 supports the command. It does however include descriptions of ON ERROR/GOTO and ON/GOTO. There are times when a GOTO command will do quickly and easily what would take a group of commands to do. This is demonstrated by the program for this month.

This month's program is inspired by ads I've seen lately for computer programs that will pick numbers for people playing lotteries. The concept seemed simple enough. The trick was to get the computer to pick a small set of numbers from a larger set, without duplicating any of the numbers. The natural selection for this sort of thing is the random number generator. As you will no doubt recall the random number generator will produce real numbers (i.e. 3.124,5.698,etc.) if it is not constrained. In the DIM statement the variable M is defined to be an integer and the random number generator RND(M) is therefore held to integers only.

Also notice that the value of A is defined to be a one dimensional array A(25). In this respect the BASIC09 DIM statement is like the extended BASIC DIM statement. The rest of the commmands in the program are things we have covered previously, except the GOTO command.

To use the GOTO command we simply have to put a line number on the line we wish to go to. As you can see I put a 10 before the place I wanted to jump to. That is the only line number I needed in the whole program. If you have been using line numbers right along, that's okay, but they do take up memory space. For small programs though this is no big consideration.

I used the GOTO to break us out of the loop if a duplicate number was found, and select a new number to take its place. After a new number is selected the loop is re-entered and starts to check the array from the first element again. If we had used the GOSUB to accomplish this we may have seen duplicate numbers.

Let's try this scenario. Suppose the current number being checked matched the third element in our storage array. A GOSUB would have taken us out of the loop, selected a new number, and brought us back where we left from. The new number would then be compared to what was left in the array, but if it matched one of the numbers that were checked before it was selected, it would never be caught. The possibility then exists for duplicate numbers.

Now before you run the program and go out and buy a lottery ticket let's try an experiment. Although we have no lottery here in Alabama, we do have cable TV and I have seen some of the other states lotteries. A common one seems to be to pick 6 numbers from 1 to 48 and match them exactly with the ones picked by the state. I picked a set of numbers (7, 13, 29, 37, 41 & 47) and ran the program. I usually had one of the program numbers match the set above. I rarely had two to match and never came close to all six matching.

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COCO III

Part 4

by
John Galus

In this part we will examine the new high-resolution text screens that are a welcomed new feature of the COCO III computer. There are four possible display formats for the text screens 32, 40, 64, and 80 columns. In Basic we can access three of them using the WIDTH command. When we enter this command the computer automatically jumps into the text mode we want. The 32 column format is like the old Color Computers video text screen, the other one allows an extended text screen that we previously implemented by an Assembly language routine on the old COCO.

Besides the extra columns we can use other text character features such as, Blinking, Underlined and different color characters. The new text screens use a buffer where a two byte code is placed to represent a character and its attribute. A characters attribute is its color or other special text feature. The characters that can be displayed are from ASCII character 32, the Space bar, to 159. On page 293 of the Basic manual you can see special foreign characters that the text modes can display. Each character takes two bytes. For example to display a blinking "A" on the screen the two byte code would be stored in the text buffer. From the memory map on page 311 of the manual we find that the hires text screen begins at virtual address $6C000.

```
CHARACTER       ATTRIBUTE
$41             $80

10 WIDTH 40
20 LPOKE&H6C000,&H41
25 LPOKE&H6C001,&H80
30 GOTO 30
```

The computer scans this text buffer every machine cycle (60 times per second) and interprets the information there. Here is list of the attribute codes.

```
ATTRIBUTE:

BLINK   $80 OR 128 DECMIAL
UNDERLINE 64
FOREGROUND COLORS:
PALETTE 8-15   CONTROLLED BY
  BITS 3-5 OF ATTRIBUTE BYTE
BACKGROUND COLORS
CONTROLLED BY BITS 0-2 OF
 ATTRIBUTE BYTE
```

We can also control the height of the characters. This is controlled by bits 0-2 of the Video mode register located at $FF98.

LINES	VALUE
24	3
21	4
19	5
17	6

Usually there are 24 lines of text in a mode. Now we will look at how to setup a text mode.

1.) BIT 7 OF $FF90 MUST BE CLEARED
2.) BIT 7 OF $FF98 MUST BE CLEARED
3.) THE TEXT MODE MUST BE CHOSEN AND SET IN $FF99
4.) START OF SCREEN ADDRESS

PLACED IN $FF9D & $FF9E

```
BUFF   EQU $4000   'TEXT BUFFER
START  ORCC #$50   'INTERRUPT OFF
       LDX  #BUFF  'POINT TO BUFF
       STX  BEG      'SAVE IT
       LDD  #$2000   'A SPACE AND
            ATRIBUTE (GREEN)
CLS    STD  ,X++
       CMPX #BUFF+8192  'END
            OF SCREEN?
       BLS  CLS
       LDX  #$E800      'PHYSICAL
            SCREEN START
       STX  $FF9D       'SAVE IN
            VERTICAL OFFSET REG
       CLR $FF90        'TEXT
            SCREEN SELECT
       LDA #3
       STA  $FF98 '40 X 24 LINES
       LDA  #5
       STA  $FF99
       LDX  BEG     'GET TEXT
       LDA  #'A      'LETTER A
PRT    LDB  #$80     'ATTRIBUTE
            BLINK
       STD  ,X++
       STX  BEG     'SAVE NEW
            POSITION
KEY    JSR  $A1C1    'INKEY
       BEQ  KEY     ' NO KEY LOOP
       CMPA  #3     'BREAK KEY?
       BEQ  FIN     'YES FINISHED
       BRQ  PRT     'PRINT OUT
           LETTER PRESSED
FIN    ANDCC #$AF    'TURN OF
           INTERRUPTS
       JSR  $E690    'HSCREENO
       SWI         'RETURN TO ZBUG
```

HERE IS LIST OF THE TEXT MODES AVAILABLE:

MODE: 32 COLUMN

# OF LINES	VALUE IN $FF99
24	1
25	33
28	97

MODE: 40 COLUMNS

# OF LINES	VALUE
24	5
25	37
28	101

MODE: 64 COLUMNS

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# OF LINES	VALUE
24	17
25	49
28	113

MODE: 80 COLUMNS

# OF LINES	VALUE
24	20
25	52
28	116

VERTICAL SIZE VALUE IN $FF98:

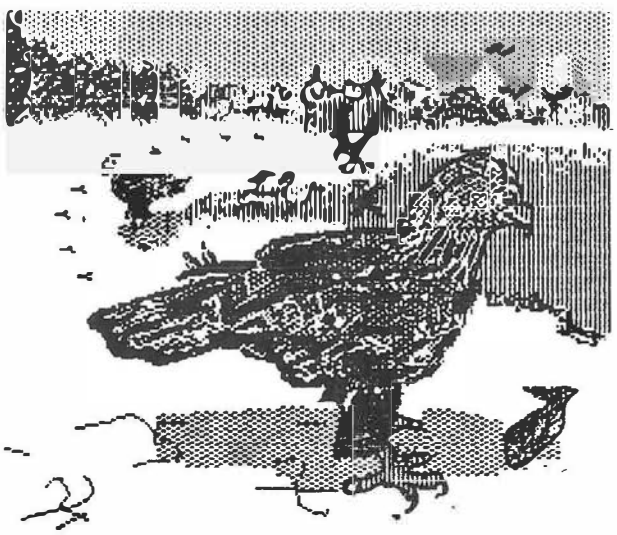
HEIGHT	# IN $FF98	TEXT LINES
7	3	24
8	4	21
9	5	19
10	6	17
FULL SCREEN	7	

It's quite a bit of work to set these modes up yourself. Basic allows you to access three of these modes using the WIDTH command which is located at $F636 in Super Extended ROM. To get into these modes here is a short Assembly language routine to activate them. $E6 must be cleared and the mode number must be in the "B" register, either 32, 40, 80.

```
TEXT  CLR  $E6  ;TEXT SCREEN
      LDB  #40  ;WIDTH 40
      JSR  $F643  ;JUMP INTO
           ROM WIDTH COMMAND
```

The new computers use these text screens by patching the normal print rountine at $A30A and sends it to $F7AE, where it determines if a hires text screen is on. If it is on, it checks to see if any screen attributes have been enabled by the ATTR Basic command and places the corresponding character and attribute in the text buffer, which is scanned by the computer every machine cycle. In the next part we will examine how the COCO III controls the "ld" graphic modes. The old VDG (Video Display Generator) and the SAM (Synchronous Address Multiplexer) are contained within the new COCO III graphic chip and uses many of the old register addresses to maintain compatibility with the earlier model Color Computers. In the COCO III we can obtain all the graphic modes, the normal text and the seni-graphic 4 mode, that uses the SET and RESET commands. The VDG is still controlled by $FF22 and we can still obtain artifact colors by mixing Pmodes and different values poked into $FF22. The COCO III even provides the capacity to obtain the correct artifact colors by holding down the F1 control key while turning on the computer, no more reset hitting.

The SAM is still controlled by registers located at $FFC0 to $FFC5, these registers controls the graphic modes. The starting address of the graphic screens are controlled by the registers at $FFC6 to $FFD3 and the address must be placed in the vertical offset registers located at $FF9D and $FF9E. Also bit 7 of $FF90 must be set as with the Hi-res text screens (see above). If you want to impress your friends just tell them that your computer can display 22 high-resolution graphic modes, 12 Text modes, and 9 low resolution modes for a total of 43 modes. Pretty impressive don't you think!



SUPER BLITZ

COCO 3 GAME

This CoCo 3 program is a conversion of the Blitz plane games for other computers. It is done in 16 color graphics. To play the game, merely press the spacebar to drop bombs on the city. Only one bomb may be dropped at a time. With each pass, the airplane gets lower. The object of the game is to destroy the buildings before you hit them. The down arrow key controls the air foils. By pressing it, you plane will automatically drop a level.

This program is provided as a courtesy of T&D Subscription Software (See their advertisement on page 8) and is used by permission.

```
0 'COPYRIGHT (C) T&D SOFTWARE 19
   88
2 REM
10 X=RND(-TIMER):X=0
20 HBUFF 1,1000:HBUFF 2,1000:HBU
   FF 3,1000:HBUFF 4,1000
30 POKE 22003, 7:POKE 22000,0:'
     SET UP FOR A SUB TO TITLE P
   AGE AND CITIES BOMBED TO ZERO
   .
40 POKE65497,0
50 POKE&HE6C6,18:POKE&HE6C7,18
      '*************************
            AN OLD TIME FAVORITE
   ...        REDONE ON THE COCO
    III,              "BLITZ!!!"
                  *************
   **********
60 ' ***********************
           BY TIO BABICH
             *******************
70 ON BRK GOTO 90
80 GOTO 100' AVOID BREAK SUB.
90 RGB:WIDTH32:PRINT"I HOPE YOU
   HAVE ENJOYED THE     GAME, PL
   EASE PLAY AGAIN SOON.":POKE65
   496,0:END
100 ' FIX PALETTE COLOURS.
110 POKE 140,240'SET ENGINE SOUN
   D
120 FORX=0 TO 15:READA:PALETTE X
   ,A:NEXT
130 HSCREEN2:HCLS0:IF PEEK(22003
   )=7 THEN GOSUB 1860
140 'VARIABLES -------
150 MI=274'HORIZONTAL MOVEMENT
160 MV=0'  VERTICAL MOVEMENT
170 ' LOCATION 22000 HOLDS NUMBE
   R OF CITIES DESTROYED.
180 ' LOCATION 22002 HOLDS CITY
         LEVEL.
190 ' LOCATION 22001 HOLDS PLANE
         SPEED.
200 ' LOCATION 22003 HOLDS FLAG
     FOR TITLE PAGE.
210 '--------------
220 ' DATA TABLES FOR COLOURS
     THAT WILL LOOK ALMOST THE S
   AME ON EITHER CMP OR RGB MONI
   TORS.
230 DATA 00
240 'SLOT 0, BLACK
250 DATA 10
260 'SLOT 1, DARK PURPLE
270 DATA 59
280 'SLOT 2, LIGHT PURPLE
290 DATA 37
300 'SLOT 3, LIGHT ORANGE
310 DATA 18
320 'SLOT 4, GREEN
330 DATA 29
340 'SLOT 5, LIGHT BLUE
350 DATA 49
360 ' SLOT 6, VERY LIGHT GREEN
370 DATA 52
380 'SLOT 7=ORANGE/YELLOW
390 DATA 40
400 'SLOT 8=PINK
410 DATA 12
420 'SLOT 9=WHITE...
430 DATA 31
440 ' SLOT 10 = LIGHT GREEN
450 DATA 63
460 ' SLOT 11 = WHITE
```

```
470 DATA 63
480 'SLOT 12 = WHITE
490 DATA 63
500 SLOT 13= WHITE
510 DATA 37
520 'SLOT 14=LIGHT ORANGE..SWX
530 DATA 52
540 'SLOT 15=ORANGE/YELLOW SWX
550 GOSUB 940
560 'OUTER LOOP
570 LV=PEEK(22002)
580 FOR LL=1 TO LV
590 GOSUB 740
600 NEXT LL
610 'MAIN LOOP
620 FOR LX=1 TO 25
630 IF LX<6 THEN PALETTE 12,63:P
   ALETTE 11,0:PALETTE 13,0:PALE
   TTE 14,52:PALETTE 15,37
640 IF LX>5 AND LX<11THEN PALETT
   E 12,0:PALETTE 13,63
650 IF LX>10 AND LX<16THEN PALET
   TE 12,63:PALETTE 13,0:PALETTE
   14,37:PALETTE 15,52:EXEC4334
   5
660 IF LX>15 AND LX<21THEN PALET
   TE 12,0:PALETTE 11,63
670 IF LX>20 THEN PALETTE 12,63:
   PALETTE 11,0:EXEC43345
680 MI=MI-PEEK(22001):IF MI<0 TH
   EN MI=274:HPUT(0,MV)-(44,MV+1
   8),2:MV=MV+12
690 IF HPOINT(MI,MV+15)>0 THEN G
   OTO 1420 'LOSE THE GAME.
700 HPUT(MI,MV)-(MI+44,MV+20),1
710 IF MV=180 THEN GOTO 1570'
   WIN THE GAME.
720 GOSUB 1090
730 NEXTLX:EXEC43345:GOTO610
740 '***DRAW BUILDINGS**
750 HSCREEN2
760 HCOLOR3
770 HLINE(0,180)-(320,180),PSET
780 X=20:Y=180:CO=0
790 CO=RND(10)
800 HCOLOR CO
810 G=RND(120)
820 R=RND(25)
830 HLINE(X,Y)-(X+R,Y-G),PSET,BF
840 RN=RND(3):IF RN=2OR RN=1 THE
   N GOSUB 880
850 X=X+R+RND(17):IF X>275 THEN
   870
860 GOTO 790
870 RETURN
880 'DRAW ROOF.
890 P=RND(5)+5
900 HLINE(X,Y-G)-(X+R/2,Y-G-P),P
   SET
910 HLINE(X+R/2,Y-G-P)-(X+R,Y-G)
   ,PSET
920 HPAINT (X+R/2,Y-G-4),CO,CO
930 RETURN
940 'DRAW PLANE
950 HSCREEN2:HCLS
960 HDRAW "C6;S4;BM260,10;R4;E2;
   CO;U3;E2;R1;E1;F1;R1;F4;C6;L9
   ;G3;F3;R12;U1;R12;L12;G1;E1;D
   1;L2"
970 HDRAW"C13;F2;R10;D1;L9;F3;R1
   3;H5;U1;L13;R12;C6;U5;C14;R1;
   D4;R1;U4;D1;R1;D2;U1;R1;C15;R
   5;D1;L4;U1;L1;;L1;D1;L1;D1;L1
   ;R1;U1;R1;U2;L1;U1;L1;C14;L2;
   C6;L1"
980 HDRAW"C11;E3;L8;U1;R9;E2;L12
   ;G5;C6;G1;L2;H1;F1;R2;R12;L12
   ;U1;C11;R12"
990 HDRAW"B;L7;B;D2;C12;L6;R3;D1
   ;L6;R12;L6;D1;L3;R6"
1000 HGET(259,1)-(302,21),1
1010 HGET(100,100)-(140,120),2
1020 HCOLOR 14
1030 HLINE(10,20)-(20,30),PSET,B
   F
1040 HGET(10,0)-(20,30),3
1050 HCLSO
1060 HGET(10,0)-(20,30),4
1070 RETURN
1080 HPRINT(41-R,G),"*"
1090 ' BOMB DROP!
1100 IF BC=1 THEN 1150' IF BOMB
   IS IN AIR , THEN MOVE IT!
1110 AI$=INKEY$:IF AI$=""THEN  R
   ETURN ELSE SOUND 240,1
1120 IF AI$=CHR$(10) THEN HPUT(M
   I,MV)-(MI+44,MV+18),2:MV=MV+1
   2
1130 BX=MI+8:BY=MV+12
1140 BC=1
1150 HPUT (BX,BY)-(BX+10,BY+20),
   3
1160 BY=BY+14:IF BY>180 THEN BC=
   0:BY=BY-14:HPUT(BX,BY)-(BX+10
   ,BY+20),4
1170 RETURN
1180 ' BORDER THE GRAPHICS SCREE
   N      NICELY.
1190 FOR R=1 TO 3
1200 HCOLOR RND(10)
1210 FOR G=0+R TO 41-R
1220 HPRINT(G,R),"*"
1230 HPRINT(G,25-R),"*"
1240 NEXT G
1250 FOR G=0+R TO 25-R
1260 HPRINT(R,G),"*"
```

```
1270 HPRINT(40-R,G),"*"
1280 NEXT G
1290 NEXT R
1300 RETURN
1310 ' PRINT TEXT NICELY
1320 HSCREEN2
1330 RD=RND(2):IFRD=1 THEN HCOLO
   R 10 ELSE HCOLOR 7
1340 FOR G=1 TO LEN(A$)
1350 E$=MID$(A$,G,1):IFE$=" "THE
   N RD=RND(5):IF RD=1 THEN HCOL
   OR 2 ELSE IF RD=2 THEN HCOLOR
    6 ELSE IF RD=3 THEN HCOLOR 7
    ELSE IF RD=4 THEN HCOLOR 8 E
   LSE IF RD=5 THEN HCOLOR 10
1360 HPRINT((X-1)+G,Y),E$
1370 POKE140,RND(255)
1380 EXEC 43345
1390 FOR D=1TO50:NEXTD
1400 NEXT
1410 RETURN
1420 '---  LOSE THE GAME ----
1430 FOR T=0 TO 15:HCOLORT
1440 HCIRCLE(MI,MV),(T+1)*2,1
1450 POKE140,RND(255):EXEC43345:
   NEXTT
1460 X=5:Y=5:A$="You have crashe
   d your plane !!!"
1470 GOSUB 1180:GOSUB 1310
1480 POKE65496,0:PLAY"01;L10;7;6
   ;5;6;5;4;5;4;3;4;3;2;3;2;L5;1
   ;P10;2;P10;1":POKE65497,0
1490 FOR G=1TO1000:NEXT G:HCLSO
1500 HCLSO:PG=1:GOSUB 1630
1510 X=5:Y=5:A$="  Would you lik
   e to play"
1520 GOSUB 1180:GOSUB 1310
1530 X=12:Y=7:A$="  again  (Y/N)
    ? ?"
1540 GOSUB1310
1550 EXEC44539:A$=INKEY$:IFA$="n
   " OR A$="N" THEN GOTO 90
1560 EXEC 44326:RUN 2
1570 '--- WIN THE GAME ----
1580 HSCREEN2:HCLSO
1590 GOSUB 1180:GOSUB1180
1600 X=12:Y=4:A$=" Congradulatio
   ns !!"
1610 GOSUB 1310:GOSUB 1180
1620 POKE 22000,PEEK(22000)+1
1630 C$=STR$(PEEK(22000))
1640 X=5:Y=9:A$="You have succes
   sfully bombed :":GOSUB 1310:G
   OSUB 1180
1650 X=9:Y=12:A$=C$+" Cities.":G
   OSUB 1310:GOSUB1180
1660 IF VAL(C$)=4 THEN 1730
1670 IF PG=1 THEN RETURN
1680 X=5:Y=15:A$="Hit <ENTER> fo
   r next round.":GOSUB 1310
1690 EXEC44539:A$=INKEY$:IFA$<>C
   HR$(13) THEN SOUND240,1:GOTO
   1690
1700 POKE 22001,4:IF PEEK(22002)
   <3 THEN POKE 22002,PEEK(22002
   )+1
1710 POKE 22003,0'** SET TITLE
    PAGE FLAG TO OFF.
1720 RUN 3
1730 HSCREEN2:HCLS:GOSUB 1180:GO
   SUB1180:X=5:Y=5
1740 A$="    ----CONGRADULATIONS
   ----":GOSUB1310:GOSUB1180
1750 X=5:Y=8:A$="You have comple
   ted your mission":GOSUB1310:G
   OSUB1180
1760 X=5:Y=10:A$="and have been
   awarded the rank":GOSUB1310:G
   OSUB1180
1770 X=5:Y=12:A$="of SQUADRON CO
   MMANDER.":GOSUB1310:GOSUB1180
1780 FOR G=1 TO50:FOR R=1TO10:PA
   LETTE R,RND(63)
1790 NEXT R:NEXTG
1800 X=5:Y=16:A$="Would you like
    to play again,":GOSUB1310:GO
   SUB1180
1810 X=5:Y=17:A$="  Squadron co
   mmander (Y/N) ? ?":GOSUB 1310
1820 EXEC44539
1830 A$=INKEY$:IFA$="N" OR A$="n
   " THEN GOTO 90
1840 IF A$="Y" OR A$="y" THEN RU
   N2
1850 SOUND240,1:GOTO 1820
1860 '---- TITLE PAGE ----
1870 HSCREEN2:HCLSO:GOSUB 1180:G
   OSUB 1180
1880 X=8:Y=5:A$="////////////\
   \\\\":GOSUB 1310
1890 X=8:Y=6:A$="((<<  SUPER BLI
   TZ!  >>))":GOSUB 1310
1900 X=8:Y=7:A$="((<< By: Tio Ba
   bich >>))":GOSUB 1310
1910 X=7:Y=8:A$="//////////////\
   \\\\\:GOSUB 1310:GOSUB
    1180:GOSUB 1180
1920 X=5:Y=12:A$=" Select plane
   speed :":GOSUB1310:X=5:Y=13:A
   $="(F)ast  or  (S)low ? ?":GO
   SUB 1310
1930 EXEC44539:A$=INKEY$
1940 IF A$<>"F" AND A$<>"S" AND
   A$<>"s" AND A$<>"f" THEN SOUN
   D240,1:GOTO 1930
1950 IF A$="F" OR A$="f" THEN PO
   KE 22001,4 ELSE POKE 22001,2
     ' **PUT FAST OR SLOW SPEED
   IN     LOCATION 22001.***
1960 X=5:Y=17:A$=" Select City l
   evel: (1-3) ? ?":GOSUB 1310
1970 EXEC44539:A$=INKEY$:IFASC(A
   $)<49 OR ASC(A$)>51 THEN SOUN
   D240,1:GOTO 1970
1980 POKE 22002, VAL(A$)
1990 RETURN
```

COCO DISK DRIVE PROBLEMS

by

Paul Anderson
SD Enterprises

I would like to report 2 problems encountered with color computer disk drives. The first problem involves drive motors and was announced by Dr. Marty Goodman. Because of its importance I wish to restate the problem. WHEN ANY DRIVE IS ACCESSED ALL DRIVE MOTORS SHOULD BE RUNNING.

It seems, from our customers feedback, that many brands of dual drives are in need of a wiring change described in Dr. Goodman's article. If a user has more than a single disk drive he or she should perform the following steps to see if his or her drives are wired properly.

1 Open all drive doors and remove all disks from the drives.
2 Turn computer on and type DIR and press ENTER 2 While the 1st drive motor is spinning check to see that ALL OTHER drive motors are spinning.

If all drive motors are spinning then your disk drives are wired properly.

If only the 1st drive motor is spinning then your other drives are IMPROPERLY wired. Contact the store where you purchased the drives to have them properly wired.

There seems to be another REAL potential for trouble using modified or different Disk Operating System (DOS) ROMS and DOUBLE SIDED drives setup as follows.

DRIVE 0 front as drive 0;
back as drive 2

DRIVE 1 front as drive 1;
back as drive 3

The trouble is a MIS-READ of data on the disk and seems to stem from the way in which the head position of each drive is kept track of. The DOS can either use a 2 byte or 4 byte head position table for this purpose.

The following BASIC program will allow a double sided drive user to determine the way their DOS handles the drive table. Type it in and insert a scratch disk, formatted on both sides, into drive 0 and run the program.

*** Listing 1**

```
10 POKE 2430,0:'DRIVE 0 HEAD POS
20 POKE 2431,0:'DRIVE 1 HEAD POS
30 POKE 2432,0:'DRIVE 2 HEAD POS
40 POKE 2433,0:'DRIVE 3 HEAD POS
50 PRINT"INSERT SCRATCH DISK FOR
   MATTED ON BOTH SIDES
   (DRIVE 0 AND 2)"
60 PRINT"THEN PRESS ANY KEY"
70 A$=INKEY$:IFA$= "" THEN70
80 DIR0:'READ DRIVE 0 DIRECTORY
90 DIR2:'READ DRIVE 2 DIRECTORY
100 PRINT
110 IF (PEEK(2432)) = 17 THEN
   PRINT"4 BYTE HEAD TABLE":END
120 IF (PEEK(2432)) =  0 THEN
   PRINT"2 BYTE HEAD TABLE":END
```

The trouble seems to occur if a 4 BYTE table is used with double sided drives. The correct way to keep track of a double sided disk drive's head is to have one byte per drive representing both sides as opposed to 2 bytes per drive one byte representing each side. Since the heads of a double sided drive move together they will each always be in the same position. Therefore, only 1 byte

is needed to represent both heads.

If you have a 4 byte head, table program listing 2 will indicate if the mis-read trouble occurs with your DOS or not. Type it in and insert a scratch disk, formatted on both sides, into drive 0 and run the program.

*** Listing 2**

```
10 CLEAR 1000
20 PRINT"INSERT SCRATCH DISK
   FORMATTED ON BOTH SIDES
   (DRIVE 0 AND 2)"
30 PRINT"THEN PRESS ANY KEY"
40 PRINT
50 A$=INKEY$:IF A$= "" THEN 50
60 A$="READ OK!"
70 DSKO$ 2,17,1,A$,B$
80 A$="READ BAD!"
90 DSKO$ 2,0,1,A$,B$
100 DSKI$ 2,34,1,A$,B$
110 DSKI$ 0,1,1,A$,B$
120 DSKI$ 2,17,1,A$,B$
130 PRINTA$
```

The program writes the words "READ OK!" on drive 2 track 17, and writes the words "READ BAD!" on drive 2 track 0. It then reads drive 2 track 34 followed by drive 0 track 1. Finally it attempts to read the data stored on drive 2 track 17. If the DOS is working properly the words "READ OK!", stored on track 17, should appear. If the words "READ BAD!", stored on track 0, appear there is a SERIOUS problem with the DOS using double sided drives.

This mis-read trouble was discovered when a user sent us a set of VIP Database data disks which spanned across 2 double sided drives. When the VIP Database searched for a file that was on the back side of drive 0 (drive 2) the file was not found. He was using a DOS ROM he bought from a well known Color Computer disk drive vendor (not Radio Shack).

This mis-read can be duplicated if you have a CoCo 3 and RSDOS 1.1 (or 2.1) and double sided drives set up as outlined above. It will also work with a CoCo 2 if it is configured for the all ram mode. Run the following program to enable the double sided drives. Format a disk on both sides (DSKINI0 and DSKINI2). Then run listing 2 and watch it fail for yourself.

*** DUAL DRIVE ENABLE PROGRAM**

```
10 POKE 55453,1
20 POKE 55454,2
30 POKE 55455,65
40 POKE 55456,66
```

The cure was found when we tried the disks using RGBDOS from RGB Computer Systems. RGB-DOS uses a 2 byte head table instead of a 4 byte head table and does NOT fail the mis-read test. If your DOS fails you should contact the supplier and request an updated DOS ROM which will not fail the above test.

Other double sided drive configurations may also fail in a similar manner, but until the cause is found and cured these double sided drive users can NOT be assured of proper disk operation.

* Included on DCN on Disk.

OPERATING HINT

You can do memory peeks or pokes, or list part of your program, and then continue the program by typing "CONT ENTER". You do not loose your variables with this procedure.

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ham radio & computers by bill chapple w4gqc

Keying Without a Relay

Computers have changed ham radio operation. When I received my novice license back in 1954, everything used vacuum tubes. These worked very well but were expensive. Vacuum tubes consume a lot of power and the amount of tasks that could be accomplished were limited. Today vacuum tubes are only used for high power linear amplifiers, and this use is decreasing.

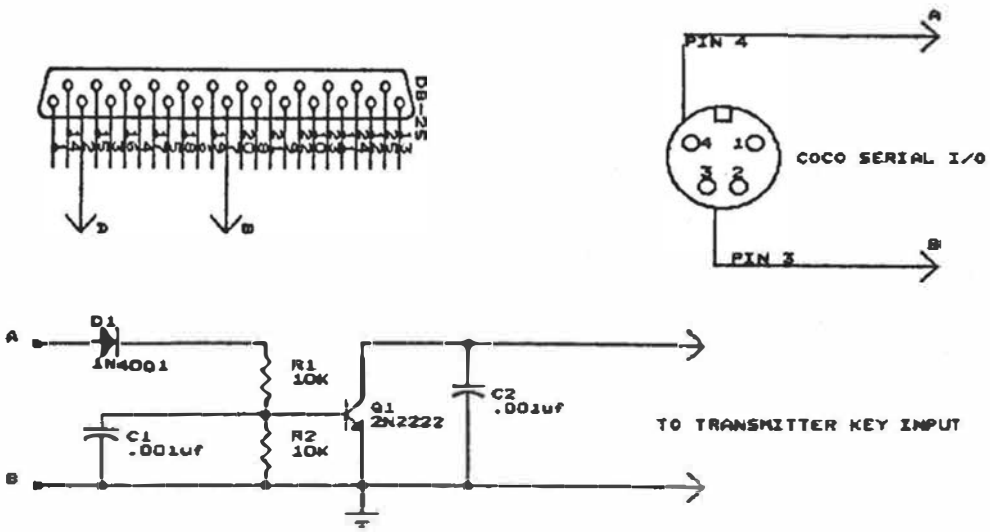
Now modern transceivers are computer controlled. I have a Yaesu FT-757 and it has several microprocessors. As I reflect back over my experience as a ham, and look at the CoCo 2 that I use for my ham station, I am constantly awed by its power. My FT-757 has a computer aided tuning (CAT) feature. With this I can select any frequency using my computer. This is done with ASCII using the serial port. I have not persued this but there is interest in using the computer to control the transceiver's frequency. There are many uses for the serial port and it may be advantageous to purchase a box that will allow several devices to be switched to this port. These are available for the standard 25 pin connectors. Devices that could be switched are a printer, modem, and ham interfaces.

Morse Keyer Interface

Last month I presented an improved Morse Code Keyer program. It allowed fixed messages to be sent as well as the call letters and name of the station being worked. I used the interface that I had previously developed with the Morse Terminal Program. This involved using a relay for keying the transmitter. Generally I do not like relays because they are slow to key and are bulky and expensive. However a relay will key any transmitter. Thus using a relay has an advantage for older transmitters with high voltage on the keying circuit.

Transceivers marketed today require a low keying voltage. I looked at the possibility of keying my FT-757 with an electronic interface eliminating the relay. To start I measured the voltage across the key. It was about 3 volts. A 2N2222 transistor would easily key the circuitry. The output from the serial port swings from + 12 to - 12 volts.

My plan was to turn on the transistor when the output goes to +12 volts. A diode was used to prevent the -12 volts from being applied to the transistor. One end of a 10K 1/4 watt resistor was connected to the diode and the other end was connected to the base of the transistor. This limits the current to the transistor and causes it to conduct when the RS-232 is at +12 volts. Another 10K resistor was connected from the base to the emitter of the transistor. Its purpose is to stabilize the transistor. A .001 uf capacitor



Morse Keyer Interface

FIGURE 1

was also connected across the base and emitter of the transistor. This capacitor prevents erratic operation due to radiation from the transmitter. A second .001uf capacitor is connected from the emitter to the collector for the same reason.

Figure 1 is a diagram of the keying circuit. The pins for a CoCo serial port and a standard 25 pin connector are included. I included the 25 pin connector in case the interface is to be used with a computer having a standard RS-232 connector. I have a model 100 and a MSDOS clone that I might want to use with the interface. Parts layout is not critical. I did not use any shielding and built the prototype on a small piece of circuit board material. I did not notice any bad effects using the FT-757 with my Heath SB-200 amplifier. The FT-757 will operate full break-in on Morse Code and the electronic keying interface worked great. When using the SB-200 amplifier I had to manually switch to the transmit mode because the SB-200 will not follow Morse keying.

I was really surprised that I did not have to use a shielded cable. However I do recommend using a shielded cable to run from the interface to the connector. My transceiver uses a 3 conductor phone plug and I connected the output from the collector of the transistor to the center barrel of the plug and ground to the case.

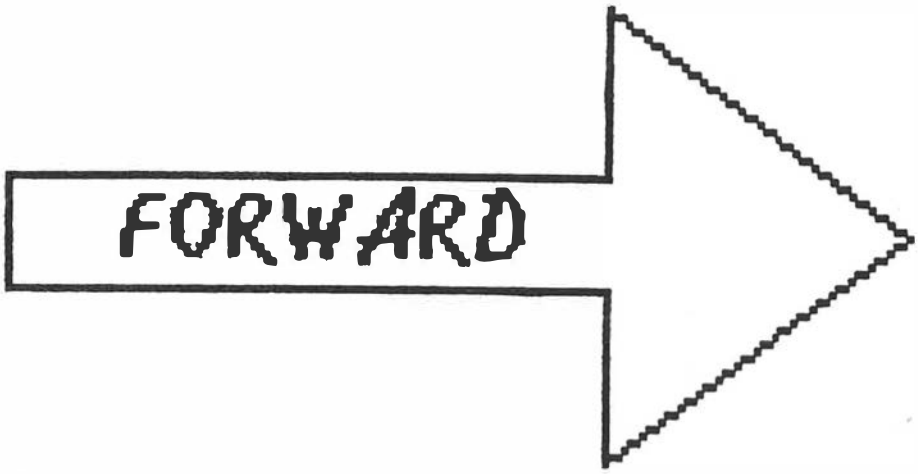
It might be possible to build the interface inside the connector that goes to the computer. The transistor is small and 1/8 watt resistors could be used. I may try this in the future.

SOFTWARE

The program I presented last month was used. I had to modify line 770 to the following:

```
770 POKE65312,0:FOR PP=1 TO 4*W:
   NEXT PP:POKE65312,2:FOR PP=1
   TO Z:NEXT
```

Refer to last month's issue of Dynamic Color News and make the changes to line 770. The reason for this change is that the output is inverted using the electronic keyer circuit. I have enjoyed using the interface and hope to be able to put the components in the connector. Then it would really look nice with the computer directly plugged into the transmitter's keying jack.



by
Bill Bernico
& B.J. Bryson

This is an exciting two player game that works with all Color Computers. Both players are trying to be the first to get 128 points. Each player is ask to select any key and the computer rolls the dice and gives you the number of moves. Hitting Doubles gives you a chance to double your score. Although if you hit Doubles twice in a row you have to start again. CoCo 3 users use the 32 width mode.

```
1 'THE GAME OF forward
      (C) 1988 FROM
         BILL BERNICO SOFTWARE
            BY BILL BERNICO & B.
   J. BRYSON
2 SOUND150,1:CLS:CLEAR1000:Z$="V
   30CV28CV26CV24CV22CV20CV18CV1
   6CV14CV12CV10CV8CV6CV4CV2C":Y
   $="V2CV4CV6CV8CV10CV12CV14CV1
   6CV18CV20CV22CV24CV26CV28CV30
   C": PLAY"T255L255":GOSUB3:WID
   TH32:GOTO5
3 IFPEEK(33021)=50THENIFQ=1THENP
   OKE65496,0ELSEPOKE65497,0ELSE
   IFQ=0THENPOKE65494,0ELSEPOKE6
   5495,0
4 IFQ=1THENQ=0:RETURNELSEQ=1:RET
   URN
5 F$=" :::  :  ::  : : :  :  ::
    ::    :   : : : : : : : : :
   : : : :   ::  : : ::  : : : :
   :: ::  : :   :   : : : : :  : :
     : : : : : :   :    :  : :
      : :  : : : ::    "
6 I=INSTR(1,F$,":"):IFI>0THENMID
   $(F$,I,1)=CHR$(128):GOTO6
7 CLS:FORX=0TO4:FORY=1TO31:A$=MI
   D$(F$,X*32+32-Y,Y):SOUNDY*5+X
   *20,1:PRINT@32+X*32,A$:NEXTY,
   X:IFZ=1THENGOSUB3:ENDELSEFORX
   =448TO212STEP-32:PRINT@X," (C
   ) 1988 BILL BERNICO SOFTWARE"
   STRING$(32,32);:SOUNDX/2,1:NE
   XTX:Q=2000:GOSUB10:GOSUB3
8 PRINT@258,"BY BILL BERNICO & B
   .J. BRYSON":FORU=1280TO1311:P
   OKEU,PEEK(U)-64:NEXTU:SOUND15
   0,1:PRINT@352,"   WANT INSTR
   UCTIONS? (Y/N)":GOSUB24:IFF=2
   THENGOSUB36
9 CLS:L$=STRING$(32,128):C$(1)=C
   HR$(191):S$(1)="05XZ$;":C$(2)
   =CHR$(175):S$(2)="01XZ$;":GOT
   O11
10 FORZ=1TOQ:NEXT:RETURN
11 CLS:FORL=1TO2:PRINT"PLAYER"L
   CHR$(8);:LINEINPUT", PLEASE E
   NTER YOUR     FIRST NAME.";N$
   (L):PRINTN$(L)", YOUR COLOR I
   S";:P=POS(0)+224*(L-1)+64:FOR
   M=1TO5:PRINT@P,"-> "C$(L):Q=9
   9:GOSUB10:PRINT@P," ->"C$(L):
   SOUND200,1:GOSUB10:NEXT
12 PRINT"AND YOU SOUND LIKE THIS
   ...":Q=499:GOSUB10:PLAYS$(L):
   Q=99:GOSUB10:PRINTL$L$:NEXT:P
   1(1)=0:P1(2)=160:P(1)=448:P(2
   )=480:G=1
13 PRINT@448," HIT ANY KEY TO SE
   E WHO STARTS       (RANDOM S
   ELECTION)";:EXEC44539:FORR=1T
   050:PLAY"V"+STR$(RND(20)+10)+
```

```
   "N"+STR$(RND(12)):NEXT:R=RNO(
   100):IFR<50THENL=1ELSEL=2
14 GOSUB10:CLS:S(1)=0:S(2)=0:PRI
   NT@128,L$:PRINT@288,L$:PRINT@
   416,L$::Q=400:GOSUB10:G=1:PRI
   NT@384,"":L=VAL(MID$("21",L,1
   ))
15 F1=0:L=VAL(MID$("21",L,1)):PR
   INT@352,STRING$(64,32);:AG=2
16 GOSUB50:AG=VAL(MID$("21",AG,1
   )):PRINT@320,N$(L)", HIT A KE
   Y"LEFT$(" AGAIN",1+F1*(AG-1)*
   6),,,,,:PLAYS$(L):EXEC44539
17 GOSUB3:FORM=1TO10+RND(10):A=R
   ND(6):B=RND(6):PRINT@352,"YOU
   R ROLL="A"+"B;:SOUND200+RND(5
   0),1:NEXTM:GOSUB3:IFRND(6)=6T
   HENA=B:PRINT@352,"YOUR ROLL="
   A"+"B;
18 C=A+B:GOSUB50:IFF1=1ANOA=B TH
   ENPRINT@370,"OH NO!":FORM=200
   TO10STEP-10:SOUNDM,1:NEXTM:PR
   INT"DOUBLE/DOUBLE":S(L)=0:PRI
   NT@P1(L),STRING$(128,32);:FOR
   QX=1TO500:NEXTQX:GOTO15ELSEIF
   S(L)+C>128THENC=128-S(L)
19 GOSUB22:IFS(L)=128THEN26
20 IFA=B ANOF1=0THENF1=1:PRINT@3
   84,"DOUBLES!":FORM=10TO200STE
   P10:SOUNDM,1:NEXTM:GOSUB10
21 IFF1=1THENGOSUB23:IFF=2THEN16
   ELSE15ELSE15
22 PRINT@368,"...FORWARD"A+B:FOR
   M=S(L)TOS(L)+C-1:PRINT@P1(L)+
   M,C$(L);:PLAYY$:NEXTM:S(L)=S(
   L)+C:RETURN
23 SOUND150,1:PRINT@384,"TRY AGA
   IN? (Y/N)"
24 EXEC44539:P=PEEK(135):IFP=78T
   HENF=1ELSEIFP=89THENF=2ELSE24
25 SOUND200,1:RETURN
26 S(L)=S(L)+C:GOSUB50:PRINT@320
   ,N$(L)" WINS BY"S(L)-S(VAL(MI
   D$("21",L,1)))" POINTS!",,,,,
   :FORM=10TO200STEP10:SOUNDM,1:
   NEXT
27 GOSUB10:SOUND200,1:PRINT@352,
   "PLAY AGAIN? (Y/N)":GOSUB24:I
   FF=2THENS(1)=E(1)-128:S(2)=E(
   2)-128:GOTO14ELSEPRINT@352,"S
   OMEONE ELSE WANT TO PLAY? (Y/
   N)";:GOSUB24:IFF=2THEN11
28 F$=" ::: ::: ::: ::  ::  : :
   ::: :   :   : : : : : : : : :
    : :   :   :   : : : : : : ::
      :  ::  :   : : : : : : : :
    : :  :  :       ::: ::: :::
   ::  ::   :  ::: :  ":Z=1:GOTO
   6
29 G=VAL(MID$("21",G,1)):PRINT@3
   84,"":PRINT@320,N$(L)", HIT A
    KEY "MID$(" AGAIN",G,(G-1)*4
   +1):EXEC44539:FORR=1TO5+RND(5
   ):GOSUB31
30 IFA=B THENPRINT@352,"YOUR ROL
   L ="A"+"A" OH NO!!!";:C=0:FOR
   M=250TO1STEP-10:SOUNOM,1:NEXT
   :PRINT"DOUBLE/OOUBLE";:S(L)=E
   (L)-127:PRINT@S(L),STRING$(12
   8,32);:PRINT@P(L),STRING$(30,
   32);:GOTO14ELSEGOSUB20:GOSUB2
   3:IFF=1THEN14ELSE29
31 GOSUB3:FORR=1TO5+RND(5)
32 A=RND(6):IFRND(4)=4THENB=A EL
   SEB=RND(6):IFB=A THEN32
33 SOUND200+RND(50),1:PRINT@352,
   "YOUR ROLL ="A"+"B;:NEXT:GOSU
   B3:C=A+B:PRINT"...AOVANCE"C:R
   ETURN
34 GOTO 28
35 '
36 CLS:READA$,B$:IFA$=""THENRETU
   RNELSEPRINT"          DIRECT
   IONS"STRING$(22,32)"#########
   #",,,A$B$:PRINT,,"   (HIT ANY
    KEY TO CONTINUE)":EXEC44539:
   SOUND200,1:GOTO36
37 DATA" FORWARD IS AN EXCITING
   GAME OF  CHANCE ANO NERVE  TH
   AT YOU ARE  SURE TO FINO VERY
    ADDICTIVE.    EACH PLAYER GE
   TS A TURN THROW-  "
38 DATA"ING A PAIR OF ELECTRONIC
    DICE,  ADDING UP THE TOTALS
   AS YOU GO  ALONG.  THE WINNER
    IS  THE ONE  WHO SCORES 128
   OR BETTER!"
39 DATA" WHEN YOU THROW DOUBLES
   YOU ARE  'ON A ROLL'  AND MAY
    ROLL YOUR  DICE AS OFTEN AS
   YOU WISH.      BUT BE CAREFUL
   !  IF YOU HAPPEN  TO THROW  D
   OUBLES  AGAIN,  YOU  GET  'DO
   UBLE/DOUBLE'  AND LOSE  "
40 DATA"EVERYTHING.

                  HAVE FUN!"
41 DATA,,,,,
50 FORM=1TO2:PRINT@P(M),"";:PRIN
   TUSING"!%        % ### DOWN #
   ## TO GO";C$(M),LEFT$(N$(M),1
   0),S(M),128-S(M);:NEXT:RETURN
```

BASIC PROGRAMMING

DISK I/O

In this series we are looking at basic programming techniques. Basic is a very powerful and useful programming language. A person with a good knowlege of basic programming can write programs that will fit his needs.

This month we want to look at disk input and output (I/O) commands. Fortunately Microsoft Color Disk Basic has two commands that let us look at the information on the disks. These are DSKI$ and DSKO$. First let's look at a few things about a disk.

A disk is magnetic and circular. Everyone is familar with a tape recorder which is also magnetic. As the disk spins the head moves in and out locating the various tracks and sectors. There are 34 tracks with each containing 18 sectors. A tape recorder requires us to manually position the tape. The computer with the disk software finds required locations on the disk. This makes a disk system very easy to use. We tell the computer to save a file and the software finds a location on the disk to place the file. It also has to keep a record of where the information has been stored and how much room is available for additional files. This is the purpose of the disk directory.

GRANULES

The computer divides the disk into 34 tracks and 68 granules. Granules are numbered from 0 to 67 and tracks are numbered from 0 to 34. A track is divided into 18 sectors and a granule consists of 9 sectors. Therefore a track contains 2 granules. Refer to your disk manual for more information on granules, tracks, and sectors.

The disk directory starts on track 17 sector 3. Each file occupies 32 bytes on the track and each track consists of 256 bytes. If we divide 256 by 32 then we can see that the information for 8 files can be contained within one track.

Why are we concerned with how information is placed on the disk? With the DSKI$ command we can read information directly from a track and sector. With the DSKO$ command we can write new information to a track and sector. Suppose a disk is no longer usable. This is usually because the directory has been destroyed. However the data is sometimes still available if we can find a way to recover it. With the DSKI$ command we can remove the data from a track and sector without using the destroyed directory. We may have to do some hunting to find the track and sector where the data is stored, but this is better than loosing it.

Another use for these two powerful commands is for expanding the information supplied by the DIR command. Supposed it is desired to make a file that contains the directory of a number of disks. Since we can read the information from the directory with the DSKI$ command, then we could use this to build a file that just contained directory information.

What about reading information from an OS-9 formatted disk or a MSDOS disk. If the information is saved in ASCII format

then it can be read from disk basic using the OSKI$ command.

USING DSKO AND DSKI

The format for these commands is as follows:

```
DSKI$ D,T,S,A$,B$
DSKO$ D,T,S,A$,B$
```

where
D is the drive number
T is the track
S is the sector
A$ & B$ are strings containg the first and second 128 bytes of the sector.

We can remove each byte from the string by using the MID$ command. We have shown how to do this in earlier parts of this series and our program for this month uses this method of removing the bytes from the strings and printing them or storing them in memory.

If the bytes are stored in memory after having been read from the disk, then changes can be made and the string saved back to the disk. Be careful though as this is a good way to destroy a good disk. Make a backup disk to exeriment with.

DISK I/O PROGRAM

This month we have a program that uses the DSKI$ and OSKO$ commands. It allows a sector to be read into memory or printed to a printer. The values in memory can be changed and sent back to the disk. If you are not familiar with what is stored on the disk then you can load a sector into memory and review the data.

Data in sectors can be loaded into memory and later this data saved to a disk file. Data can also be transferred from a disk in drive 0 to a disk in another drive.

One option converts granules to tracks and sectors. The program is user friendly and comments are included to show what each section does.

```
10 CLS'THIS IS OSK I-O
20 PRINT"DISK I/O PROGRAM USING
   OSKO &  OSKI$ COMMANDS.
30 PRINT"COPYRIGHT (C) 1988
40 PRINT"OYNAMIC ELECTRONICS INC
   .
50 CLEAR 2000
60 INPUT"ENTER 1 FOR PRINTER";P
70 GO TO 820
80 '
90 CLS:PRINT"THIS READS DIRECTLY
    FROM THE    DISK AND STORES
   THE STRINGS IN  MEMORY LOCATI
   ON 30000
100 INPUT"ENTER 1 JUST TO PRINT
   DATA AND NOT STORE IT IN MEMO
   RY";XX
110 INPUT"PRESS 1 TO RETURN TO M
   ENU";MU:IF MU=1 THEN RETURN
120 GOSUB 1360 'GET T AND S
130 'SET UP IS FOR DRIVE 0
140 D=0:M=30000
150 OSKI$ 0,T,S,S1$,S2$
160 IF XX=1 THEN PRINTS1$;S2$:GO
   TO110
170 Y$(1)=S1$: Y$(2)=S2$
180 FOR K=1 TO 2: GO SUB 230: NE
   XT K
190 GO TO 390
200 '
210 'THIS REMOVES THE BYTES
220 'FROM THE STRING
230 FOR J=1 TO 128
240 X$=MID$(Y$(K),J,1)
250 A=ASC(X$)
260 B=A: IF B<32 THEN B=32
270 Z$=CHR$(B)
280 'STORE BYTE IN MEMORY
290 POKE M,A: M=M+1
300 V=128*(K-1)+J-1
310 PRINTV;A;X$ 'PRINT VALUES
320 Q$=INKEY$
330 IF Q$=" " THEN PRINT"TRACT"T
   ;"SECTOR";S
340 IF Q$="E" THEN 90
350 IF P=1 THEN PRINT#-2,V;A;Z$
360 NEXT J
370 RETURN
380 '
390 PRINT"THIS WAS TRACT #"T,"SE
   CTOR #"S
```

```
400 GO TO 90
410 '
420 PRINT"THIS WRITES DIRECTLY O
   NTO THE   DISK FROM MEMORY 30
   000":PRINT
430 S1$="":S2$=""
440 'DATA STORED IN 30000-30256
450 FOR J=30000 TO 30127
460 'THIS PUTS DATA IN MEM ON DS
   K
470 A=PEEK(J):A$=CHR$(A)
480 S1$=S1$+A$
490 NEXTJ
500 FOR K=30128 TO 30255
510 A=PEEK(K):A$=CHR$(A)
520 S2$=S2$+A$
530 NEXT K
540 INPUT"TRACK";T:INPUT"SECTOR"
   ;S
550 D=0
560 C=0
570 DSKO$ 0,T,S,S1$,S2$
580 RETURN
590 '
600 PRINT"THIS REVIEWS DATA IN T
   HE STRING
610 PRINT"USE UP ARROW TO DECREA
   SE MEM
620 C=1
630 FOR J= 30000 TO 30255
640 A=PEEK(J):A$=CHR$(A)
650 PRINTJ;A;A$;
660 B$=INKEY$
670 'MOVE BACK 10 MEM LOCATIONS
680 'IF UP ARROW IS PRESSED
690 IF B$="B THEN J=J-10
700 IF C=16 THEN GO SUB 730
710 C=C+1:PRINT:NEXT J
720 GO TO 70
730 C$=INKEY$:IF C$=""THEN 730
740 IF C$="B THEN J=J-32
750 IF C$="E" THEN 820
760 'THE FOLLOWING ALLOWS MEMORY
770 'TO BE CHANGED
780 IF C$="M" THEN INPUT"ENTER M
   EMORY TO CHANGE";M:INPUT"ENTE
   R VALUE";V:POKEM,V
790 C=0:RETURN
800 '
810 'MAIN MENU FOLLOWS
820 CLS:PRINT"THESE ARE THE OPTI
   ONS.":PRINT:PRINT"1 REVIEW IN
   FO IN TRACTS & SECT":PRINT"2
   REVIEW DATA IN BUFFER
830 PRINT"3 WRITE TO DISK FROM M
   EMORY
840 PRINT"4 WRITE INFORMATION TO
    NEW FILE
850 PRINT"5 CONVERT GRAN TO TRAC
   K & SECT.
860 PRINT"6 WRITE INFO ON TRACKS
    TO MEM.
870 PRINT"7 WRITE INFO IN MEMORY
    TO DISK.
880 P$=INKEY$: IF P$=""THEN 880
890 X=VAL(P$)
900 IF X=0 THEN 820
910 ON X GO SUB90,600,420,1040,9
   40,1200, 1280
920 GOTO820
930 '
940 PRINT"THIS CONVERTS GRAN # T
   O TRACK & SECTOR
950 PRINT"ENTER 99 TO EXIT":INPU
   T"GRAN #";G
960 IF G=99 THEN 1020
970 F=G/2:IF F-INT(F)=0 THEN S=1
    ELSE S=10
980 SS=G:IF G>33 THEN SS=SS+2
990 T=INT(SS/2)
1000 PRINT"GRAN="G;"TRACK="T;"SE
   CTOR="S
1010 GO TO 950
1020 RETURN
1030 '
1040 PRINT"THIS READS DATA FROM
   TRACKS AND PUTS IT IN A NEW D
   ISK FILE
1050 PRINT"IT READS FROM DRIVE 0
    AND PUTS  INFO ON ANOTHER DR
   IVE.
1060 PRINT"PRESS THE 'E' KEY TO
   END
1070 INPUT"DRIVE NUMBER FOR DATA
   ";DR
1080 INPUT"ENTER FILE NAME";N$
1090 GOSUB 1360
1100 DRIVE DR:OPEN "O",#1,N$
1110 PRINT"SECTOR "8"TRACT "T
1120 DSKI$ 0,T,S,S1$,S2$
1130 PRINT #1,S1$;S2$
1140 PRINTS1$;S2$
1150 S=S+1:IF S>18 THEN S=1:T=T+
   1
1160 X$=INKEY$:IF X$="E" THEN 11
   80
1170 GOTO1120
1180 CLOSE #1:RETURN
1190 '
1200 PRINT"THIS WRITE INFO ON TR
   ACKS TO MEM
1210 INPUT"ENTER MEMORY";M: INPU
   T"DRIVE NUMBER";DR
1220 GOSUB 1360
```

```
1230 DSKI$ DR,T,S,S1$,S2$
1240 PRINTS1$;S2$:X$=S1$:GOSUB 1
   450:X$=S2$:GOSUB 1450
1250 INPUT"PRESS 1 TO CONTINUE";
   MU:IF MU=1 THEN 1220
1260 RETURN
1270 '
1280 PRINT"THIS WRITES DATA IN M
   EMORY TO DISK FILE
1290 INPUT"ENTER BEGINNING MEMOR
   Y";M
1300 INPUT"ENTER ENDING MEMORY";
   E
1310 INPUT"DISK FILE NAME";D$
1320 OPEN "O", #1, D$ :CLS
1330 A=PEEK(M):A$=CHR$(A):M=M+1:
   PRINTA$;
1340 PRINT #1,A$;:IF M>E THEN CL
   OSE #1:END
1350 GOTO 1330
1360 '
1370 'SET TRACK AND SECTOR
1380 T=PEEK(500):S=PEEK(501)
1390 PRINT"1 TRACT IS"T
1400 PRINT"2 SECTOR IS"S
1410 P$=INKEY$:IF P$="" THEN 141
   0
1420 V=VAL(P$):IF V=1 THEN INPUT
   "ENTER TRACT";T:POKE 500,T:GO
    TO 1390
1430 IF V=2 THEN INPUT"ENTER SEC
   TOR";S:POKE 501,S:GO TO 1390
1440 RETURN
1450 L=LEN(X$):FOR J=1 TO L:A$=M
   ID$(X$,J,1):A=ASC(A$)
1460 POKE M,A:M=M+1:NEXT J:RETUR
   N
```

OPERATING HINT

For deleting characters using the extended basic's editor just press the "D" key for each character. This saves having to count the characters when using the multiple character delete method.

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Editor's Comments

My recent Radio Shack sales flyer contains color computer products again. I noticed that disk drives are on sale for $199. This is a good opportunity to upgrade to a disk drive if you have been considering making the change.

Our product review section is doing well. In this section we review products sent to us and write an editorial on what to expect from them. Our editorials are usually more informative than the information contained in the advertisements. Most of the products are for the color computer 3 although some will work on all computers.

One thing I have always liked about color computers is the type of basic used. If you learn to program using extended color basic, then you will not have any trouble when you go to another machine. Even if you later want to learn a different language, a knowlege of basic will help in understanding how to organize information.

I appreciate the letters we have received. This allows us to know of your problems and provides help in deciding subjects to cover. We want to provide information that is useful to our readers, and your letters let us know what you need. We started the OS-9 series as a result of your letters. We have readers at all levels of computer experience from beginners to experts. Therefore we have to tailor our editorials so that everyone can benefit from them. Many of our readers do not have a color computer 3. Since Radio Shack is only producing the color computer 3, their new software is for the color computer 3. Most of our public domain programs will work on all color computers and our series on basic programming applies to all color computers.

I enjoy writing programs and have written several that we use in publishing this magazine. One program allows us to print basic programs with continuation lines indented. This makes it easy to fine where a line begins. Another program lets us take a single column text file and create another file of any number of columns. We can then print a page at a time without having to paste in the columns.

I want to wish each of you a happy Thanksgiving. I enjoy the holiday seasons as it gives me more time for the computer since outside activities are usually at a minimum.

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Questions and Answers

Dear Sirs,

I have subscribed to your magazine almost from the beginning and enjoy each issue. Your most recent issue (Oct 1988) contained a program called Pingpong which struck me as being very familiar. So I pulled out a copy of my "BRICKS" program I wrote about seven years ago. Sure enough, they were the same, except that the copyright and ownership lines had been left out, and one or two lines had been combined. Otherwise they are identical. I did place the program into the public domain, but would like to receive proper credit, even though this represents an early attempt at programming on my part. I would appreciate it if you could make the appropriate corrections to this program in your file of public domain programs so that proper credit can be given in the future. It's no big deal, and I am not really upset, but I do find it interesting as to why someone would delete my authorship lines before distributing the program. Well, keep up the good work on your magazine. If possible I would like to see some hardware projects written up in some future issues. You may want to mention to your readers that the Oct 1988 issue of OMNI magazine (10th anniversary issue) contains a great article on building your own light sensitive robot insect from parts that will cost about $60.00.

Thanks for hearing me out.

Steve Ostrom

Steve thanks for your letter. We will modify the Pingpong program to give you credit. Thanks for the information on the robot insect article. Some of our readers may be interested in it. I am looking for more hardware projects. It is hard to come up with a project that does not require modifications to the computer. I like projects that will plug into the joystick or printer port as these generally will not damage the computer if a mistake is made. Again thanks for your support and letter.

****

Dear Bill,

I recently purchased your DISASM Program and have made a considerable amount of use of it. I especially like the real time assembler feature and the fact that the program can be restarted at any address. The restart feature allows you to change a single instruction if the new instruction uses the same number of memory bytes as the old one. I also have a Radio Shack EDTASM Assembler Program. I find that the DISASM Program is much easier to use than the EDTASM Program especially for short USR type routines.

While I was using the DISASM Program, I found that the 'LDD I' mnemonic did not appear to assemble correctly. After examining the program for a while, it seems that a simple patch to line 9960 made the mnemonic assemble correctly (see attached page). Also, some of the page

2 or 3 mnemonics such as 'LDY N' in the extended, indirect mode did not assemble or dissassemble correctly. After lines 4600 and 9300 were patched and lines 9975 were added (see attached page), the 'LDY N' mnemonic appears to work correctly in the extended, indirect mode. in addition, these patches seem to make other page 2 or 3 mnemonics (i.e. CMPDN, STS N & CMPUN work correctly also in the extended, indirect mode.

These thoughts are being passed along for whatever use, if any you might wish to make of them.

George Mabry

George thanks for the corrections for the DISASM program. This program was written in 1982 and I am surprised that these errors were not noticed before. I guess no one has used these commands. We are making these changes to the program and appreciate your pointing the errors out to us.

****

Hello Bill

In reference to your MAXPRINT program-- first of all, it's a good program and I have no problems with it. Since I'm not a programmer I am not able to have it do what I would like it to do, I have given it several tries with no luck.

I am enclosing the listing of your program and the few changes that you had told me to make when I first got it, so that it would run properly on my DMP-105 printer. Everything works fine and I have used it often. I would like to have it print like in a graphic mode with no space between lines, this would make it darker and less elongated (height) than it does now, maybe).

Can this be done or is it more of a problem than it looks? If there is an easy solution, I would like you to scribble down the changes or acknowledge my question somehow.

Thank you

Al Tanguay

Al thanks for your comments on MAXPRINT. It appears that you need a graphics screen dump program. We had one in issue #44 (December 87). This could be modified for your printer by changing two lines. Maybe one of our readers can give us the values to use to get the program to work on a DMP 105. Thanks for your letter.

****

I want to thank each of you who have written or called. If you have a question or a solution to a software or hardware problem then I would like to hear from you.

Your Personal Electronic Photo Album

Put you, your spouse, your kids, your Grandma, your dog, or anything else you like on your very own personal picture disk! You send us your pictures or artwork and we will digitize it and save it on disk for you, in one of the formats below. Originals can be as small as a stamp or as large as a poster. All originals returned.

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For a FREE sample disk, please send $3.00 S/H, along with your model CoCo and the format you wish. Call or write if you have questions or need additional details.

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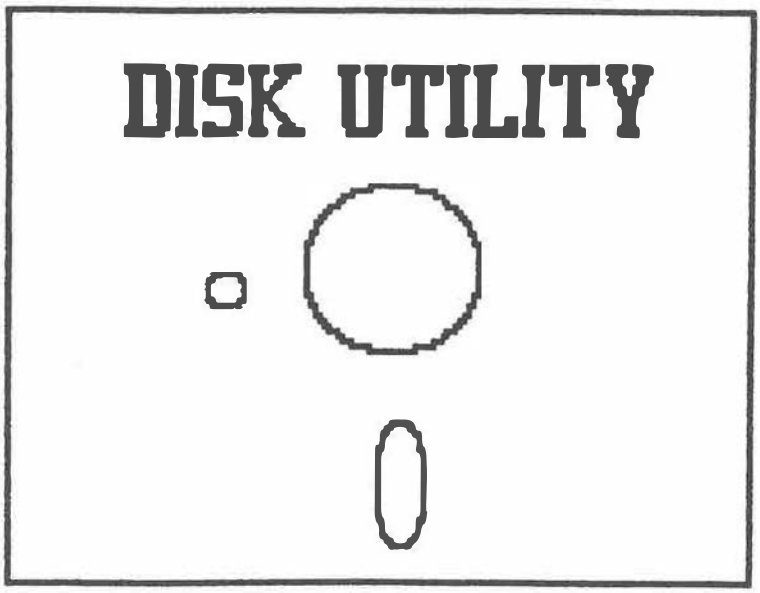
(503)663-2423 (9am-3pm PST)

Add $3 S/H per order. Payment may be personal check or Money Order only. Sorry, no cash, credit cards or COD's.

DISK UTILITY



This disk utility machine language program will allow you to quickly backup a disk in 1 to 3 passes depending upon the amount of information stored on the disk. A machine language file called BACKUP is generated by the basic loader program. BACKUP can then be saved to a disk. To use the utility enter LOADM "BACKUP". Instructions will then be printed on the screen. The destination disk does not have to be formatted.

DISK LOADER PROGRAM

```
2 PCLEAR 4:CLS
4 '
6 PRINT
8 PRINT:PRINT"STANDBY WHILE MACH
   INE LANGUAGE  PROGRAM IS BEIN
   G GENERATED":PRINT
10 BE=3584:M=BE
12 READ X$
14 IF X$="@" THEN 40
16 L=LEN(X$)
18 FOR J=1 TO L STEP 2
20 A$=MID$(X$,J,2):B=PEEK(M)
22 C$=LEFT$(A$,1):D$=RIGHT$(A$,1
   )
24 X=ASC(C$):Y=ASC(D$):X=X-48:Y=
   Y-48
26 IF X>9 THEN X=X-7
28 IF Y>9 THEN Y=Y-7
30 V=16*X+Y:POKE M,V
32 M=M+1:IF M=EN THEN 40
34 NEXT J
36 PRINTM
38 GOTO12
40 PRINT"DATA IS TRANSFERRED
42 PRINT"1 SAVE ML PGM TO DISK
46 INPUT X
48 X$="BACKUP
49 EN=M:EX=BE
50 IF X=1 THEN SAVEM X$,BE,EN,EX
60 END
100 DATA 8E0989318D0082ECA1ED818
   C0C9C25F7318D03888E0400ECA1ED
   818C060025F77E098900000000000
   004914F004F009795266709000100
   007F557F2D0026616060606060002
   6066426AEB9969026030000260626
   062606260 60E9B2971317F2900801
   20E
110 DATA 45FFFF800000007CE252454
   C4F43205355504552002018810019
   0600330000201DD6983457863487F
   F030F71B7FFDE10CE03D0B60C988B
   708704B08E04C01702C7810D270D8
   03025F2810922EEB70C9B20D38E07
   12C6126F825A26FB4F200EFB0C9B5
   CC0
120 DATA 1224FCCB126D8526F54CA78
   5811225EB170274BEC0066F01CC11
   02ED028602A784CC0800ED04AD9FC
   004A606102602448E0844EC83ED02
   8C082222F76F846F017F0C9C17012
   7170249BEC0068600A784AD9FC004
   7F098586C0B7FF481700C11026021
   16F
130 DATA 02201C8116250 8B609868A1
   0B7FF40865 3B7FF481E881E881700
   A1102601F11700928D49108EFF4B1
   A508E0A7ABF09838E0CA2B6FF4886
   FFB70982C6F4F7FF48B609868A80B
   7FF40E680E7A420FABEC006B6FF48
   1CAF8444102601B46C02A60281232
   59F
```

```
140 DATA 6F84AD9FC0041600868E0CA
    2108EC006CC204E8D295F3404CE07
    00E6C5E723CE0B07C6038D1EA622A
    7806F80A623A780C6098D1035045C
    C11225DBCCC84EE7804A26FB39340
    4ECC18DF435045A26F5398E222E30
    1F26FC39108E0000313F2708B6FF4
    885
150 DATA 0126F53986D0B7FF481E881
    E88B6FF48868039080003F501FE01
    0101F7164E0C0003F501F800FF01F
    7184E1700CCB60C9C81461024011F
    1701218D0517012720EAB60C9C870
    C9DCC2606FD0C9EB60C9C1700E127
    048D178D40B60C9C8B02B70C9C814
    624
160 DATA 08FC0C9EC312FF24E039C60
    22002C603BEC006A702E784CC0CA2
    ED04CE0700C612A6C0A703AD9FC00
    4A60610260OB56C045A26ED39FE0C
    9E108E0CA2CC0009B7FFDFAEA1AFC
    14A26F95A26F6B7FFDEFF0C9E39FE
    0C9E108E0CA2CC0009B7FFDFAEC1A
    FA1
170 DATA 4A26F95A26F6B7FFDEFF0C9
    E39FE0CA0108E0CA2CC0009B7FFDF
    AEC1ACA1260D4A26F75A26F4B7FFD
    EFF0CA039B7FFDE204ECC2606FD0C
    9EFD0CA0B60C9D8D2C271234028DA
    9A6E417FF5F350217FF568DBB2003
    17FF4FB60C9D8B02B70C9D8146240
    8FC
180 DATA 0C9EC312FF24D0391F89473
    4021F988D0583FFFF3582CE0800EC
    C6398E05C07FFF407F09868D1E16F
    D3F8E058020F07FFF407F09868E05
    00200B7FFF407F09868E054020008
    D05810D26FA393410C620A6848840
    A7805A26F78E01F4AD9FA00026083
    01F
190 DATA 26F6351020E2AEE43402C62
    0A6848A40A7805A26F73592046A6A
    6A6A6A6A6A6A6A6A13151005126A6
    A04151005126A6A6A6A6A6A6A6A6A
    6A6060606060606060606060606060
    6060606060606060606060606060606
    0606060606060606060606060606060
    606060604E4F524D414C604449534
    B60
200 DATA 534B45576053484F554C446
    042456074606060605049435455524
    5604449534B60534B45576053484
    F554C4460424560716060606060
    6060606060606060606060606060606
    0606060606060606060606060606060
    435552524545460534B455760495
    360
210 DATA 6060606060606060606060606
    0606060605052455353604E455760
    534B4557604F52605052455353604
    54E5445526060606060606060606060
    60606A606A6A606A6A6A606A6A6
    06A6060606060606060606494E5345
    5254604F524947494E414C60414E4
    460
220 DATA 505245535360454E5445526
    0606060606060606060606060606060
    6060606060606060606060606060606
    0606060494E5345525460434F5059
    60414E44605052455353604545544
    5526060606060606060606060606060
    606A606A6A606A6A6A6A606A6A606
    A60
230 DATA 6060606060606060524D4D4
    F564560474F4F4460434F50596066
    6050524553536045E54455260606
    0606060606060606060606060606060
    6060606060606060606060606060606
    0606052454D4F5645606A0201046A
    6044495348606660505245535360454
    54E
240 DATA 5445526060606060606060606
    0606060606060606060606060606060
    6060606060606060606060FFFF00000
    000FFFFFFFF00000000FFFFFFFF00
    000000FFFFFFFF00000000FFFFFFF
    F00000000FFFFFFFF00000000FFFF
    FFFF00000000FFFFFFFF00000000F
    FFF
250 DATA @
```


ORIGINAL RADIO SHACK SOFTWARE

We purchased these from a local customer and are offering them at reduced prices. They are slightly used but are in good condition.

Cat. No.	Name	Price
26-3290	Animated Adventure (D)	$9.95
26-3310	Pyramid game (C)	$7.95
26-3152	Typing Tutor (PP)	$7.95
26-3106	Finance II (PP)	$7.95
26-3099	Demon Attack (PP)	$7.95
26-3049	Spidercide (PP)	$7.95
26-3069	Gomoku / Renju (PP)	$7.95
26-3064	Cyrus - Chess (PP)	$9.95

(PP) = Program Pak, (C) = Cassette D=Disk, Shipping included in price Indicate second choice. Checks Visa or MC cards.

Dynamic Electronics Inc.
P. O. Box 896 (205) 773-2758
Hartselle, AL 35640

Product Reviews

GRAFFIND

by Bill Chapple

for all Color Computers

GRAFFIND is a picture file manager program for PMODE 4 pictures. It allows pictures to automatically load and display, pictures to be copied from one drive to another, and it allows pictures to be renamed or killed. Pictures can be mixed with various extensions such as BIN, PIC, or MAX.

As the program is run, you are asked for an input drive and next for an output drive. For a single both of these will be "0" and for a dual drive the input may be "0" and the output "1".

Then the computer reads the directory and the screen goes blank for a few seconds. The files are then displayed using graphic characters in two columns. Then you can type "N" for a new disk, "E" to enter a file from the menu, or press the enter key to automatically load and display each picture file, regardless of the extension.

Files can be renamed, transferred to another drive, or killed. The program makes it easy to make files on a particular subject from a larger collection of files.

The program and numerous pictures are included on both sides of the disk. The cost is $10. RainyDay Software, 10625 SE 362nd Ave., Sp. B-32, Boring, OR 97009 (503) 663-2423.

IRONSIDES & CRIMSON SAILS

by Norm Matice

Color Computer 3 Game

Ironsides & Crimson Sails is a naval battle game from SoftWAR Technologies. To play the game you must have a 512k Color Computer 3 and 2 disk drives. It is a strategy game for two players, although one player can play both sides. The game is written in BASIC09 I- code. You must therefore put the RUNB and the GFX2 (it uses the 640 x 192 hi-res screen) modules in the CMDS directory of your game disk. The instructions that come with the game take you through this proceedure step by step so there should be no fear of this. You do however have to own the OS9 level II operating system to do this.

I had an RGB monitor so I also had to remember to use the MONTYPE R command to get the correct colors on my screen. Once you get the game up and going, you are treated to a map of the battlegrounds. On the map are the ships, the sea, the costal regions, and various hazards. There are two different fleets of boats one red and one black. The object for the black fleet is to sink the entire red fleet to win the game. The red fleet can either sink the entire black fleet or position one of its ships over one of the black anchors to win the game.

The hazards which consist of such things as rocks, sea serpents or bad weather, depending on which game you are playing, have different degrees of danger to them. You are therefore at risk upon crossing one, but you will not know by how much. The risk runs from 10 to 100 percent.

The disk comes with 5 scenarios on it. They are the title game, Ironsides & Crimson Sails, and Battle of Copenhagen, The Gates of Thasos, The Battle of New Orleans and The Battle of Mobile Bay. Each game will take a while to finish and each is distinctly different in land-

scaping.

This is a good game for two people or two teams of people to play. The BASIC09 I-code executes quickly enough that there is no drawback to the speed of the game. The game is available through SoftWAR Technologies, Ameritrust Building, 17140 Lorain Avenue, Cleveland, Ohio 44111, (216) 251-8085. The price of the game is $8.95.

THE CASTLE OF THAROGGAD

by Norm Matice

Color Computer 3 Game

The Castle of Tharoggad is a role playing game for the Color Computer 3. For those of you who have The Dungeons of Daggorath we are talking about the same game with a few enhancements to complement the CoCo 3's capabilities. If you look at Tharoggad and Daggorath you will notice that they are just about reverse spellings of each other. Those of you with CoCo 1's and 2's, if the game sounds good to you, you too can get the Dungeons of Daggorath.

The big difference in the two games is Tharoggad's use of 16 colors in its graphics and an icon driven menu to control movement. Daggorath uses 1 and 2 letter commands to get things accomplished.

In both games you are placed in one level of a multi-level maze. Your perspective is through the eyes of your surrogate in the game. You see what he sees as you travel along the maze. While in the maze you will come across things that will be useful to you in your attempt to escape. Of course escape will not be easy because you will be challenged by an assortment of nasty creatures, all just hoping to do you in. If that isn't bad enough, you can also wear yourself out if you exert yourself too much. Your health is monitored by a beating heart, as the heartbeat increases, the closer to exhaustion you come. If you over exert yourself, you will pass out, becoming an easy prey for the monsters that are around.

The game has a save game feature to it. This is quite handy because it is very doubtful that you could get out of the mazes in one sitting. A good strategy would be to save the game at least as often as you change levels. If you are killed and have not saved a game you will be placed back to the beginning and have to fight your way through again.

The game takes a little practice to get used to manipulating your character, but once you do, the game can become very addicting. The Castle of Tharoggad is available at Radio Shack, as a ROM pack and costs $29.95.

Flight Simulator II

by Norm Matice

Color Computer 3 Game

Flight Simulator II needs a 128k Color Computer 3 with one disk drive, to fly. The plane being simulated is a Piper Cherokee Archer II PA-28-181. I have logged a few hours as pilot in command of a PA-28-181, so I was quite excited by this fact. Before we get to the actual flight, let's go over what is included in the package.

There are two books included with the disk itself. One is the Flight Physics & Aircraft Control book. It is quite similar to the book I studied to pass the written requirement for my pilot's licence. It is not quite

as complete but covers some of the required subject matter. The other book is the Flight Simulator II book and covers the operating of the program. Each book runs about 100 pages, so prepare to do some reading.

Also included is a card with everything you need to know to operate the plane's different systems. If you want of course you can try to fly the plane by just using those. The penalty of your computer plane crashing is quite mild compared to a real plane crash. Also included are area charts, which are maps of the area in and around the airports you can fly at. Though they bear a vague resemblance to sectionals used in flying, they are not nearly as detailed. However since this is a simulation, they do not need to be.

As I stated earlier, I have piloted the real article, so I just got the card out and cranked up the engine. My first few trys down the runway put me in the lake at the end of it. I had looked at the card wrong and had not trimmed the plane properly for take off. After that, I successfully got the plane in the air.

A few things I noticed about the flight were that it was hard to get the plane to level off and get it trimmed up for straight and level flight. It was more difficult than an actual plane. I also missed the sound of the engine and a tachometer to help me gauge where to set the throttle. When I was making turns I noticed that if I pushed the key for a left bank the plane would bank left but would not stay in the turn if I came back to center. This is a minor point that just takes some adjusting.

I have flown other simulators before and on them I have always crashed instead of landing. This simulator handled more like the real thing on the landing and I was able to make a safe landing, although I did bounce a little as I set it down. That of course was because of my flying of the simulator and added a realistic touch.

The graphics of the simulator are good with the availablity of views from the cockpit unrivaled by the real article. You have a virtual 360 degree view and a bird's eye view of the plane with the radar option. This also lets you zoom in and out on the plane and makes navigating easier.

On top of all this the simulator also has a World War I dogfight mode that can be used to test your skill once you have mastered the art of flying. Although this game will not make you a pilot, it will provide you with hours of entertainment and give you a feel for what a pilot does.

The game is available at Radio Shack stores and costs $34.95.

MEMORY MANAGER
for
The COLOR COMPUTER 2

Did you know that the 64K Color Computer 2 and earlier computers have an extra 32K that is generally not used? Our Memory Manager allows basic or machine language programs to be run in either 32K bank. Banks are exchanged with an EXEC command. Also the second bank can be used as a ramdisk to store programs. This makes cassette operation super fast because programs can be saved to the ramdisk. A third option configures the computer for the all ram mode allowing data or programs to be stored in the upper memory. Our Memory Saver 2 allows your programs to be saved even with power failures. The Memory Manager Software is available on either cassette or disk.

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HOME PUBLISHER

by Norm Matice

for the Color Computer 3

The Home Publisher by Tandy is a desktop publishing program for the Color Computer 3. It allows you to use a number of different fonts and to mix graphics with text. After you have got your document looking the way you want it, you can send it to your printer for a hardcopy.

Your printer has to be a dot matrix printer. The home publisher has printer drivers for the following Radio Shack dot matrix printer(DMP) models 105, 106, 106a, 130, 130a, 200, 420, 430, 2100p, 2110 & 2200. If you have one of these printers or a printer that works like these you can use the print drivers supplied. If not you will have to write your own print driver.

The program itself is menu driven, utilizing pull down menus to make selections. The regular mode joystick control is a little hard to hold in place. The high resolution mode is much easier to work with. The only problem with that is you need the regular joystick to select that option and then you have to plug in the hi-res interface afterwards.

The program comes with 14 fonts, ranging from bubble to computer to gothic to modern to graphic to script. In addition there are 4 attributes that can be set. They are bold, italics, outline and shadow. Although all four attributes can be turned on at once, the pull down menu disappears after turning on any one of them. This means you have to keep pulling the menu down to set the ones you want for your document.

Also on the disk is a sample document consisting of one page of a newspaper like document. It gives a good example of the different fonts and attributes and the mix of graphics and text. The program needs a 128k Color Computer 3 and one disk drive. It is available at Radio Shack for $39.95.

NEW PRODUCTS

This section is provided free for producers of color computer products. We do not have any new product information this month.

ATTENTION DEALERS

We can provide a *valuable* service to you at no charge.

1. When you release a new product send us a copy of your new product release. We will print it in our **NEW PRODUCTS SECTION.**

2. Send us your new products to review. A professional will review your new product and write an editorial on it similar to one of the reviews in this issue. This gives you free advertising and our readers learn more about your product by reading about them in our **PRODUCT REVIEW SECTION.**

3. If you have a mailing list of color computer owners who have bought from you, we may be able to exchange advertising for your names.

4. We do **not** believe in high advertising rates. Have you considered placing an advertisement with us? Our rates are on the back cover.

DRILL

This program is designed to help drill addition, subtraction, multiplication, and division. If you or your children need basic math drills, then this program can help.

```
4 CLS(4)
5 PRINT"DIRECTIONS:"
6 PRINT"YOU WILL GET 10 QUESTION
  S
7 PRINT"WITH EACH OPERATION."
8 PRINT"YOU HAVE 2 CHANCES FOR E
  ACH
9 PRINT"QUESTION."
15 PRINT"PRESS <ENTER> WHEN READ
  Y
16 PRINT"TO BEGIN."
17 INPUT Z
20 CLS:PRINT"(1) ADDITION"
30 PRINT "(2) SUBTRACTION"
40 PRINT "(3) MULTIPLICATION"
50 PRINT "(4) DIVISION"
55 PRINT"PRESS(1,2,3 OR 4)AND TH
  EN <ENTER>
60 INPUT "WHICH EXERCISE(1-4)";R
65 IF R>4  THEN PRINT"TRY AGAIN.
  ":GOTO 55
66 IF R=0 THEN PRINT"TRY AGAIN."
  :GOTO 55
70 CLS
75 FOR P=1 TO 600:NEXT P
80 ON R GOSUB 1000,2000,3000,400
  0
90 GOTO 75
1000 PRINT @ 100,"PICK A LEVEL O
  F DIFFICULTY."
1010 PRINT"(1) EASY"
1020 PRINT"(2)
1030 PRINT"(3)
1035 T=T+1
1040 PRINT"(4) HARDEST"
1060 PRINT"PRESS (1,2,3, OR 4) A
  ND <ENTER>."
1070 INPUT"WHICH LEVEL(1-4)";L
1075 IF L>4 THEN PRINT"TRY AGAIN
  .":GOTO 1060
1076 IF L=0 THEN PRINT"TRY AGAIN
  .":GOTO 1060
1080 CLS
1090 FOR N=1 TO 10
1100 IF L=1 THEN X=RND(5):Y=RND(
  5):GOTO1135
1110 IF L=2 THEN X=RND(12):Y=RND
  (12):GOTO 1135
1120 IF L=3 THEN X=RND(30):Y=RND
  (30):GOTO 1135
1130 IF L=4 THEN X=RND(50):Y=RND
  (50):GOTO 1135
1135 GOTO 1140
1140 CLS
1160 PRINT @ 201,"WHAT IS"X"+"Y
1170 T=0
1180 INPUT A
1300 T=T+1
1310 IF A=X+Y THEN PRINT"YOU ARE
   TERRIFIC.":SOUND 128,10:C=C+
  1:GOTO 1360
1320 PRINT"NO,TRY AGAIN.":SOUND
  10,10
1322 INPUT Z
1325 IF Z=X+Y THEN PRINT "THAT'S
   RIGHT.":SOUND 128,10:GOTO 13
  60
1330 PRINT"THE ANSWER IS"X+Y:SOU
  ND 10,10
1340 PRINT"PRESS <ENTER> TO CONT
  INUE."
1350 INPUT B
1360 NEXT N
1370 CLS(8):PRINT @ 201,"YOU HAV
  E" C "QUESTIONS CORRECT."
1380 PRINT"PRESS <ENTER> FOR ANO
  THER ROUND."
1390 INPUT C
1400 CLS:GOTO 20
2000 PRINT @ 100,"PICK A LEVEL O
  F DIFFICULTY."
2010 PRINT "(1) EASY"
2020 PRINT"(2)
2030 PRINT"(3)
2040 PRINT"(4) HARDEST"
2060 PRINT"PRESS (1,2,3 OR 4) AN
  D <ENTER>."
2070 INPUT"WHICH LEVEL(1-4)";L
2075 IF L>4 THEN PRINT"TRY AGAIN
  .":GOTO 2060
2076 IF L=0 THEN PRINT"TRY AGAIN
  .":GOTO 2060
2080 CLS
 2090 FOR N=1 TO 10
```

```
2100 IF L=1 THEN X=RND(5):Y=RND(
   5):IF X<Y GOTO 2100:GOTO 2135
2110 IF L=2 THEN X=RND(12):Y=RND
   (12):IF X<Y GOTO 2110 ELSE GO
   TO 2135GOTO 2135
2120 IF L=3 THEN X=RND(30):Y=RND
   (30):IF X<Y GOTO 2120 ELSE GO
   TO 2135
2130 IF L=4 THEN X=RND(50):Y=RND
   (50):IF X<Y GOTO 2130 ELSE GO
   TO 2135
2135 CLS
2160 PRINT @ 201,"WHAT IS"X"-"Y
2170 T=0
2180 INPUT A
2300 T=T+1
2310 IF A=X-Y THEN PRINT"WOW-THA
   T'S TERRIFIC.":SOUND 128,10:C
   =C+1:GOTO 2360
2320 PRINT"NO,TRY AGAIN.":SOUND
   10,10
2322 INPUT Z
2325 IF Z=X-Y THEN PRINT"THAT'S
   RIGHT.":SOUND 128,10:GOTO 236
   0
2330 PRINT"THE ANSWER IS"X-Y:SOU
   ND 10,10
2340 PRINT"PRESS <ENTER> TO CONT
   INUE."
2350 INPUT B
2360 NEXT N
2370 CLS(6):PRINT @ 201,"YOU HAV
   E" C "QUESTIONS CORRECT."
2380 PRINT"PRESS <ENTER> FOR ANO
   THER ROUND."
2390 INPUT C
2400 CLS:GOTO 20
3000 PRINT @ 100,"PICK A LEVEL O
   F DIFFICULTY."
3010 PRINT"(1) EASY"
3020 PRINT"(2) HARDER"
3030 PRINT"(3) HARDER YET"
3040 PRINT"(4) HARDEST"
3060 PRINT"PRESS (1,2,3 OR 4) AN
   D <ENTER>."
3070 INPUT "WHICH LEVEL(1-4)";L
3075 IF L>4 THEN PRINT"TRY AGAIN
   .":GOTO 3060
3076 IF L=0 THEN PRINT"TRY AGAIN
   .":GOTO 3060
3080 CLS
3090 FOR N=1 TO 10
3100 IF L=1 THEN X=RND(5):Y=RND(
   5):GOTO 3135
3110 IF L=2 THEN X=RND(12):Y=RND
   (12):GOTO 3135
3120 IF L=3 THEN X=RND(30):Y=RND
   (30):GOTO 3135
3130 IF L=4 THEN X=RND(50):Y=RND
   (50):GOTO 3135
3135 CLS
3160 PRINT @ 201,"WHAT IS"X"TIME
   S"Y
3170 T=0
3180 INPUT A
3300 T=T+1
3310 IF A=X*Y THEN PRINT"SUPER-K
   ID.":SOUND 128,10:C=C+1:GOTO
```


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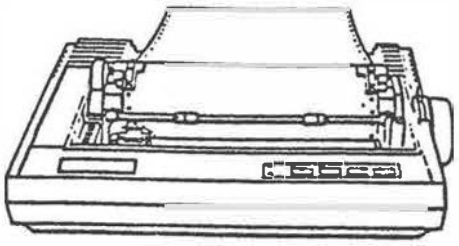
```
   3360
3320 PRINT"NO,TRY AGAIN.":SOUND
   10,10
3322 INPUT Z
3325 IF Z=X*Y THEN PRINT"THAT'S
   RIGHT.":SOUND 128,10:GOTO 336
   0
3330 PRINT"THE ANSWER IS"X*Y:SOU
   ND 10,10
3340 PRINT"PRESS <ENTER> TO CONT
   INUE."
3350 INPUT B
3360 NEXT N
3370 CLS(4):PRINT @ 201,"YOU HAV
   E" C "QUESTIONS CORRECT."
3380 PRINT"PRESS <ENTER> FOR ANO
   THER ROUND."
3390 INPUT C
3400 CLS:GOTO 20
4000 PRINT @ 100,"PICK A LEVEL O
   F DIFFICULTY."
4010 PRINT"(1) EASY"
4020 PRINT"(2) HARDER"
4025 T=0
4030 PRINT"(3) HARDER YET"
4040 PRINT"(4) HARDEST"
4060 PRINT"PRESS(1,2,3 OR 4) AND
    <ENTER>."
4070 INPUT"WHICH LEVEL(1-4)";L
4075 IF L>4 THENPRINT"TRY AGAIN.
   ":GOTO 4060
4076 IF L=0 THEN PRINT"TRY AGAIN
   .":GOTO 4060
4080 CLS
4090 FOR N=1 TO 10
4100 IF L=1 THEN X=RND(5):Y=RND(
   5):GOTO 4135
4110 IF L=2 THEN X=RND(12):Y=RND
   (12):GOTO 4135
4120 IF L=3 THEN X=RND(30):Y=RND
   (30):GOTO 4135
4130 IF L=4 THEN X=RND(50):Y=RND
   (50):GOTO 4135
4135 CLS
4160 PRINT @ 100,"WHAT IS"X*Y"DI
   VIDED BY"Y
4170 T=0
4180 INPUT A
4300 T=T+1
4310 IF A=(X*Y)/Y THEN PRINT"WOW
   -JUST GREAT.":SOUND 128,10:C=
   C+1:GOTO 4360
4320 PRINT"NO,TRY AGAIN.":SOUND
   10,10
4322 INPUT Z
4325 IF Z=(X*Y)/Y THEN PRINT"THA
   T'S RIGHT.":SOUND 128,10:GOTO
    4360
4330 PRINT"THE ANSWER IS"(X*Y)/Y
   :SOUND 10,10
4340 PRINT"PRESS <ENTER> TO CONT
   INUE."
4350 INPUT B
4360 NEXT N
4370 CLS(2):PRINT @ 201, "YOU HA
   VE" C "QUESTIONS CORRECT."
4380 PRINT"PRESS <ENTER> FOR ANO
   THER ROUND."
4390 INPUT C
4400 CLS:GOTO 20
```

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picking the winning combination than you do. With that said if your computer should pick a winning group of numbers feel free to send me half of the winnings.

PROCRDURE lottery

```
DIM A(25),B,C,X,M,N:INTEGER
SHELL "DISPLAY C"
PRINT
INPUT "HIGHEST POSSIBLE NUMBER?
      ",M
PRINT
INPUT "HOW MANY NUMBERS SHOULD
      BE SELECTED? ",N
PRINT
FOR X=1 TO N
A(X)=0
NEXT X
C=1
REPEAT
20 B=RND(M+1)
FOR X=1 TO N
IF A(X)=B THEN
GOTO 20
ENDIF
NEXT X
A(C)=B
C=C+1
UNTIL C=N+1
FOR X=1 TO N
PRINT A(X); " ";
NEXT X
PRINT
PRINT
```

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Editor's Comments, Questions and Answers, and Operating Hints are included in all issues. Product reviews are in issues since #17. Numbers in Parentheses indicate the part of a series. A N indicates the issue is not available on disk or tape. All issues except #1,2,3, 16, & 17 are available on disk or tape.

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Improved Morse Keyer Pgm
World Map (pgm)

VIP Writer III 2.0

495K Total Text Space • EASY 4 Color MENUS

"In the beginning there was VIP Writer and users saw that it was good, But it's not the best anymore. There's a new word processor to claim the crown...VIP Writer III –Setting the Standard" –RAINBOW Sept. 1988

COMPARISON CHART			
	VIP Writer III	Telewriter 128	Word Power 3
Screen Display	32/40/64/80	40/80	80
Spelling Checker	**VIP Speller**	NONE	FREE WARE
Dictionary size	50,000 Words	NONE	20,000 Words
Print Spooler	YES	NONE	YES
Total Space 128K	**106,000**	48,000	72,000
Total Space 512K	**495,104**	48,000	450,000

SCREEN DISPLAY OPTIONS

As the chart above shows -VIP Writer III offers more screen width options -all with 24 lines and actual lower case letters. It uses the CoCo 3's hardware display and double clock speed and is VERY FAST! You can choose foreground, background, hilite and cursor colors from up to 64 hues. Color can be turned ON or OFF for the best possible display using a monochrome monitor or TV set. VIP Writer III has a built in context sensitive help facility which displays command usage in easy to read colored windows.

CUSTOMIZER & PRINTER INSTALLER

VIP Writer III comes with a configuration / printer installation program which lets you customize VIP Writer III to suit your own liking. You can set screen width and colors as well as margins and more. You can also install your own printer and set interface type (serial, parallel or J&M), baud rate, line feeds, etc. Once done, you never have to enter these parameters again! VIP Writer III will load n' go with your custom configuration every time!

TEXT FILE STORAGE

VIP Writer III creates ASCII text files which are compatible with all other VIP Programs as well as other programs which use ASCII files. You can use VIP Writer III to even type BASIC programs! There is a 48K text buffer (437K in a 512K CoCo 3) and disk file linking allowing virtually unlimited text space. VIP Writer III works with up to four disk drives and lets you display directories and free space as well as rename or kill disk files. In addition VIP Writer III is 100% compatible with the RGB Computer Systems Hard Disk.

EDITING FEATURES

VIP Writer III has a full featured screen editor which can be used to edit text with lines up to 240 characters long with or without automatic word wrap around. You can select type-over mode or insert mode. There is even an OOPS command to recall a cleared text buffer. Other editing features include: Type-ahead • typematic key repeat and key beep for flawless text entry • end of line bell • full four way cursor control with scrolling • top of textfile • bottom of textfile • page up • page down • top of screen • bottom of screen • beginning of line • end of line • left one word • right one word • DELETE character, to beginning or end of line, word to the left or right, or entire line • INSERT character or line • LOCATE and/or CHANGE or DELETE single or multiple occurrence using wildcards • BLOCK copy, move or delete with up to TEN simultaneous block manipulations • TAB key and programmable tab stops • word count • line restore • three PROGRAMMABLE FUNCTIONS to perform tasks such as auto column creation and multiple copy printing.

TEXT FORMATTING

VIP Writer III automatically formats your text for you or allows you to format your text in any way you wish. You can change the top, bottom, left or right margin and page length. You can set your text flush left, center or flush right. You can turn right hand justification on or off. You can have headers, footers, page numbers and TWO auxiliary lines which can appear on odd, even or all pages. You can also select the line on which they appear! You can even change the line spacing! Parameters can be altered ANYWHERE!

PREVIEW PRINT WINDOW

VIP Writer III features an exclusive format window which allows you to preview your document BEFORE PRINTING IT! You are able to move up, down, left and right to see centered and justified text, margins, page breaks, broken paragraphs, orphan lines etc.

PRINTING

VIP Writer III prints TWICE as fast as any other CoCo word processor! It supports most serial or parallel printers using J&M JFD-CP or Rainbow interface and gives you the ability to select baud rates from 110 to 19,200. You can imbed printer control codes anywhere in your text file EVEN WITHIN JUSTIFIED TEXT! VIP Writer III also has TWENTY programmable printer macros which allow you to easily control all of your printers capabilities such as bold, underline, italics and superscript using simple key strokes. Other features include: multiple copy printing • single sheet pause • line feeds.

PRINT SPOOLING

Save up to $150 on a print spooler because VIP Writer III has a built in print spooler with a 57,000 character buffer which allows you to print one document WHILE you are editing another. You don't have to wait until your printer is done before starting another job!

SPELLING CHECKER

VIP Writer III includes VIP Speller AT NO ADDITIONAL COST! VIP Speller checks text for misspelled words and has a 50,000 word dictionary that can be added to or edited.

DOCUMENTATION

VIP Writer III is supplied with a 125 page instruction manual which is well written and includes many examples. The manual has a tutorial and glossary of terms for the beginner as well as a complete index! VIP Writer III includes VIP Speller. DISK $79.95

Writer III or Library /W owners: Upgrade to the VIP Writer III 2.0 for $10 + $3 S/H. Send ORIGINAL disk and $13 total.

VIP Writer owners: Upgrade to the VIP Writer III 2.0 for $49.95 + $3 S/H. Send ORIGINAL disk and $52.95 total.

VIP Database III

VIP Database III features selectable screen displays of 40, 64 or 80 characters by 24 lines with choice of 64 foreground, background, hilite and cursor colors for EASY DATA ENTRY. It uses the CoCo 3's hardware screen and double clock speed to be the FASTEST database available! VIP Database III will handle as many records as will fit on your disks and is structured in a simple and easy to understand menu system with full prompting for easy operation. Your data is stored in records of your own design. All files are fully indexed for speed and efficiency. IN-MEMORY SORT of records is LIGHTNING FAST and provides for easy listing of names, figures, addresses, etc., in ascending or descending alphabetical or numeric order. Records can be searched for specific entries using multiple search criteria. The built-in mail-merge lets you sort and print mailing lists, print form letters, address envelopes - the list is endless. The built-in MATH PACKAGE even performs arithmetic operations and updates other fields. VIP Database III also has a print spooler and report generator with unlimited print format capabilities including embeddable control codes for use with ALL printers. DISK $69.95

VIP Database owners: Upgrade to the VIP Database III for $39.95 + $3 S/H. Send ORIGINAL disk and $42.95 total.

VIP Library

/Writer Database Enhanced

The VIP Library /WDE combines all six popular VIP application programs - VIP Database III, VIP Writer III, VIP Speller, VIP Calc, VIP Terminal and VIP Disk-ZAP - into one program on one disk! The program is called VIP Desktop. From the desktop you have instant access to word processing with a spelling checker always in attendance, data management with mail merge, spreadsheet financial analysis, telecommunications and disk maintenance. * DISK $169.95

For VIP Library shipping please add $4 USA. $5 Canada. $10 Foreign.

VIP Library owners: Upgrade to the VIP Library /WDE for $89.90* + $3 S/H. Send ORIGINAL disk and $92.90 total.

* Future VIP Library upgrades available at reduced cost.

All products run under RSDOS and are not copy protected.

SD ENTERPRISES

✆(503) 663-2865 ✉POB 1233 Gresham, OR 97030

Non VIP Library orders add $3 for shipping and handling in USA. Canada $4. Foreign $6. COD orders add an additional $2.25. Checks allow 3 weeks for delivery. All other orders are shipped the same day.

Telewriter 128 is a trademark of Cognitec. Word Power 3 is a trademark of Microcom Software.

HAM RADIO PROGRAMS
For Radio Shack Color Computers

MORSE - This program allows a key to be pressed and then sounds the Morse equivalent. It also will send random characters. This is an excellent tool for developing code speed for the the Novice, Technician, or General class licenses.

DX - Type in a prefix for a foreign country and have the country displayed.

ANTENNA - An antenna design program that calculates the dimensions for a wide spaced Yagi antenna of up to 4 elements.

Order HR-1 (3 programs) $11.95

MORSE TERMINAL

When used with an interface this converts your color computer into a Morse Terminal. To transmit just type the Morse characters and the computer keys your transmitter. In the receive mode the computer decodes and displays the Morse characters on the screen. Instructions are included for building an interface with off the shelf parts. **HR-2 $12.95**

STATION LOG

Keep a record of your contacts. Just enter the information as it is requested. Items that are the same such as date, frequency, and type of emission need only be entered once and changed as needed. Save and load records to tape or disk. Add to the log and quickly find stations. Print the log to a printer. **HR-3 $9.95**

THERMOMETER

Now your computer can give you the temperature in both Fahrenheit and Centigrade. Assembly plugs into a joystick port & consists of a thermistor on a 10' cable for the single unit and a second thermistor on a 20' flat cable for the dual unit. The dual unit can be used to measure inside and outside temperature.

CC-THERM $12.95, CC-THERM 2 $19.95.

MEMORY SAVER 2

A battery backup for all color computers. Leave programs in your computer and the Memory Saver will preserve them in case of a power failure. A real time saver for cassette systems. **MS-2 $39.95**

WEATHER FACSIMILE (WEFAX)

Draw weather maps on the screen. Feed transceiver's audio into the cassette port. Requires a joystick. **WEFAX $6.95.**

HAM RTTY TERMINAL

Uses the cassette port. Requires simple interface to connect cassette audio into the Mic jack and receiver audio into the cassette port. Interface instructions are included. 60, 75, & 100 WPM Baudot.

RTTY $6.95.

* MORSE KEYER (new) *

Send characters direct from the keyboard or select up to 10 preprogrammed messages to automatically call CQ, CQ DX, First Transmission, Weather, DE your call, etc. Also allows entering the call letters of the station worked and his name which can automaticaly be sent by pressing only one key. Order the cable below for a super keyer for less than $25. **M-KEYER $12.95**

* KEYER INTERFACE (new) *

Interface cable that connects to the printer port of the color computer & the KEY input of solid state transceivers. Wired for 2 or 3 conductor 1/4 inch plug (state type). Maximum key up voltage is 15 volts. Will not work on vacuum tube transmitters. 6' long, **KEY-IN $12.95**

Dynamic Color News on Tape or Disk
$6.95 each or 6 for $35 including ship.

AUDIO GENERATOR - Generates exact digital audio frequencies using your computer's crystal as a standard. Audio signal is on the cassette cable. **DCN #44.**

FREQUENCY COUNTER - Accurately measure audio frequencies up to 12000 hertz. Feed unknown frequencies in on the cassette cable. **DCN #45.**

TUNING METER- Indicates proper tuning for RTTY and Slow Scan Television. Excellent for use with hardware decoders. **DCN #48.**

HAM MATH - Solves most problems with circuits, antennas, decibels, etc. An excellent program for studying for ham licenses. **DCN #50.**

See Dynamic Color News on tape or disk index for additional support programs.

All programs are color computer 3 compatible unless indicated and are on tape or disk. Please specify tape or disk software. A 32K minimum computer is required.

Checks, VISA or MC, Add $3 shipping.

Dynamic Electronics Inc.
P. O. Box 896 (205) 773-2758
Hartselle, AL 35640

* PD-61 Pictures

HAGAR	PIC	2	B	3
SHIPS	BAS	0	B	2
SIGN5	BAS	0	B	1
SPACE	BAS	0	B	0
3GUYS	MAX	2	B	3
AIRPORT	BIN	2	B	6
BIGCAT	MAX	2	B	3
CUBE	BIN	2	B	3
DOGPICT	BAS	0	B	2
EARTH	MAX	2	B	3
GARFIELD	PIX	2	B	3
GIRL	MAX	2	B	3
NEWWAVE	MAX	2	B	3
OLIVER	MAX	2	B	3
OWL	MAX	2	B	3
PEANUTS	PIX	2	B	3
SHUTTLE	MAX	2	B	3
SR-71	MAX	2	B	3
ZEBCHESS	MAX	2	B	3
ZIGGY	PIX	2	B	3

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* PD- 62 Basic Pgms

ALARM	BAS	0	B	2
BIBLE	BAS	0	B	2
BINGOCD	BAS	0	B	1
CHECKS	BAS	0	B	3
CLOCK	BAS	0	B	1
DATA3	BAS	0	B	3
DATES	BAS	0	B	2
DECIDE	BAS	0	B	3
EXREF	BAS	0	B	3
FILES	BAS	0	B	4
FLIPPAGE	BAS	0	B	3
LABELPRT	BAS	0	B	1
MESSAGE	BAS	0	B	1
OFFSET	BAS	0	B	1
PHONE	BAS	0	B	1
PHONEDIR	BAS	0	B	2
PILOT	BAS	0	B	2
PROJEVAL	BAS	0	B	4
SPELWORD	BAS	0	B	1
VALENCE	BAS	0	B	2

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* PD-63 Basic Pgms

ANIMALS	BAS	0	B	3
BALOONS	BAS	0	B	3
BATSHIP	BAS	0	B	4
BUGS	BAS	0	B	6
CONNECT4	BAS	0	B	4
DIGGEM	BAS	0	B	3
FACTORS	BAS	0	B	4
GEOGAME	BAS	0	B	4
KINGDOM	BAS	0	B	6
MAZE3	BAS	0	B	3
MISSILES	BAS	0	B	2
POKER	BAS	0	B	4
SLOTS	BAS	0	B	2
TROLL	BAS	0	B	6

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* PD-64 Basic Pgms

OHMSLAW	BAS	0	B	1
POWER UP	BAS	0	B	1
ROMPACK	BAS	0	B	1
ROMRAM	BAS	0	B	1
SCRDUMP	BAS	0	B	1
SLOSKROL	BAS	0	B	1
SORT	BAS	0	B	1
SPEDMATH	BAS	0	B	3
SPOOLER	BIN	2	B	1
UPPER32K	BAS	0	B	1
STRIKE	BAS	0	B	1
SHIPS	BAS	0	B	2
WILLSADV	BAS	0	B	5
RACEWAY	BAS	0	B	4
TREK	BAS	0	B	4
TXTCNVRT	BAS	0	B	1

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* PD-65 Music

MUSIC	BIN	2	B	7
MUSIC1	BAS	0	B	1
SOUND	ASM	1	A	1
SOUNDDEM	BAS	0	B	1
SOUNDS	BAS	0	B	3
SOUNDS2	BAS	0	B	1
SWAN	BIN	2	B	1
SYNMUSIC	BIN	2	B	4
DEEPPURP	BIN	2	B	5
ALFEX	BIN	2	B	2
BACH	BIN	2	B	4
BUMBLE	BIN	2	B	3
CANON	BIN	2	B	3
DIAMOND	BIN	2	B	3
ENTAIN	BIN	2	B	1
FUNERAL	BIN	2	B	3
GRENGRSS	BIN	2	B	4
HILLST	BIN	2	B	4

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* PD-66 Basic Pgms

64KMEMT	BAS	0	B	2
AUTODIAL	BAS	0	B	2
FINDAWRD	BAS	0	B	2
FLASHCRD	BAS	0	B	2
PHONEWRD	BAS	0	B	1
64KTEST	BAS	0	B	1
ABBREV	BAS	0	B	4
BASECONV	BAS	0	B	1
BIORYTHM	BAS	0	B	3
BOWLSUM	BAS	0	B	2
BOXLABEL	BAS	0	B	1
CALENDAR	BAS	0	B	2
CALENDR2	BAS	0	B	1
CAR CALC	BAS	0	B	1
CASSDIR	BAS	0	B	1
CONTOUR	BAS	0	B	1
CONVERGE	BAS	0	B	1
CONVERT	BAS	0	B	3
COUNT	BAS	0	B	1
CVERT	BAS	0	B	1
DEC<>HEX	BAS	0	B	1
FUELCOST	BAS	0	B	1
HEXLOAD	BAS	0	B	1
HEXTODEC	BAS	0	B	1
IN-OUT	BAS	0	B	1
HOMONYMS	BAS	0	B	1
JOYPAINT	BAS	0	B	1
KALVOS	BAS	0	B	1
LINES	BAS	0	B	1
MACDATA	BAS	0	B	1
MISSLETT	BAS	0	B	1

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* PD-67 Basic Pgms

LOAN	BAS	0	B	3
LOANAMOR	BAS	0	B	1
64KLOOK	BAS	0	B	B
ASSEMBLR	BAS	0	B	3
DISASSY	BAS	0	B	4
FINANCE	BAS	0	B	B
ROMDUMP	BAS	0	B	1
WEREWAND	BAS	0	B	5
CHECKS	BAS	0	B	4
MONEYHLP	BAS	0	B	4
CHKBOOK	BAS	0	B	3
STAT-LOG	BAS	0	B	3
WORDPRC	BAS	0	B	5
WORDSCAR	BAS	0	B	2
TYPING	BAS	0	B	2

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* PD-68 Basic Pgms

ART	BAS	0	B	1
BARGRAPH	BAS	0	B	1
BEGIN	BAS	0	B	1
BWDUMP	BIN	2	B	1
CHAR	BAS	0	B	2
COM	BAS	0	B	2
DISMON	BAS	0	B	7
DOT	BAS	0	B	1
EDITOR	BAS	0	B	3
EXTNDKYB	BAS	0	B	4
EXTNDKYB	DOC	1	A	7
FREE	BAS	0	B	1
GRADBOOK	BAS	0	B	1
GRNDSTFF	BAS	0	B	1
INSTR	BAS	0	B	1
LET	BAS	0	B	3
STOCKS	BAS	0	B	5
TWOLINER	BAS	0	B	1
ATOMS	BAS	0	B	2
BEAST	BAS	0	B	1

PD-69 Disk Utilities

DIRPBR	BAS	0	B	2
DISKLOOK	BAS	0	B	1
DKTODK	BAS	0	B	3
DSK2TP	BAS	0	B	2
DSKLIBRY	BAS	0	B	3
DSKMSTER	BAS	0	B	4
DSKSPEED	BAS	0	B	1
DTOD	BAS	0	B	2
D UTIL	BAS	0	B	2
DDCOPY	BAS	0	B	2
DIRGET	BAS	0	B	1
DIRLIST	BAS	0	B	2
DIRSAVE	BAS	0	B	1
DISK FIX	BAS	0	B	1
DISKDIRE	BAS	0	B	3
DISKDUMP	BAS	0	B	1
DISKEDIT	BAS	0	B	4
DISKLIST	BAS	0	B	1
DISKSORT	BAS	0	B	1
DISKTEST	BAS	0	B	1
DISKTIME	BAS	0	B	1
DSKCLEAN	BAS	0	B	1
MASTRDSK	BAS	0	B	4

---

* PD-70 Basic Pgms

MLADFND	BAS	0	B	2
BIGHILL	BAS	0	B	1
BLACKJK	BAS	0	B	4
CIA	BAS	0	B	6
CIPHER	BAS	0	B	1
CUBES	BAS	0	B	1
DOGFIGHT	BAS	0	B	1
FISH	BAS	0	B	1
FLIP	BAS	0	B	2
FOOTBALL	BAS	0	B	4
GOLDMINE	BAS	0	B	3
HANGMAN	BAS	0	B	2
HILOW	BAS	0	B	3
HOBBIT	BAS	0	B	2
HUSTLE	BAS	0	B	1
JUMP	BAS	0	B	1
MEMORY	BAS	0	B	2
PROTECT	BAS	0	B	2
QUEST	BAS	0	B	4
SLITHER	BAS	0	B	1
STOCK	BAS	0	B	3

---

* PD-71 Basic & Machine Lang. Pgms

DISASSEM	BAS	0	B	2
PAYMENT	BAS	0	B	1
STATCAP	BAS	0	B	2
TEMPCONV	BAS	0	B	1
ECHOSONG	BAS	0	B	1
MUSCONV	BAS	0	B	1
FUGUE	BIN	2	B	3
JETI	BIN	2	B	3
MOONLIT	BAS	2	B	3
RONDO	BIN	2	B	4
LOOKLOVE	BIN	2	B	1
MENU	BAS	0	B	1
WE	BAS	0	B	1
MESSAGE	BAS	0	B	1
OBJECTS	BIN	2	B	2
ODIE	PIX	2	B	3
TANK	BIN	2	B	4
TRIANGLE	BIN	2	B	2
WORLDMAP	BIN	2	B	4
PAINT	BAS	0	B	1
SCRDATA	BIN	2	B	1
RES	BAS	0	B	1
SCAN	BAS	0	B	1

---

* PD 72 Basic and Machine Lang. Pgms

FIND	BAS	0	B	1
LOCFIND	BAS	0	B	1
ML ADDR	BAS	0	B	1
MLFINDER	BAS	0	B	1
MLTTD	BAS	0	B	1
READBIN	BAS	0	B	1
RELOCAT	BAS	0	B	1
CHKBOOK	BAS	0	B	3
FINANAD	BAS	0	B	6
GRAPHICS	BAS	0	B	5
HOMEUTIL	BAS	0	B	6
LIFE	BAS	0	B	4
MCONVERT	BAS	0	B	2
METCONV	BAS	0	B	1
JOYLIST	BAS	0	B	1
CLOCK	BIN	2	B	1
CAMELOT	BIN	2	B	2
FIRE	BIN	2	B	6
CLOCK	DAT	1	A	1

---

* PD 73 Basic Pgms

CARTEL	BAS	0	B	7
DODGE-EM	BAS	0	B	2
DOGS	BAS	0	B	1
DOORS	BAS	0	B	1
PINGPONG	BAS	0	B	1
CACAPHON	BAS	0	B	1
SUB	BAS	0	B	5
SURVIVAL	BAS	0	B	5
TREK	BAS	0	B	5
TYCOON	BAS	0	B	2
SCRAMBLE	BAS	0	B	5
SIMON	BAS	0	B	2
WHERISIT	BAS	0	B	2
WALLHIT	BAS	0	B	1
TICTACT	BAS	0	B	2
CHBASIC	BAS	0	B	1

PUBLIC DOMAIN SOFTWARE

This large collection of programs will allow you to quickly expand your library. All programs are available on disk and programs with a * are available on tape. Some programs require a joystick. Instructions are included in some collections as DAT, DOC, or TXT files. Prices are as follows:

1-4 $4.95, 5-9 $4.50, 10-24 $4.00, 25 up $3.50

Add $1 shipping for less than 10 and $2 for 10 up.
Checks, VISA, or Master Cards.

Dynamic Electronics Inc.
P. O. Box 896 (205) 773-2758
Hartselle, AL 35640

PD-44
Terminal pgm with documentation. This will work with the CoCo-3. Instructions are included.

MTRM43	BIN	2	B	8
CONFIG43	BAS	0	B	4
MTSTART	BAS	0	B	4
MTERM1	DOC	1	A	11
MTERM2	DOC	1	A	8
MTERM3	DOC	1	A	7
DOS BOOT	DAT	1	A	1
*	*	0	B	1
**	*	1	A	1
READDOC	BAS	0	B	1

---

* PD-45
Picture Files

DRAGON	MAX	2	B	3
HOT LIPS	MAX	2	B	3
ANIMALS	MAX	2	B	3
CLOWN F	MAX	2	B	3
FISH	MAX	2	B	3
3 MEN	MAX	2	B	3
S MAP	MAX	2	B	3
BUGS	MAX	2	B	3
CFISH	MAX	2	B	3
HERO	MAX	2	B	3
WMAP	MAX	2	B	3
GSCOTT	MAX	2	B	3
STATES	MAX	2	B	3
HORSE	MAX	2	B	3
CROSS	MAX	2	B	3
FOODW	MAX	2	B	3
RSTONE	MAX	2	B	3
COCO	MAX	2	B	3
ALIEN	MAX	2	B	3
PIXFILES	BAS	0	B	3

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* PD-46
Talk and Music Files (C)LOADM "FILE" then EXEC.

TALK	BIN	2	B	11
TALK2	BIN	2	B	11
WILLTELL	BIN	2	B	9
MUSICBOX	BIN	2	B	1
BEATLES	BIN	2	B	4
JUMP	BIN	2	B	5
GRELN	BIN	2	B	5
GHOST	BIN	2	B	4
JINGLE	BIN	2	B	3
WORLD	BIN	2	B	5
CTRYROAD	BIN	2	B	2

---

* PD-47

Miscellaneous Pgms

T	BAS	0	B	2
SANTEE2	BAS	0	B	1
MILEAGE	BAS	0	B	1
M	BAS	0	B	1
DIGITS	BAS	0	B	1
NUMBLIST	BAS	0	B	1
COUNT	BAS	0	B	1
SC	BAS	0	B	1
DRAWTEXT	BAS	0	B	1
SAMPLE	BAS	0	B	1
GRSCRWRT	BAS	0	B	2
HRTEXT2	BAS	0	B	3
DRAW	BAS	0	B	2
WRITER	BAS	0	B	1
TYPEBET	BAS	0	B	2
WRITEBET	BAS	0	B	2
TEXT2	BAS	0	B	2
SANTEE	BAS	0	B	2
SHUTTLE	BAS	0	B	1
AJOCK	BAS	0	B	1
PLATFORM	BAS	0	B	1
MAZE	BAS	0	B	4
DISKZAPR	BAS	0	B	2
ZAP	BAS	0	B	3
DETHSHIP	BAS	0	B	3
BACKUP35	BAS	0	B	1
BOOT	BAS	0	B	1
SCRNLIST	BAS	0	B	1
DOSSTART	BAS	0	B	1
LABEL	BAS	0	B	2
DSKDSABL	BAS	0	B	1
NOFREEG	BAS	0	B	1
FORMATER	BAS	0	B	1
ROMRAM	BIN	2	B	1
SUPDUP	BIN	2	B	1
TESTTEXT	BAS	0	B	1

---

* PD-48

Miscellaneous Pgms

EXTBAS	BAS	0	B	3
DISAPEAR	BAS	0	B	1
PAINT	BAS	0	B	1
DATA	BIN	2	B	1
DATA2	BIN	2	B	1
SCRDATA	BIN	2	B	1
FILL2	BIN	2	B	2
QUADDRAW	BAS	0	B	1
CELTIC	BAS	0	B	2
ALL RAM	BAS	0	B	1
CHARGEN	BIN	2	B	1
ROMRAM	BIN	2	B	1
OBSTACLE	BAS	0	B	1
64K RAM	BAS	0	B	1
COLORSEL	BAS	0	B	1
TRIG	BAS	0	B	4
ALGEBRA	BAS	0	B	4
PLAY	BAS	0	B	1
STATECAP	BAS	0	B	2
MLSOUNDS	BAS	0	B	1
ROTATION	BAS	0	B	2
PARABOLA	BAS	0	B	2
INSTAPIC	BAS	0	B	1
CLOVER	BAS	0	B	1
HAT-PLOT	BAS	0	B	1
WHEEL 1	BAS	0	B	1
LETTER-R	PAR	1	A	1
3-LINES	ROT	1	A	1
TRAPZOID	ROT	1	A	2
PYRAMID	ROT	1	A	2
CUBE	ROT	1	A	3
51X24	BAS	0	B	2
WINDOW	BAS	0	B	5
GGPRTSU	BAS	0	B	1
KALEIDO	BAS	0	B	1
OK83APRT	BAS	0	B	1
NUMCNVTR	BAS	0	B	1
ADVRTN	BAS	0	B	1

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* PD-49

Miscellaneous Pgms.

BC	BIN	2	B	10
PEDRO	BIN	2	B	11
BLOCKADE	BAS	0	B	3
REPEAT	BAS	0	B	1
AIRPLANE	BAS	0	B	1
BUSTOUT	BAS	0	B	1
GOLF	BAS	0	B	7
CITY	BAS	0	B	2
AIR-RAID	BAS	0	B	2
MAZE	BAS	0	B	4
DUALDUP	BIN	2	B	2
DIRMAP	BAS	0	B	3
CHESS	BAS	0	B	5
WHATZIT	BAS	0	B	4
BATLSHIP	BAS	0	B	3
SP*ROCKS	BAS	0	B	1

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* PD-50
Miscellaneous PGMS

GOBBLER	BAS	0	B	2
PYTHON	BAS	0	B	2
LUNAR	BAS	0	B	2
LUNALANA	BAS	0	B	1
AMAZING	BAS	0	B	2
BALLOON	BAS	0	B	1
VAPORWRM	BAS	0	B	2
ABM	BAS	0	B	3
BULLSEYE	BAS	0	B	1
CRASH	BAS	0	B	1
DOTS	BAS	0	B	3
F-16	BAS	0	B	3
KRYPTON	ART	2	B	3
KRYPTON	BAS	0	B	1
KRYPTON	GAM	0	B	1
NUKEATTK	BAS	0	B	2
ASTEROID	BAS	0	B	1
PRIX	BAS	0	B	2
ONE	BIN	2	B	3
TWO	BIN	2	B	3
THREE	BIN	2	B	3
FOUR	BIN	2	B	3
TEMPEST	BAS	0	B	2
SNAKE	BAS	0	B	2
SCORE	DAT	1	A	1
OTHELLO	BAS	0	B	4
ROCKS	BAS	0	B	3
LANDER	BAS	0	B	2

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* PD-51
Games & Programs

DRAGRACE	BAS	0	B	1
WORMER	BAS	0	B	2
SIMON	BAS	0	B	2
RIDER	BAS	0	B	2
MISSILE	BAS	0	B	3
LETSHOOT	BAS	0	B	2
SHOOTGAL	BAS	0	B	2
MISSILE2	BAS	0	B	3
FENCE	BAS	0	B	3
BANDIT	BAS	0	B	1
CHICKEN	BAS	0	B	2
MAXIMUM	BAS	0	B	3
FLIGHT	BAS	0	B	2
COVERUP	BAS	0	B	2
WORLDMAP	BAS	0	B	4
POUNCE	BAS	0	B	1
MARTIANS	BAS	0	B	2
FINDIT	BAS	0	B	3
SCRAMBLE	BAS	0	B	5
BOUNBABY	BAS	0	B	2
CHICK	BAS	0	B	3
BOBO	BAS	0	B	3
RUBIC	BAS	0	B	4
MCJUMP	BAS	0	B	3

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* PD-52
Picture files

COCO	MAX	2	B	6
COL COCO	MAX	2	B	6
MOOSHEAD	MAX	2	B	6
COKE	MAX	2	B	6
CUBS	MAX	2	B	6
REDS	MAX	2	B	6
BREAKERS	MAX	2	B	6
USFL	MAX	2	B	6
SPACE	BIN	2	B	3
GIZMO	MAX	2	B	3
DINASOUR	MAX	2	B	3

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* PD 53
Picture Files

INDIAN	MAX	2	B	6
HOMECOME	MAX	2	B	6
GRIN	BIN	2	B	3
TARD	BIN	2	B	3
STUD	BIN	2	B	3
COMET	BIN	2	B	3
DESERT	BIN	2	B	3
FOOD	BIN	2	B	3
SMIRK	BIN	2	B	3
PLAYA	BIN	2	B	3
HELLO	BIN	2	B	3
GROVER	BIN	2	B	3
DRIVE IN	BIN	2	B	3
TIME	BIN	2	B	3
KOALA	BIN	2	B	3
PATTERN	BIN	2	B	3
HAGAR	BIN	2	B	3
CHIPS	BIN	2	B	3

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* PD 54
Picture Files

PENTAGON	PIC	2	B	3
GRID 2	PIC	2	B	3
SNOWFLAK	PIC	2	B	3
CONETUNL	PIC	2	B	3
4-POINT	PIC	2	B	3
BALTSTR	MAX	2	B	3
CARTOON	MAX	2	B	3
HUELEWIS	MAX	2	B	3
STARTREK	MAX	2	B	3
HOUSE1	MAX	2	B	6
HOUSE2	MAX	2	B	6
LIFECYCL	MAX	2	B	6
COCOMAG	MAX	2	B	3
MASCASTL	MAX	2	B	3
COLUMBIA	MAX	2	B	3
POLO	MAX	2	B	3
ET	BAS	0	B	7
WHEEL 1	PIC	2	B	3

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* PD-55
Picture Files

PARKERPT	MAX	2	B	3
TOWER	PIC	2	B	3
TOWER2	PIC	2	B	3
SCREEN	PIC	2	B	3
BOMB	PIC	2	B	3
ANDRON	PIC	2	B	3
SALE	PIC	2	B	3
CHIPS	PIC	2	B	3
TUNLROAD	BIN	2	B	3
LONEROAD	BIN	2	B	3
CITYROAD	BIN	2	B	3
LAKEROAD	BIN	2	B	3
CROSROAD	BIN	2	B	3
BLACK	BIN	2	B	3
CAL1	BIN	2	B	3
CAL2	BIN	2	B	3
CAL3	BIN	2	B	3
3-LEAF	PIC	2	B	3
5-STARS	PIC	2	B	3
SPHERE	PIC	2	B	3
15-LEAF	PIC	2	B	3

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* PD-56

Glossary, Memory Maps, Programs

COCO	VIP	1	A	4
VIP ON 3	VIP	1	A	1
BEEF	VIP	1	A	1
MCTRM3	VIP	1	A	1
GLOSSARY	VIP	1	A	7
POKEPEEK	VIP	1	A	17
WIDTH	VIP	1	A	1
COCO 3	VIP	1	A	17
MISSLES	BAS	0	B	2
CLOCK	BAS	0	B	1
JET	BAS	0	B	4

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* PD-57
Picture Files

VAMPIRE	PIC	2	B	3
ATLANTA	BAS	0	B	3
NOGHOST	PIC	2	B	3
AIRPORT	BAS	0	B	4
S EASTON	BAS	0	B	4
1SMLSTEP	BAS	0	B	4
HAGAR	PIC	2	B	3
SUNSET	BAS	0	B	3
S NICKS	BAS	0	B	4
SNOOPY1	BAS	0	B	3
MICKEY	BIN	1	B	8
DONALD	BIN	2	B	8
SNOOPY2	BAS	0	B	4
SNOOPY3	BAS	0	B	4
SNOOPY4	BAS	0	B	4

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* PD-58
Miscellaneous Pgms

DISKLIST	BAS	0	B	1
DIRLIST	BAS	0	B	2
ML ADDR	BAS	0	B	1
DISKDUMP	BAS	0	B	1
PRINUTIL	BAS	0	B	2
CALPRINT	BAS	0	B	3
ALPHSONG	BAS	0	B	1
PAINT	BAS	0	B	1
DOGPICT	BAS	0	B	2
EVADER	BAS	0	B	1
NUKATTC	BAS	0	B	2
BASICMAP	BAS	0	B	3
JOYPAINT	BAS	0	B	1
PUMPKIN	BAS	0	B	1
HOMOYMS	BAS	0	B	1
ABBREV	BAS	0	B	4
CONVERT	BAS	0	B	3
CASSDIR	BAS	0	B	1
CVERT	BAS	0	B	1
FLASCARD	BAS	0	B	1
MESSAGE	BAS	0	B	1
RELOCAT	BAS	0	B	1
COUNT	BAS	0	B	1
CALENDAR	BAS	0	B	1
DOGS	BAS	0	B	1
DOGFIGHR	BAS	0	B	1
BEAST	BAS	0	B	1

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* PD-59
GAMES, UTILITIES

64X64F	BAS	0	B	1
RND#'S	BAS	0	B	1
SCROLLER	BAS	0	B	1
COCOBUG	BAS	0	B	2
DRWBOARD	BAS	0	B	1
SPACE	BAS	0	B	1
DIR-ADDR	BAS	0	B	1
BACKGAMN	BIN	2	B	2
CHESS	BIN	2	B	3
BATTLE	BIN	2	B	2
GERM	BIN	2	B	1
BLEEP	BAS	0	B	2
TICKER	BAS	0	B	3
LEAKYTAP	BAS	0	B	3
UTOPIAN	BAS	0	B	4
COLORDOT	BAS	0	B	3
STAYALIV	BAS	0	B	2
TIMEFLT	BAS	0	B	3
NAVYGUNS	BAS	0	B	2
ATACMAN	BAS	0	B	3
CALENDAR	BAS	0	B	1
POKER25	BAS	0	B	1
VIEWER5	BAS	0	B	1
STUFF	BAS	0	B	1

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* PD 60 Basic Pgms

S NICKS	BAS	0	B	4
1SMLSTEP	BAS	0	B	4
SUNSET	BAS	0	B	3
3DTTT	BAS	0	B	4
BATTSHIP	BAS	0	B	2
CRACE	BAS	0	B	2
FLY	BAS	0	B	3
KINGS	BAS	0	B	6
KINGTUT	BAS	0	B	7
OREGON	BAS	0	B	9
POKER	BAS	0	B	2
ROBOTS	BAS	0	B	3
ROLLON	BAS	0	B	2
SORCERER	BAS	0	B	6

* PD-23 MUSIC-2

LOADM "NAME/MUS"
EXEC TO PLAY MUSIC
THROUGH TV OR MON.

ADDPLAY	BAS	0	B	1
DEPLAY	BAS	0	B	1
MSQUEZ	BAS	0	B	2
RAIN	MUS	2	B	2
SONATA3	MUS	2	B	3
STRAV	MUS	2	B	4
FOGGY	MUS	2	B	4
FUNERAL	MUS	2	B	3
HARDDAY	MUS	2	B	2
INVENT	MUS	2	B	2
INVENT11	MUS	2	B	3
INVENT15	MUS	2	B	3
INVENT7	MUS	2	B	3
INVENT8	MUS	2	B	2
JOPLIN	MUS	2	B	4
KHAN	MUS	2	B	6

---

* PD-24 MUSIC-3

LOADM "NAME/MUS"
EXEC TO PLAY MUSIC
THROUGH TV OR MON.

ADDPLAY	BAS	0	B	1
DEPLAY	BAS	0	B	1
MSQUEZ	BAS	0	B	2
PEANUTS	MUS	2	B	3
ROCK	MUS	2	B	5
ROXANNE	MUS	2	B	5
SCHERZO	MUS	2	B	2
TEACH	MUS	2	B	2
PIANOMAN	MUS	2	B	5
STRANGER	MUS	2	B	5
CAMELOT	MUS	2	B	4
CHACONNE	MUS	2	B	6
DIAMOND	MUS	2	B	3
DOWNROAD	MUS	2	B	4
FANTASY1	MUS	2	B	2

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* PD-25 MUSIC-4

LOADM "NAME/MUS"
EXEC TO PLAY MUSIC
THROUGH TV OR MON.

FANTASY2	MUS	2	B	3
GRENGRAS	MUS	2	B	4
HUMOR	MUS	2	B	4
INCROW	MUS	2	B	3
STARWARS	MUS	2	B	2
SUITEGM	MUS	2	B	6
SUPERMAN	MUS	2	B	2
WHENIM64	MUS	2	B	4
ROOTBEER	MUS	2	B	7
WAYUARE	MUS	2	B	3
AXELF	MUS	2	B	2
TOCATTA	MUS	2	B	3

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* PD-26 LAST WILL

LOAN	BAS	0	B	1
LASTWILL	BAS	0	B	6
IMEGA	BAS	0	B	3
AWARI	BAS	0	B	1
BACARAT	BAS	0	B	2
BAGELS	BAS	0	B	1
BLACKJAC	BAS	0	B	1
CHUCK	BAS	0	B	1
CONCENTR	BAS	0	B	1
CUBES	BAS	0	B	2

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* PD-27 GAMES

DEFUZE	BAS	0	B	1
DR ZEE	BAS	0	B	1
FLIPFLOP	BAS	0	B	1
GO-FISH	BAS	0	B	2
HANGMAN	BAS	0	B	2
HIGHLOW	BAS	0	B	1
JACKPOT	BAS	0	B	1
KEYS	BAS	0	B	1
L E M	BAS	O	B	3
LUNARLD	BAS	0	B	2
NUMBERS	BAS	0	B	1
OBSTACLE	BAS	0	B	1
POOLGAME	BAS	0	B	4
RETURN	BAS	0	B	1
REVERSI	BAS	0	B	2
STARTREK	BAS	0	B	2
TTREK	BAS	0	B	3

PD-28 COMM.CC-TALK
BBS, TERM

BBS'S	DAT	1	A	1
CCT	IO	2	B	1
CCTALK	BAS	0	B	1
CNFG40V1	BAS	0	A	5
CNFG40V2	BAS	0	A	4
CTLKEY	BAS	1	A	1
MTERM1	DOC	1	A	11
MTERM2	DOC	1	A	8
MTERM40	BIN	2	B	8
REDIAL	BAS	0	A	1
PACREDIA	BAS	0	A	1

PD-29 COMM, WORD
PRO, GAMES

GOSTSHIP	BAS	0	B	8
INT RATE	BAS	0	B	2
INVSTANL	PC	0	B	4
MENU	BAS	0	B	4
MOTOJUMP	BAS	0	B	3
SCREEN	MAX	2	B	6
SCREEN1	BIN	2	B	3
SCREEN2	BIN	2	B	3
SCREEN2	MAX	2	B	6
STRINGTU	BAS	0	B	4
TTERM	DSK	2	B	4
TTHELP	DAT	1	A	4
USING	BAS	0	B	3
WF-DOC	JP	0	B	2
WORDFILE	JP	0	B	4
PARM1	DAT	1	A	1

PD-30 CHECK BOOK,
UTILITIES

CHECKBOK	BAS	0	B	4
CHECKBOK	DOC	1	A	9
DIRR	CMD	2	B	1
DVIEW	BAS	0	B	1
FILEMAID	BAS	0	B	2
LISTER	BAS	0	B	1
PAINTPOT	BAS	0	B	4
SCREEN	MAX	2	B	6
SCREEN1	BIN	2	B	3
SCREEN2	BIN	2	B	3
SCREEN2	MAX	2	B	6
SPECZAP	BAS	0	B	5
TAPETYPE	BIN	2	B	1
TTERM	DSK	2	B	4
DVIEW	DSK	0	B	1
MENU	BAS	0	B	4

PD-31

PIRATES TREASURE.As you explore the cave looking for the treasure, a picture appears on the screen as you go from room to room. These pictures are loaded from disk. A computer with disk drive is required.

PD-32

Color Computer 3 moving pictures. Consists of a beautiful waterfall and a colorful bouncing ball.

WATRFALL	BAS	0	B	1
WATRFALL	BIN	2	B	1
WATRFALL	MGE	1	B	
BALL	BAS	0	B	1
BALL2	BAS	0	B	1
BOUNCE	BIN	2	B	1
BALL2	HR1	2	B	4
BALL2	HR2	2	B	4
BALL2	HR3	2	B	4
BALL2	HR4	2	B	4

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* PD-33

EDUCTIONAL PROGRAMS

ABBREV	BAS	0	B	4
ABCPOP	BAS	0	B	3
ALPHAAL	BAS	0	B	1
EDUCATE	BAS	0	B	1
HANGP	BAS	0	B	1
HOMONYM	BAS	0	B	1
SPELWORD	BAS	0	B	1
MATH	BAS	0	B	2
DRILL	BAS	0	B	2
MLTP	BAS	0	B	1
ROUND	BAS	0	B	2
AREA	BAS	0	B	5
METCONV	BAS	0	B	3
NUMBERS	BAS	0	B	2
SIEVE	BAS	0	B	1

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* PD 35

ADDRESS FILES AND
FINANCE PROGRAMS

PHONE	BAS	0	B	1
LABELPRT	BAS	0	B	1
LETTER	BAS	0	B	3
MAILLST	BAS	0	B	2
PHONLST	BAS	0	B	1
MINIWORD	BAS	0	B	2
LNWIDTH	BAS	0	B	1
CHKWRITE	BAS	0	B	2
CHKANAL	BAS	0	B	4
PRNTCHK	BAS	0	A	1
CHECKS	BAS	0	B	4
CHCKSTUB	BAS	0	B	1
TOTALS	DAT	1	A	1
CHECKS	DAT	1	A	1
GRAPH	BAS	0	B	4
LOAN	BAS	0	B	3
CALC	BAS	0	B	1
PAYMENT	BAS	0	B	1
CASHJNL	BAS	0	B	3
AMORT	BAS	0	B	3

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* PD 36

COMP.SCIENCE PGMS 1
These programs are tutorials on basic programming.

COMPSC1	BAS	0	B	8
COMPSC2	BAS	0	B	3
COMPSC3	BAS	0	B	9
COMPSC4	BAS	0	B	5
COMPSC5	BAS	0	B	9
COMPSC6	BAS	0	B	5
GETPUT	BAS	0	B	2

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* PD 37

COMP.SCIENCE PGMS 2

These programs are tutorials on basic programming.

IFTHEN	BAS	0	B	9
EXTENDED	BAS	0	B	2
GETPUT	BAS	0	B	2
COMPSCI8	BAS	0	B	8
COMPSCI9	BAS	0	B	5
COMPSCI7	BAS	0	B	7
EXTDEMO	BAS	0	B	3

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* PD 38

EDUCATIONAL PGMS
These programs are excellent learning tools for school children.

ABBREV	BAS	0	B	4
ABCPOP	BAS	0	B	3
ALPHAAL	BAS	0	B	1
EDUCATE	BAS	0	B	1
HANGP	BAS	0	B	1
HOMONYM	BAS	0	B	1
SPELWORD	BAS	0	B	2
MATH	BAS	0	B	2
DRILL	BAS	0	B	2
MLTP	BAS	0	B	1
ROUND	BAS	0	B	2
AREA	BAS	0	B	5
METCONV	BAS	0	B	3
NUMBERS	BAS	0	B	2

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* PD 39

ADDRESS FILES AND
FINANCE PROGRAMS

PHONE	BAS	0	B	1
LABELPRT	BAS	0	B	1
LETTER	BAS	0	B	3
MAILIST	BAS	0	B	1
WORDPROC	BAS	0	B	3
MAILLST	BAS	0	B	2
PHONLST	BAS	0	B	1
MINIWORD	BAS	0	B	2
LNWIDTH	BAS	0	B	1
CHKWRITE	BAS	0	B	2
CHKANAL	BAS	0	B	4
PRNTCHK	BAS	0	A	1
CHECKS	BAS	0	B	4
CHCKSTUB	BAS	0	B	1
TOTALS	DAT	1	A	1
CHECKS	DAT	1	A	1
GRAPH	BAS	0	B	4
LOAN	BAS	0	B	3
CALC	BAS	0	B	1
PAYMENT	BAS	0	B	1
CASHJNL	BAS	0	B	3
AMORT	BAS	0	B	3

PD-40

TAPE-DSK & DSK-TAPE
With these programs you can copy a disk to tape or a tape to disk.

T2D	BIN	2	B	2
DTCOPY	BIN	2	B	1
DSK-TP	BAS	0	B	1
DISKLIST	BAS	0	B	1
DIRLIST	BAS	0	B	2
DISKDUMP	BAS	0	B	1
CASSDIR	BAS	0	B	1

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* PD-41
Picture files

STAMPS	MAX	2	B	3
STARTREK	MAX	2	B	3
ST-TREK2	MAX	2	B	3
SCHOOL	MAX	2	B	3
SATURN	MAX	2	B	3
ESCHER	MAX	2	B	3
LABOR	MAX	2	B	3
MASK	MAX	2	B	3
BUG BOX	MAX	2	B	3
SPACE	MAX	2	B	3
EASTER	MAX	2	B	3
SPACE 2	MAX	2	B	3
POPEYE	MAX	2	B	3
GARFIELS	MAX	2	B	3
BEETLE B	MAX	2	B	3
POLO	MAX	2	B	3
HAGAR	MAX	2	B	3
X-PAD	MAX	2	B	3
CASTLE	MAX	2	B	3
MUSIC TV	MAX	2	B	3
COCO	MAX	2	B	3

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* PD-42
Picture files

TITLES	MAX	2	B	3
PIXFILES	BAS	0	B	3
THOLIAN	MAX	2	B	3
3001AD	MAX	2	B	3
F15	MAX	2	B	3
QUEEN	MAX	2	B	3
BRONCOS	MAX	2	B	3
STARTREK	MAX	2	B	3
ROOM	MAX	2	B	3
RAMBO	MAX	2	B	3
OWL	MAX	2	B	3
ENTERPR	MAX	2	B	3
STAR-T3	MAX	2	B	3
NCC-1701	MAX	2	B	3
SAT-2	MAX	2	B	3
ATMOSP	MAX	2	B	3
STARWARS	MAX	2	B	3
ORIENTAL	MAX	2	B	3

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* PD-43
Picture files

STAMP	MAX	2	B	3
STRIPE	MAX	2	B	3
WOMAN	MAX	2	B	3
BLUEJAY	MAX	2	B	3
LUCY	MAX	2	B	3
OLD ENG	MAX	2	B	3
MENU1	MAX	2	B	3
OWL	MAX	2	B	3
VAN GOG	MAX	2	B	3
WOMAN1	MAX	2	B	3
PSH	MAX	2	B	3
DUCKPOND	MAX	2	B	3
RANGER	MAX	2	B	3
PLANET	MAX	2	B	3
CHRSTMAS	MAX	2	B	3
PEACE	MAX	2	B	3
WOMAN3	MAX	2	B	3
HAWK	MAX	2	B	3
PHASER	MAX	2	B	3
PIXFILES	BAS	0	B	3

PUBLIC DOMAIN SOFTWARE

* PD-1 GAMES

MENU	BAS	0	B	1
BEAST	BAS	0	B	1
BEAST	DAT	1	A	1
BOBO	BAS	0	B	3
GUNNER	BAS	0	B	2
HOW	BAS	0	B	3
LANDER	BAS	0	B	3
LIFE	BAS	0	B	3
MAX	BAS	0	B	3
POKER	BAS	0	B	2
BIORITHM	BAS	0	B	3
BLACKBOX	BAS	0	B	2
BLOCKADE	BAS	0	B	1
BUSJUMP	BAS	0	B	1
CHUTE	BAS	0	B	2
GO	BAS	0	B	3
HANGMAN	BAS	0	B	2
OTHELLO	BAS	0	B	2
TARTUS	BAS	0	B	1
TARTUS2	BAS	0	B	1

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* PD-2 GAMES

MENU	BAS	0	B	1
RUBIC	BAS	0	B	5
FRACTAL	BAS	0	B	1
KALSCOPE	BAS	0	B	2
TARTUS	BAS	0	B	1
TARTUS2	BAS	0	B	1
WORLD3D	BAS	0	B	4
LIFE	BAS	0	B	2
ADVENT	BAS	0	B	4
ADVENT	DOC	1	A	2
HURKLE	BAS	0	B	2
REVERSE	BAS	0	B	2
GUESSFR	BAS	0	B	2
SCRAMBLE	BAS	0	B	3
PIZZA	BAS	0	B	2
CINQUAIN	BAS	0	B	2

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* PD-3 GAMES

MENU	BAS	0	B	1
AANDAN	BAS	0	B	2
STARTREK	BAS	0	B	9
TREKINST	BAS	0	B	3
SEQUENCE	BAS	0	B	2
ALPHABET	BAS	0	B	3
GEOGRAPH	BAS	0	B	4
FLASH	BAS	0	B	4
BAGELS	BAS	0	B	3
OREGON	BAS	0	B	9
MULTIPLY	BAS	0	B	2

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* PD-4 ML GAMES

MENU	BAS	0	B	1
PONG	BIN	2	B	1
SQUASH	BIN	2	B	2
BLOCKADE	BIN	2	B	2
GERM	BIN	2	B	1
WIGWORM	BIN	2	B	2
GRID	BIN	2	B	2
ZEROG	BIN	2	B	2
3DTICTAC	BIN	2	B	7
HOPBOP	BIN	2	B	5
ICEWAR	BAS	0	B	6
CIVILWAR	BAS	0	B	4
TICTACTO	BIN	2	B	7

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* PD-5 GAMES

MENU	BAS	0	B	1
CAVE	BAS	0	B	4
WARGAME	BAS	0	B	2
WARGAME	BIN	2	B	1
WARGAME2	BAS	0	B	5
WARROOM	BIN	2	B	3
NORAD	BAS	0	B	3
ANDREA	BAS	0	B	5
CURSE	BAS	0	B	4
GARGOYLE	BAS	0	B	6
KINGTUT	BAS	0	B	7
TAIPAN	BAS	0	B	6

DSK-6

SPELL & FIX- FIND
SPELLING ERRORS
IN TXT DISK FILES

MENU	BAS	0	B	1
MANUAL	TXT	1	A	12
SPELLFX2	BAS	0	B	1
SPELLFX2	BIN	2	B	6
SPELLFIX	BAS	0	B	1
DICT	TXT	1	A	33
COREDICT	TXT	1	A	1
SAMPLE	TXT	1	A	1
BUILD	BAS	0	B	1
LIST	BAS	0	B	1
RESET	BAS	0	B	1
APPEND	BAS	0	B	1
ADDWORDS	BIN	2	B	3

PD-7 DISK UTILITIES

MENU	BAS	0	B	1
BASIC64	BIN	2	B	1
BSEARCH	BIN	2	B	1
DISKCOMP	BIN	2	B	1
DISKTEST	BIN	2	B	3
DISKWASH	BAS	0	B	1
DOS64K	BAS	0	B	2
DSDBOOT	BIN	2	B	1
LIST	BIN	2	B	2
PRINT	BIN	2	B	3
PRINTDIR	BAS	0	B	1
RECOVER	BIN	2	B	1
ROMBACK	BAS	0	B	1
ROMFIX	BIN	2	B	1

PD-B DISK UTILITIES

SCRN51	BAS	0	B	1
SCRN51	BIN	2	B	1
SCRNDEMO	BAS	0	B	2
SDC	BIN	2	B	1
SQUEEZE	BIN	2	B	1
SSDBOOT	BIN	2	B	1
TAPE2DSK	BAS	0	B	1
TIMER	BIN	2	B	2
UNLOCK	BIN	2	B	1
BACKUP	BIN	2	B	1
BACKUP1	BIN	2	B	1
MORE	BIN	2	B	3
SPEAK	BIN	2	B	3
PCLEARFX	BIN	2	B	1
MULTBACK	BIN	2	B	1
MULTBACK	DOC	1	A	1

PD-9

TERMINAL PROGRAMS

MENU	BAS	0	B	1
TELETERM	BIN	2	B	3
TELETERM	CAS	2	B	3
TTHELP	DAT	1	A	4
MTERM	BIN	2	B	6
MTERM	VIP	1	A	19
MTCONFIG	BAS	0	B	3
MTERM+	BIN	2	B	6
DATATRDE	BIN	2	B	3
KERMIT	BAS	1	A	1
KERMIT	BIN	2	B	2
HAYESAE	BIN	2	B	4
HAYESAE	DOC	1	A	6

PD-10

COLOR COMP. FORTH

MENU	BAS	0	B	1
FORTHMAN	UL1	2	B	7
FORTHMAN	UL2	2	B	7
FORTHMAN	UL3	2	B	1
FORTH	BIN	2	B	3
EDIT	DAT	1	A	3
FRTHDOC1	TXT	1	A	7
FRTHDOC2	TXT	1	A	7
FRTHDOC3	TXT	1	A	1
FRTHDOC4	TXT	1	A	7
32KFORTH	BIN	2	B	4
NEWFORTH	BIN	2	B	3
WE	BAS	0	B	1

PD-11 MCPAINT

A COMPLETE GRAPHICS
DEVELOPMENT PROGRAM
WITH INSTRUCTIONS

RUN-ME	BAS	0	B	1
MCPAINT	BIN	2	B	11
ICONS	SYS	2	B	3
MCDOC	DOC	1	A	11
PRINTDOC	BAS	1	A	1
GLASDEMO	BIN	2	B	6
STARS	BIN	2	B	2
1940S	SET	2	B	1
BLOON	SET	2	B	1
BOLD	SET	2	B	1
FANCY	SET	2	B	1
GREEK	SET	2	B	1
GREEKU	SET	2	B	1
HEBREW	SET	2	B	1
OLDENG	SET	2	B	1
TYPING	SET	2	B	1
EPSON	DRV	2	B	1
EPSON2	DRV	2	B	1
ANIMATE	BAS	0	B	1
ANIMAT	BIN	2	B	1
BANNER	BAS	0	B	2
MCUTIL	BIN	2	B	1

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* PD-12

PMODE 4 PICTURES

CHURCH, ROSES,
RUN"PIXFILES"JOY-
STICK IS REQUIRED

XIXCMP	BAS	0	A	3
OUTPOST	BAS	0	A	3
OUTPOST	BIN	2	B	3
SFIELD	BAS	0	A	2
SFIELD	BIN	2	B	3
PIXFILES	BAS	0	B	3
TRUCK	BIN	2	B	3
MODEM	BIN	2	B	3
HORSE	BIN	2	B	3
MISSION	BIN	2	B	3
CLOISTER	BIN	2	B	3
RAIN	BIN	2	B	3
EAGLE	BIN	2	B	3
ROSES	BIN	2	B	3
CHURCH	BIN	2	B	3
GARDEN	BIN	2	B	3
PRES	BIN	2	B	3
LONI4	BAS	0	A	3

PD-13

GRAPHICON PICTURE
DISK-1. REQUIRES
PIXFILES/BAS FROM
PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-14

GRAPHICON PICTURE
DISK-2. REQUIRES
PIXFILES/BAS FROM
PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-15

GRAPHICON PICTURE
DISK-3 REQUIRES
PIXFILES/BAS FROM
PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-16

GRAPHICON PICTURE
DISK-4 REQUIRES
PIXFILES/BAS FROM
PD-12 & JOYSTICK

PICTURES GCM 1 B 68

PD-17 DISK UT.

64KBHW	BAS	0	A	1
AUTOSTRT	BAS	0	B	1
BAKDIR	BAS	0	A	3
BIN›BAS	BAS	0	A	1
CASSLABL	BAS	0	B	1
CURSOR	BAS	0	B	1
CUSTOM	BAS	0	B	3
CUSTOMIZ	BAS	0	B	1
DIR	BIN	2	B	1
DIR32	BAS	0	A	2
DIR32C	DOC	1	A	3
DIRLISTR	BAK	0	B	1
DIRLISTR	BAS	0	B	1

PD-18 TAPE TO DISK
DISK UTILITIES

DIRSORT	BAS	0	A	1
DISK-DIR	BAS	0	A	1
DISKLABL	BAS	0	A	1
LOADSOLU	BAS	0	B	1
MENU	BAS	0	B	1
PDIR	BAS	0	A	1
SORT	BAS	0	B	1
SORTPRT	BAS	0	B	1
SORTSAVE	BAS	0	A	1
SOULTION	BIN	2	B	1
SUPERBAC	BIN	2	B	1
T2D	BIN	2	B	2
TIMER	BAS	0	B	1
TPTODSK	BIN	2	B	1

---

* PD-19 GAMES

3DMAZE	BAS	0	A	2
BOXES	BAS	0	B	1
CLOSE EN	BAS	0	B	2
CRITICAL	BAS	0	B	1
GAMMON	BAS	0	B	3
GOLDMINE	BAS	0	A	3
HOCKEY	BAS	0	A	1
HOGJOWL	BAS	0	A	8
HORSERAC	BAS	0	A	3
JUMPING	BAS	0	B	1
KALIDESC	BAS	0	B	1
MASTMIND	BAS	0	B	1
MEMORY	BAS	0	B	1
MOONBASE	BAS	0	B	2
NAMES	BAS	0	B	4
OTHELLO	BAS	0	B	4

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* PD-20 GAMES

PEG	BAS	0	B	3
RABBIT	BAS	0	B	1
SAFE	BAS	0	B	2
SAUACER	BAS	0	B	1
SHOOTEM	BAS	0	B	2
SIMMON	BAS	0	A	1
SLITHER	BAS	0	A	2
SPACE WA	BAS	0	B	4
STAR TRE	BAS	0	B	1
SUBCHASE	BAS	0	B	2
SUBDESTR	BAS	0	B	2
SUNDANCE	BAS	0	B	2
TANKS	BAS	0	B	2
TOWER	BAS	0	B	2
UNDROVER	BAS	0	B	1

PD-21 MUSIC

PLAY MUSIC THROUGH
YOUR TV OR MONITOR.
COMPOSE,EDIT MUSIC.

ORCH	BIN	2	B	8
ORCH	DOC	1	A	3
OCNVRT	BIN	2	B	2
GHOSBUST	MUS	4	M	3
STELMO	MUS	4	M	2
MASH	MUS	4	M	2
BOND1	MUS	4	M	2
2001	MUS	4	M	2
ARIA	MUS	4	M	2
INVENTI	MUS	4	M	1
BATTSTAR	MUS	4	M	2
BOND2	MUS	4	M	2
CLOSENCT	MUS	4	M	2
SCARBORO	MUS	4	M	1
FUGUEINC	MUS	4	M	1
MINUET	MUS	4	M	1
LONGTIME	MUS	4	M	2
MESSIAH	MUS	4	M	3

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* PD-22 MUSIC-1

LOADM "NAME/MUS"
EXEC TO PLAY MUSIC
THROUGH TV OR MON.

ADDPLAY	BAS	0	B	1
DEPLAY	BAS	0	B	1
MSQUEZ	BAS	0	B	2
ALSOSPAK	MUS	2	B	5
BOOGIE	MUS	2	B	5
CIRCUS	MUS	2	B	5
CLOWN	MUS	2	B	2
CLOWNS	MUS	2	B	4
HAYDEN	MUS	2	B	8
JBGOOD	MUS	2	B	4
PEACE	MUS	2	B	2
PEACH	MUS	2	B	5
PUFF	MUS	2	B	6
GOODDIEY	MUS	2	B	4

PROGRAMS! PROGRAMS! and even more PROGRAMS!
from Bill Bernico Software

Response from my Rainbow ad (May '88 - Page 56) was so great that I'm extending my offer. I'm selling ALL 7 of my "Pack" disks at half price. That's right, you'll get COCOPACK, FUNPACK, VALUPACK, SUBPACK, UTILPACK and 3-PACK (Volumns 1 & 2). These 'Pack' disk originally sold for $6 EACH! Now they can be yours for the low low price of just $21.00. That's HALF PRICE! I'll even pay shipping and handling. $21 is all you pay. You'll get games, graphics, utilities, tutorials, educational, home help, disk management, font styles, printer, music, graphic lettering and input programs and many more useful, helpful and entertaining programs for your CoCo 1, 2 AND 3 . Over 230 programs in all, and over 50 of those are for the new CoCo 3. The graphics are terrific.

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COCOPACK - Over 60 programs, featuring selections from all catagories. Many graphic screen fonts.

FUNPACK - This disk includes additional and expanded fonts as well as 'CoCoSize', the exercise program for the Color Computer. (See the Rainbow review April '87 page 143 for details)

VALUPACK - This disk could have been called CoCoPack II because it contains dozens more programs in lots of catagories.

SUBPACK - Attention programmers! Here's a disk crammed with dozens of handy subroutines for you to use in your own programs. Throw dice, deal cards, display text on the graphics screen (CoCo 1&2) and much more!

UTILPACK - Find ML addresses, format your printer, figure business and finance deals, or calculate camera settings. These are just SOME of the many Utilities you'll find.

3-PACKs - Volumns 1 and 2 of contain many many programs just for the Color Computer 3. The graphics capabilities of this marvelous machine make it a natural for exciting games, graphics, and all the other catagories as well. A must for your growing collection of CoCo 3 programs!

Just to see if you're paying attention, for anyone who orders this collection of my goodies, I'll throw in disk number 8...it's called 3-PACK (Volumn III) and it's loaded with many more goodies just for the Color Computer 3. Remember, $21 will get you 8, not 7 disks. U.S. funds only. Send cash, check or money order only to:

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Do you want to learn to interface your computer using the joystick port? We had a series on this with example programs for making a voltmeter, thermometer,ohmmeter, and light meter.

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