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the RAINBOW

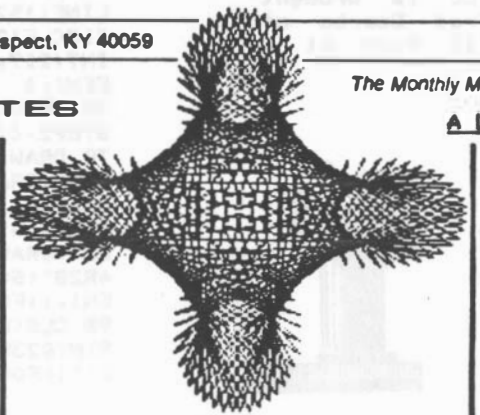
5803 Timber Ridge Drive • Prospect, KY 40059

Vol. I No. 6

The Monthly Magazine for Color Computer Users

EDITOR'S NOTES

We're sure you notice a few different things about the RAINBOW this month. The main one being the format. From now on, your favorite Color Computer magazine will look like a magazine. We hope you will find it easier to use and enjoy. Frankly, we're very proud of it.



(Graphic by POLYGON — See Page 7)

Inside, you'll find the usual collection of programs, hints, tips, games and other information devoted exclusively to the Color Computer that have caused so many of you to write or call with your good comments. We've yet to get a complaint ... which must be some kind of record (of course, now we will just because we mention it)! That's OK, we want to know what you want.

For all those (and there are hundreds) who have written about back issues, please pardon us for not responding individually. There just simply hasn't been the time. There's a notice inside about them, and if you're interested, please read it and try to consider it a personal letter. When we do print back issues, we'll probably only do enough so that we can handle the paid-up requests on hand.

Also, if the RAINBOW is a little later than usual, its because

(Continued on Page 8)

A LATE BULLETIN!

DISC SAVEM

Despite what it says in some parts of the Color Computer Disc manual, the SAVEM command which is used to save machine language programs will NOT work if you use hexidecimal numbers.

Tandy's "Color Computer Disc System" manual, on page 61, says that, just as in the tape versions, you must specify starting, ending and execute addresses in order to save machine language programs. It then adds: "Use the hexidecimal numbers for all these addresses."

Don't do it that way. It just won't work. Nor will it work if you use the "&H" prefix to decimal numbers, either. Just use the addresses in plain old, ordinary, run-of-the-mill decimal numbers (base 10 for the technically-minded).

This tidbit should save you quite of a bit of time and a lot of frustration.

Inside.....

Color Disc Systems Compared...
Fantasy Game Aids...
Two Great Games...
Hints and Tips...
Product Reviews...
Much More...

ZELDA AND HER BATS

What does a witch need more than anything else? Other than her broomstick, its got to be a bat. And there are a lot of them in this program from Illustrated Memory Banks.

ZELDA'S BAT BOTTLE is brought to you courtesy of Fred Scerbo of IMB and we think you'll find it a lot of fun to play.

As most of you undoubtedly know, witches need all kinds of special things to make their magic potions. Bats happen to be one of them and, in the instant situation, Zelda needs 10 of them. You need to help her zap them, fill up the bottle, and do it as quickly as possible. ZELDA'S BAT BOTTLE will tell you how long it takes!

From Zelda's Bat Bottle by F. Scerbo, © 1981

ZELDA'S BAT BOTTLE is copyrighted by Illustrated Memory Banks and may not be dublicated. You are authorized to make two copies for your single end use. For permission to make additional copies, contact IMB at P. O. Box 289, Williamstown, MA, 01267.

Incidentally, you might pay special attention to the graphics. You will notice they are a little different than those which have been presented in the RAINBOW in the past but are extremely attractive! We think you'll like this one ... and will have some fun helping Zelda out.

The Listing:

```
10 CLEAR500:CLS(0):PMODE3,1:COLO
R3,1:PCLS(0):SCREEN0,1:LINE(20,8
)-(234,92),PSET,B:DRAW"BM5,20U8R
5D8U4L5":DRAW"BM5,32U8F5D3U8"
20 COLOR4,2:LINE(28,16)-(60,84),
PRESET,BF
30 LINE(68,32)-(104,84),PRESET,B
F:CIRCLE(86,32),20,2,.9,.52,.98:
PAINT(86,19),2,2:PSET(86,15)
40 LINE(108,32)-(144,84),PRESET,
BF:CIRCLE(126,32),20,2,.9,.52,.9
8:PAINT(126,17),2,2:PSET(126,15)
50 LINE(152,16)-(212,48),PRESET,
BF:CIRCLE(212,32),18,2,1,.77,.23
:PAINT(215,17),2,2:PSET(230,32):
LINE(152,52)-(212,84),PRESET,BF:
CIRCLE(212,68),18,2,1,.77,.23:PA
INT(217,53),2,2:PSET(230,68):SCR
EEN1,1
60 PMODE4,1:SCREEN1,1:FORI=1TO48
STEP2:CIRCLE(60,144),I,8,.9:NEXT
70 DRAW"BM140,104;C0L28D80R28U34
L12":DRAW"BM144,184;C0U80R28D80U
34L28"
80 DRAW"BM176,184;U80R18ND46R18D
80":DRAW"BM244,104L28D46R28L28D3
4R28":SOUND200,1:SOUND200,1:SCRE
EN1,1:FORI=1TO1000:NEXT
90 CLS(0):PRINT@172,"ZELDA'S";:P
RINT@238,"BAT";:PRINT@300,"BOTTL
E!";:FORI=1TO1500:NEXT
```

(Continued on Page 18)

the RAINBOW
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Lawrence C. Falk — Editor

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The RAINBOW is published every month of the year.

A TALE OF TWO DISCS --

By Lawrence C. Falk

A couple of months ago there were no disc systems available for the Color Computer. Now there are two. One, as was mentioned in the RAINBOW's November issue in a brief overview, is from Tandy and the other, also fairly recent in plans and announcement, is from Exatron -- the makes of the "Stringy-Floppy" system they advertise as the "poor man's disc."

We have yet to physically see an actual copy of the Exatron system (we've asked), although we have a pretty good understanding of its operation from a number who have. Frankly, we tried to get a review copy from them, but they were close-to-the-vest about it.

That doesn't color this review, however, and we provide that information only so you can judge the comments we make. Although the RAINBOW's policy is pretty strict about not reviewing unseen software or hardware (for your protection), we felt our information to be excellent on the Exatron -- we basically trust our sources -- and we do have the Tandy system in hand. In view of the interest in discs, we present this information here.

We hope it will guide you if you are in the market for a disc system, now or in the future.

(Continued on Page 4)

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DISCS (Cont'd from Pg. 3)

As previously reported, the Tandy disc system is based in ROM, except for about 2K for system RAM, file buffer allocation and file control blocks for the file buffers. This makes the "bottom of user RAM" start at about Hex DD4 rather than the familiar Hex 0600 (decimal 3540 instead of decimal 2441). The memory locations are allocated dynamically, depending on the number of file buffers you specify, so the available user memory could be less.

By contrast, Exatron uses that 16K above the user area (so does Tandy for is Disc Operating System (DOS). Apparently the buffers for Exetron are up there, too.

Hopwever, Exatron allows the use of only 11 file buffers rather than Tandy's 15. While file buffers may seem to be something very "extra," we can certainly anticipate a number of applications when the extra ones Tandy provides would be extremely helpful.

Again as to file buffers, Tandy automatically defaults to three -- Exatron requires you to set them. It seems just another thing to worry about.

To us, however, the biggest concern is the Exatron system supports single-density discs only. That's something like 87,000 bytes per disc. The Tandy system holds more than 157,000 bytes. A most significant difference! Perhaps Exatron -- which has a feature that allows conversion of Model I discs to Color Computer -- did it for this reason. However, it is, to our mind, a great waste of storage space.

We must say the DOS for both seems about the same. There are the "SAVE", "RUN," "FORMAT," "BACKUP," "DIR (or) CAT," "COPY," "RENAME", "KILL" and other similar commands. As we reported last month, the DOS for Tandy is pretty much the same as for Model I-III. So is Exatron. You can "VERIFY" saves, load in either machine language or ASCII formats. Exatron does allow for downloading ROM Carts. Tandy doesn't (but, since they sell them, you wouldn't expect them to).

Tandy does allow you to set the record length while record lengths for Exatron are set at 255. Thus, you can "pack" more records in the Tandy system - and this is treated rather extensively in the excellent (as always) Tandy documentation.

In conversations with Exatron, I have been told they feel their RAM-based system superior, because it makes for easier updates. But, the Tandy system can be upgraded by a new ROM chip. Given Tandy's support for its systems, we would expect there will be upgrades available as (and if) necessary.

Both directory listings leave a bit to be desired, without the full information you get with Model III or II. Also, neither system has password protection, disc names, invisible/noninvisible files nor search through all drives (in a multi-drive system) for a specific file name. You have to specify the drive. However, you can designate the drive out of which you wish to operate.

Both systems are basically transparant to the user, which means you can pretty much run BASIC and not worry about the DOS until you want it. I think this is an advantage. If you have been saving data on tape, its a fairly simple edit to change tape I/O to the disc I/O. Needless to say, the file transfer beats tape hands down!

As to price, the Tandy system is really less expensive -- and you can get the whole package in one box. Exatron sells the DOS system, but you need to order your drives elsewhere.

Documentation: We've only seen the premilinary Exatron version, and it seems to be good. As to Tandy, it is in the usual attractive Color Computer format. There are some gaps, particularly in the examples which have heavy emphasis on embedded data. The sample programs

(Continued on Page 17)

HERE COME THE VIPERS

Here's one we think you'll enjoy.

Dave Hooper submits this program, called VIPER ATTACK, which is, he admits, a first effort in game programming. I am sure most of you will agree that it certainly doesn't appear to be a first effort and that it is a lot of fun to play.

There are still a few refinements coming for VIPER ATTACK. When available, Dave plans to market this program. Because some of the special niceties, like on-screen scoring, are not included, you can type it in and run it, courtesy of Dave and the RAINBOW.

Pay careful attention to the nasties! There are a number of different kinds, and we think you'll appreciate the graphic detail with which Dave has concerned himself. As he wrote the other day, it can be a frustrating experience trying to get just what you want.

If you want a tape version (tired fingers?) Dave will be able to supply same for $9.95 plus $1.50 postage and handling. The address is 4490 N. Mumford Dr., Hoffman Estates, IL, 60195.

Watch out for the Vipers! Here's the listing:

```
10 Y=32:X=2:U=62:V=2
12 Z$=CHR$(133+80)
14 PRINT@0,STRING$(32,Z$)
16 PRINT@Y,STRING$(X,Z$):Y=Y+32
18 PRINT@U,STRING$(V,Z$):U=U+32
20 PRINT@Y,STRING$(X,Z$):Y=Y+32:
X=X+2
22 PRINT@U,STRING$(V,Z$):U=U+30:
V=V+2
24 IFY<416THEN16
26 PRINT@416,STRING$(32,Z$)
28 FORH=0TO63
30 FORV=28TO31
32 SET(H,V,3)
34 NEXTV,H
36 PRINT@75,"VIPER";
38 PRINT@108,"ATTACK";
40 PRINT@174,"BY";
42 PRINT@234,"DAVE HOOPER";
44 A$="T255;L255;O5BAGFEDCO4BAGF
EDCO3BAGFEDCO2BAGFEDCO1BAGFEDCP5
"
46 PLAYA$+A$:PLAYA$+A$:FORT=1TO1
000:NEXTT:CLS
48 PRINT@224,"DO YOU REQUIRE A B
RIEFING BEFORE"
50 PRINT@256,"YOU ASSUME COMMAND
 OF THE BASE "
52 INPUT"DEFENSE PATROL (ENTER Y
 OR N)";B$
54 IFB$="N"THEN100ELSEIFB$="Y"TH
ENGOSUB6000
100 PCLEAR4:PMODE3,1
105 PCLS(3):COLOR2,3
110 SCREEN1,0
115 DIMA(13),B(9),C(3),D(7),E(14
),F(6),G(6),H(11),J(20)
130 DRAW"S4;BM188,68R4F4D8G4L4E4
U3NL13U1NL13U4NH4BD3L12G1D1BR2D3
F3L3H3U8E3R3G3D3"
135 GET(178,68)-(196,84),B,G
140 LINE(178,68)-(196,84),PRESET
,BF
145 DRAW"S4;BM0,8F3NG1R5NF1E3R1F
3G1NL5BE1R5NF1E3":PAINT(11,10),2
,2
150 GET(0,8)-(23,12),C,G
155 LINE(0,8)-(23,12),PRESET,BF
160 DRAW"S4;BM222,6ND1R11D1L3NL8
ND3BR1D3L3G1F1R12E1H1L2NE5L2NL6E
5R4E1H1L8G1F1R1":PAINT(232,11),2
,2
170 GET(222,3)-(246,12),D,G
175 LINE(222,3)-(246,12),PRESET,
BF
180 DRAW"S2;BM216,80F8NE4D4NG8F4
E4NF8U4NE8H4"
185 PAINT(222,86),2,2
190 GET(216,80)-(240,100),E,G
195 LINE(216,80)-(240,100),PRESE
T,BF
200 DRAW"S3;BM58,86E2F4NR16E6R4F
6E4F2":PAINT(69,85),2,2
205 GET(58,81)-(86,88),F,G
210 LINE(58,81)-(86,88),PRESET,B
F
215 DRAW"S4;BM56,104G2F8E8H2BD12
E2H8G8F2BR4BU4R4BU4L4":PAINT(62,
110),2,2
220 GET(54,104)-(70,116),G,G
225 LINE(54,104)-(70,116),PRESET
,BF
226 FORI=1TO50:X=RND(256)-1:Y=RN
D(150)-1:PSET(X,Y,2):PLAY"T255L2
5504GE":NEXTI
230 DRAW"S4;C1;BM148,182NH4L6G2D
2F2R20E2U2H2L6NL8E4U2G2L12H2ND2E
4R8F4"
235 CIRCLE(152,175),1,1:CIRCLE(1
45,185),1,1:CIRCLE(159,185),1,1:
PAINT(152,180),1,1
240 GET(140,172)-(164,188),H,G
```

(Continued on Page 16)

GAME AIDS #1...

RANDOM NUMBERS MAKE EASY FUN!

By JOHN L. URBAN

When I first started my data processing classes in college, the subject of computers and Fantasy Role-Playing (FRP) games came up when each student was asked to state his or her goals in learning to program.

Each of us, in turn, explained our ambitions until, in the back of the room, a married couple said they wanted to incorporate use of their computer into a FRP game. The instructor, not being familiar with micro-computers in the home, proclaimed this to be an interesting thought, but he did not see how that would be possible.

One of the unwritten rules of the hobbyist programmer is: DON'T TELL ME IT CAN'T BE DONE! This series of articles, explaining how the Color Computer can be used as an aid to the referee of a FRP game, is dedicated to those people who say "It can't be done."

The Color Computer has a very powerful BASIC, one of the best written and most popular on the personal computer market today. I refer, of course, to the Microsoft BASIC, used in all TRS-80 computers, including the Color Computer.

One of the best functions included in Microsoft BASIC for the Color Computer is the RND (Random) statement. Why is the Color Computer's RND any different from that of other BASICS? I'm glad you asked.

(Continued on Page 18)

For the COLOR COMPUTER:

You just spent your vacation money on the Extended BASIC Color Computer, and now you want to buy software!!!???

Don't skip meals — get CHROMASETTE Magazine! Each month your computer will get a balanced diet of 6 or more programs on cassette (just load and run!). Along with the tape comes some notes on the programs, along with tidbits on the Color Computer world.

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letters to....

the RAINBOW
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Editor:

I want to extend my congratulations on the fine work you are doing. I've been waiting for quite a while for a magazine that truly is helpful and covers the Color Computer.

David Sharma
Mississauga, Ont.

* * * * * *

Editor:

I'm a mathematician who, initially, wanted to promote myself — microcomputerwise — to higher things after learning BASIC and Assembly. For the foreseeable future I'll stick with the TRS-80CC. It could be the hottest item on the microcomputer market and I'm sure you'll grow with it.

Talk about Tandy having a "tiger by the tail!" I really don't think they knew what they had when they introduced it. Let's hope they support it like they should.

John Wilkinson
Santa Barbara, CA

* * * * *

Editor:

I just received my first issue and think your magazine is great! Color Computer owners are finally getting some good quality programs.

Thank you.

LaDell Penman
Montrose, CO

* * * * *

Editor:

First of all, congratulations on continuing to publish a first class magazine. I really look forward to each issue since they are normally full of good tips and excellent programs.

Let me make a couple of suggestions:

1. Allow sufficient margin on the left for punching holes for individuals like myself can keep copies neatly filed in a three-ring binder.

2. Encourage the development of USEFUL programs in addition to games. You may want to indicate a need for same in future issues.

3. Don't forget an annual issue which will include an index.

Thank you again for a very fine magazine. I wish you continued success.

Jorge Mir
New Berlin, WI

(Ed. Note: The printer willing, we'll have space for hole-punching this month. And Mr. Mir is right, we would like more non-game programs (although we don't want to downgrade games and fun, either). If you have something you've been using, send it it for consideration! We'd enjoy having the opportunity to look at and share it.)

* * * * *

Editor:

I'm impressed with the RAINBOW! I purchased the Color Computer to develop educational materials for language teaching, linguistics and teaching various subjects to your children. I chose the Color Computer because it can control the tape recorder with ease and most of the excercises I am developing require ORAL listening comprehension.

I tried the Apple II SUPERTALKER, and although it can access oral data randomly, it is not cost effective and the quality of the oral data is poor.

I'd like to see more educational applications and I also have a question. In Apple we can initialize the disc with a HELLO program which is run as a turnkey when the machine is turned on. Can anyone help me with this for the Color disc?

I'd also like to be able to control the REWIND and REPEAT and tell the students to press PLAY on the recorder. Can anyone help?

Dr. Marno Soemarno
Ohio University

* * * * *

Editor:

I read your review of MASTER CONTROL and agree in principle that its a handy utility. I can't figure out how to use it well since the documentation was not clear (maybe I didn't get any) and quite incomplete. Also, a fair PACMAN is available from Soft Sector Marketing and a superior one from Computerware, Encinitas, CA.

I suggest Mr. Bauner (Nov. "Letters") obtain MAGIC BOX from Spectral Associates, Tacoma, WA. Not only will he be able to translate Model I/III BASIC tapes, but further information is in the documentation.

Michael Potts, M.D.
Nashville, TN

* * * * *

Editor:

CINTUG, the Cincinnati TRS-80 Users Group, meets on the second Saturday monthly and its newsletter ($12 a year) contains considerable useful information about the Color Computer.

Those interested can contact me at 44 Dow Court, Fairfield, OH 45014.

Dick White
Fairfield, OH

* * * * *

Editor:

Please enter my subscription. I wish you the greatest success.

Greg Wilson
Potts Point
Australia

* * * * *

RANDOM GRAPHIC FUN

Here's a nice short program that will bite the Apple right down to the core!

Robert Foulke contributes this little gem that will generate random-type graphic images that are beautifully geometric. If you have a screen print programn, you can get some super-fantastic printouts!

In the fourth program line, where you have the option of changing the RND number, try 3 or 30 first. These can produce some exceptionally fine graphics. But, as Robert says, any number will do.

We believe you'll really like this one. It can be extremely entertaining.

The Listing:

```
10 ' R. FOULKE - 1981
20 ' "POLYGON"
30 PMODE 4,1:PCLS:SCREEN1,1
40 PI=3.14159:M=RND(90)
50 FOR T=0 TO 2*PI STEP PI/75
60 R=COS(M*T)*95
70 X1=COS(T)*R+128:Y1=SIN(T)*R+9
6
80 A=T+PI/3
90 R2=COS(M*A)*95
100 X2=COS(A)*R2+128:Y2=SIN(A)*R
2+96
110 LINE (X1,Y1)-(X2,Y2),PSET
120 NEXT T
130 FOR T=1 TO 800:NEXTT
140 GOTO30
```


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ED'S NOTES (Cont'd from Pg. 1)

we have been forced to go to bulk mail. Frankly, we've grown so fast we just cannot afford to use first class postage (and we want to keep our subscription rate at $12 a year for 12 issues). Actually, the RAINBOW was MAILED earlier this month than ever before.

Next month: A new game or two, some plans for building a desk/table to put all this equipment you're collecting on, a very useful article on flowcharting (it can be important), a neat card-shuffling routine that works in 4K(!) easily, some machine language tidbits, more reviews and at least one "practical" program we think you'd like to have.

Thanks, again, for your support. We've grown more quickly that we ever thought we would, and we have even bigger expansion plans. And, again, tell your friends about us, patronize our advertisers, and -- if you have a favorite computer store -- you might mention us to them. We've got a good deal for retailers on single copy sales.

Until 1982!

CHROMASETTE MAGAZINE

Chromasette isn't really a magazine in the traditional sense, but it is a tremendous amount of fun and something to anticipate each month (just like you do with the RAINBOW)!

Chromasette (P.O. Box 1087, Santa Barbara, CA 93102, $45 a year, $25 for half a year) comes to you on a cassette tape with six or more programs every month, ranging from games to interesting fun things that will amuse and delight you.

In addition, you get a little insight into how the programs work and some good information about the Color Computer. And Dave's (the intrepid editor) graphics -- especially the monthly cover -- will really set any Color Computer doubter on his ear.

Chromasette is from the same genere of Cload, and, admittedly, some of the programs are adaptations. That's no problem, because, frankly, adapting even non-graphic programs is time-consuming. If you figure what your time is worth, the subscription is a bargain.

Some of the programs which have been offered thus far test the fancy of almost everyone. Of particular note is DRAWER, which really lets you control drawing on the hires graphic screen. My favorite, however, is MCJUMP, where you try to work your way up to a jump over 20 barrels. The graphics are really good.

JERUSALEM ADVENTURE tests your wits against several problems, including murderous arabs (fiendish Dave is not prone to hints, even if you beg!), and I really enjoyed TWO DATES, a days-between-dates program with a creative twist and format. There have been a "Simon"-like MUSICPAT game, a frustrating but enjoyable NERVES maze game and, for you going into business, PHONEWD -- a program that lists all the possible letter combinations of your telephone number.

A FORM OF "CSAVE?"

For those who are most concerned that there is no "CSAVE?" command available with the Color Computer, there is a way to almost duplicate this process.

CSAVE? is a Model I/III command which allows you to, after loading a program to tape, rewind the tape and run the program back through to compare what's on the tape byte-for-byte with that which is in memory. It does not erase memory. So, if you have a problem with the tape version, you can just CSAVE again.

Remember, this works for Model I/III, but it is not supported for the Color Computer. That's one of the reasons many of us have to clog up our tapes with multiple saves. For the Color Computer, once you CLOAD, the program in memory is erased.

However, there is the SKIPF command. SKIPF only compares byte-for-byte on the tape leader, not the program itself. On the surace, it seems this doesn't do a whole lot of good for the program itself.

But, as Dick White of Fairfield, Ohio, points out, the errors you get when loading to tape are I/O errors. And SKIPF does react to those! Further, SKIPF, like CLOAD?, does not erase memory. So try SKIPF to verify saves, although you could still get garble because there is no actual comparison of the program itself. Still, it is better to have to fix the garble than to sit there with a tape that won't load, period!

This really just touches on the programs which have been available in the first four issues, with many more to come. In short, Chromasette is a real treasure chest of fun and help for Color Computer owners and would be an ideal Christmas present to give yourself.

AIDS (Cont'd from Pg. 6)

Run the following program:

```
10 PRINT RND(0)
```

After running the program, you should see a number on the screen with a decimal point to the left. The number will look something like .332515079. Type NEW, press <ENTER> and run this program next:

```
10 FOR I=1 TO 5:PRINT RND(0);
     " ";:NEXT I
```

You should see five different numbers, between 0 and 1. What the RND(0) does is compute a number between 0 and 1. This is a common feature on most personal computers in generating random numbers.

But what good is a random number between 0 and 1? Not much, actually. Not many programs require a random number that is less than 1. In reality, a computer is a glamorized calculator. It can add, subtract, multiply and divide. A decimal number is nothing more than a number in base 10 (1, 10, 100, 1000, etc). The same is true of numbers less than 1, (.1, .01, .001, etc).

Run the following program:

```
10 X=RND(0)
20 PRINT X, 10*X, 100*X
```

What you should see are three numbers with the decimal point in three different places: The first to the left of the number, the second after the first number, and the third after the second number.

Run the program a few more times. Each time there will be a different number with the same decimal format.

In programming, these numbers are referred to as "real" numbers. But even a number like 67.7321187 it is not very useful if we needed only the number 67. Add this line to the program:

```
30 PRINT (INT X*100)
```

Now run the program. There should be four numbers on your screen, all the same except for the position of the decimal point, and ... the first two numbers without the decimal point and all numbers to the left of the decimal point. The INT in Line 30 tells the computer to print only the "whole" numbers, or numbers to the left of the decimal point. So now we have a more functional use for the RND statement. But what if you need only a number from 1 to 20, or 1 to 4, or 1 to 10?

Add this to your program:

```
40 PRINT INT(X*20)
```

Run the program a few times. What you should see is that the new number is not the same as the other numbers. Why is this number so different from the others? Let's say the computer chooses .2996951 as the real number. By multiplying by 20, the result will be 5.993902. Adding INT will print only the number to the left of the decimal point. So now, the answer will be 5. Line 40 will create a number from 0 to 19. But wait. We wanted a number from 0 to 20, not 0 to 19! By changing Line 40 to:

```
40 PRINT INT(X*20)+1
```

we can generate a number from 1 to 20.

Okay. So now we have any number we want randomly selected by using RND(0). But the Color Computer manual has numbers like RND(10) and RND(100). What about them?

Well, finally we come to the reason why the Color Computer's RND function is different (and in most cases, vastly superior) from other BASIC's.

Even though the Color Computer has the capability of creating a random number using RND(0), we can use the highest number needed as the argument. NEW the program and type this in:

```
10 PRINT RND(20)
20 FOR I=1 TO 500:NEXT I:GOTO10
```

(Continued on Page 11)

CPRINT

If you want things formatted to your printer simply and easily -- things like line length, page length and skip-over perforation -- then CPRINT from Micro-Labs, Inc., is probably for you.

CPRINT is a ROM Pack which plugs into the Cart slot on the side of your Color Computer and allows you to control many of the functions you could not control before (without complicated line counting software that you had to write yourself).

Even more important, CPRINT

(Continued on Page 12)

AIDS (Cont'd from Pg. 10)

Let the program run for a while. You should see random whole numbers from 1 to 20 printed on your screen. With this function, you can change the number to fit into your FRP game any way your wish. This means you can have a number from 0 to 20, 1 to 20, 0 to 100, or whatever.

One final note. The RND function is not actually a completely randomized number. It is actually what is referred to as a "pseudo-random" number. The computer, in some mysterious way, plucks a number from its memory and computes a number via a routine in its ROM, returning the new number. In this way, the computer appears to be choosing a new random number each time one is called for.

While this month's opening of the series on FRPs is more in the nature of a tutorial on random numbers and their generation, next month's issue of the RAINBOW will explain how I use this function to generate a character, and, also, how PRINT USING can be used to format the screen so that it will be right-justified.

Till then, may Odin show favor upon your quests!

KOSMIC KAMIKAZE

KOSMIC KAMIKAZE has one of the best spaceship graphics we have seen in non-machine language hires graphics. It also has an interesting format, a good signature and is pretty challenging to play.

Available from Illustrated Memory Banks (IMB, P. O. Box 289, Williamstown, MA 01267 for $18.95), it has plenty of options that require a quick finger on the old joystick.

The game pits your spaceship in an uncharted area of the universe amid a whole raft of alien-type pirate ships. Each of the ships looks different, and that is part of the charm of the game. Depending on the difficulty level you select, you get seven, four or two shots to wipe out the pirate vessel before it zaps into hyperspace and shows up in a new location. To make things somewhat easier for you, the pirates warn you before they shoot back, but you need to be extremely quick to activate a defensive shield in time. You start out with five shields, but can earn more.

There's also a comet that can't be defended against by shields. It moves very fast, but you get a big bonus for hitting it.

COSMIC KAMAKAZE takes a little getting used to. You have to hit the pirates (and the comet) just right in order to destroy them.

IMB has employed the now-famous POKE command to speed up the action. However, on some versions of the Color Computer, that will hang things up when the PLAY command is used. This caused us a few problems until we eliminated the POKE and, frankly, the action is fast enough without it.

Yet, these are but minor annoyances in a game that is fun to play and requires some real skill to score well, even at the beginner's level. Its more than a plain old shoot-em-up and it certainly demonstrates what a little patient programming can do in creating non-machine language graphics.

MACHINE TAPE FINDER/SAVER

By JORGE MIR

The short, simple program listed below will allow you to copy machine language programs onto a cassette tape.

```
10 REM *** FINDER ***
20 CLS
30 PRINT "PROGRAM:"
40 FOR X=474 TO 481
50 Y=PEEK(X):IF Y=32 THEN Y=143
60 POKE X+559,Y
70 NEXT X
80 A=PEEK(487)*256+PEEK(488)
90 B=PEEK(126)*256+PEEK(127)-1
100 C=PEEK(157)*256+PEEK(158)
110 PRINT"       DECIMAL",
      " HEX"
120 PRINT"       -------",
      " ---"
130 PRINT"START: "A,"  "HEX$(A)
140 PRINT"  END: "B,"  "HEX$(B)
150 PRINT"ENTRY: "C,"  "HEX$(C)
160 PRINT:INPUT "HOW MANY
      COPIES OF THIS PROGRAM
      DO YOU WISH TO MAKE";N
170 IF N=0 THEN END
180 PRINT:INPUT "WHAT IS THE
      TITLE YOU WISH TO   USE
      FOR THIS PROGRAM";A$
190 A$=LEFT$(A$,8)
200 FOR X=1 TO N
210 CSAVEM A$,A,B,C
220 PRINT@416,"COPY"X"COMPLETE"
230 MOTOR ON
240 FOR Y=1 TO 1000:NEXT Y
250 MOTOR OFF
260 NEXT X
270 END
```

CPRINT (Cont'd from Pg. 11)

holds on to control even during the LLIST command, which means you can have format control for your line listings. We hope all you readers of the RAINBOW appreciate that, since we try to format our listings to the 32-character screen to make it easier for you to enter programs. CPRINT makes this possible.

CPRINT (available for $49.95 from Micro-Labs, Inc., 902 Pinecrest, Richardson, TX, 75080) also converts your serial output to parallel, which means -- especially in the case of the LP VII -- the throughput is faster because you are not tied to the 600 BAUD rate. It can also be used with other printers which use a parallel interface.

BACK ISSUES

Many of you have asked about back issues of the RAINBOW. So many, in fact, we simply haven't been able to respond individually. We're sorry. We have had a great deal of difficulty keeping back issues in stock because of the overwhelming demand for them.

However, we plan to print a special "back issue" edition of all copies to date, and these special issues will be available in the next month. They will sell for $2 each (or the regular single-copy price), plus a special $2.50 mailing charge per order. Payment must be made in advance.

We're sorry, but due to problems with postage and mailing, we cannot "start" a subscription with back-dated issues. You must order the back-dated issues at $2 each, plus the mailing charge. Please place your order, including payment, as soon as possible. You may now use VISA or Mastercard.

We hope this causes you no problem and we thank you for your understanding.

It comes in an attractive plastic cover. And, because it plugs into the ROM Cart port, you still have your serial port free for, say, a modem which could -- with a little software -- give real-time printout of VIDEOTEX, especially with the CPRINT Screen Print function (another plus!).

Of course, using the ROM Cart port can be a disadvantage for those who must dedicate this port to a disc drive system. We've spoken to Micro-Labs and they are considering a solution to this problem.

Since the CPRINT operation is in ROM, there is no overhead and for those who need some forms control, this is an extremely worthwhile purchase, especially if no disc system is involved.

6809 Color Computer

EDITOR, ASSEMBLER AND MORE!

TIRED OF WAITING FOR SOFTWARE DELIVERY?

WE SHIP FROM STOCK!

NEW!

SOFTWARE DEVELOPMENT SYSTEM

The Micro Works Software Development System (SDS80C) is a complete 6809 editor, assembler and monitor package contained in one Color Computer program pack! Vastly superior to RAM-based assemblers/editors, the SDS80C is non-volatile, meaning that if your application program bombs, it can't destroy your editor/assembler. Plus it leaves almost all of 16K or 32K RAM free for *your* program. Since all three programs, editor, assembler and monitor are co-resident, we eliminate tedious program loading when going back and forth from editing to assembly and debugging!

The powerful screen-oriented Editor features finds, changes, moves, copys and much more. All keys have convenient auto repeat (typematic), and since no line numbers are required, the full width of the screen may be used to generate well commented code.

The Assembler features *all* of the following: complete 6809 instruction set; complete 6800 set supported for cross-assembly; conditional assembly; local labels; assembly to cassette tape or to memory; listing to screen or printer; and mnemonic error codes instead of numbers.

The versatile ABUG monitor is a compact version of CBUG, tailored for debugging programs generated by the Assembler and Editor. It features examine/change of memory or registers, cassette load and save, breakpoints and more.

SDS80C Price: $89.95

CRACK THOSE ROMS!

SOURCE GENERATOR: This package is a disassembler which runs on the color computer and enables you to generate your own source listing of the BASIC interpreter ROM. Also included is a documentation package which gives useful ROM entry points, complete memory map, I/O hardware details and more. Disassembler features include cross-referencing of variables and labels; output code which can be reassembled; output to an 80-column printer, small printer or screen; and a data table area specification which defaults to the table boundaries in the interpreter ROM. A 16K system is required for the use of this cassette.

80C Disassembler Price: $49.95

LEARN 6809!

6809 Assembly Language Programming, by Lance Leventhal, contains the most comprehensive reference material available for programming your Color Computer.

Price: $16.95

PARALLEL D!

USE A PARALLEL PRINTER with your Color Computer! Adaptor box plugs into the serial port and allows use of Centronics/Radio Shack compatible printers with parallel interface. Assembled and tested.

P180C Price: $89.95

CBUG IS HERE!

MONITOR TAPE: A cassette tape which allows you to:

- Examine or change memory using a formatted hex display
- Save areas of memory to cassette in binary (a "CSAVEM")
- Download/upload data or programs to a host system
- Move the video display page throughout RAM
- Send or receive RS-232 at up to 9600 baud
- Investigate and activate features of your computer, such as hi-res graphics or machine-language music
- Use your color computer as an intelligent peripheral for another computer, a color display or a 6809 program development tool

The monitor has 19 commands in all, and is relocatable and re-entrant.

CBUG Tape Price: $29.95

MONITOR ROM: The same program as above, supplied in 2716 EPROM. This allows you to use the entire RAM space. And you don't need to re-load the monitor each time you use it. The EPROM plugs into the Extended Basic ROM Socket or a modified ROMPACK.

CBUG ROM Price: $39.95

32K RAM!

MEMORY UPGRADE KITS: Consisting of 4116 200ns. integrated circuits, with instructions for installation. 4K-16K Kit Price: $39.95. 16K-32K Kit (requires soldering experience) Price: $39.95

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THE P I P E L I N E

(Here's a new feature, in which we will have some information on a monthly basis about your Color Computer. We can't reveal the source for most of this info ... but be assurred its the latest "official" from some "official" sources!)

-0-

ROM 1.1: There is a new ROM, numbered 1.1, available for the Color Computer. If you buy Radio Shack's 32K upgrade, you will get it. Some of the later models will also have it. We've yet to determine whether you can actually purchase it separately.

The major thing is that it supports 8-bits to printers without having to load the 8-bit driver program (which Tandy will give you for free). On the video display, when loading from cassette, the video displays an 'F' and the file name when the selected file is located. The 'F' continues to flash until the file is finished loading, even if its ungapped.

There are some minor differences when running the Chess and Bustout ROM packs.

NEW ROM PACKS: Despite earlier projections of mid-December for the Spectaculator and Scripsit ROM carts of Dec. 15, Tandy now does not expect them to be available until somewhat later. Spectaculator is a Color Computer version of VISICALC. Mere speculation: They'll either be available or compatable with disc systems (somehow).

MULTIPEN PLOTTER: That fancy looking multipen plotter will have Color Computer support. The software should be on disc and the Color Computer disc should be ready by the end of the year (make that January).

EDITOR/ASSEMBLER: The date for availability of this ROM pack has been shoved back to January or February. Reason: Tandy wants to add a DEBUG, so you won't have to load it on from tape. Hope they're not too late on this, there are a number of other good ones currently available!

SPACE WAR

The general idea of SPACE WAR, the third of the "Space Trilogy" series from Spectral Associates, involves piloting your space ship through a dangerous area between the stars and attacking a death star fortress which occupies that area.

All is not as simple as it seems. For one thing, there is a revolving shield which protects the death star. While you can get some points for hitting the shield, you really rack 'em up for shooting through the shield's hole and scoring a hit on the star itself.

But...there are four invisible mines defending the star. They pop into visibility if you get too close to them -- but then you have to quickly get out of the way or they will explode. You can "cloak" your ship ... but then you can't attack ... and once you use up your cloaking energy, it is gone for good.

There are other problems for the intrepid explorer, too. Things like a black hole which has gravity that can suck you in, an enemy ship, and so forth. Its not an easy game to win and requires practice and skill.

As always, this machine language game from Spectral has a great deal going for it. The graphics are great, the action fast and the interaction a lot of fun. You can spend hours at it without getting bored.

We know of no arcade game like SPACE WAR, which makes it all the more enjoyable. And you will enjoy playing it.

SPACE WAR is available from Spectral, 141 Harvard Ave., Tacoma, WA, 98466 for $21.95.

ROMPACK BACKUP

Now just what would you do if your ROM Pack blew up?

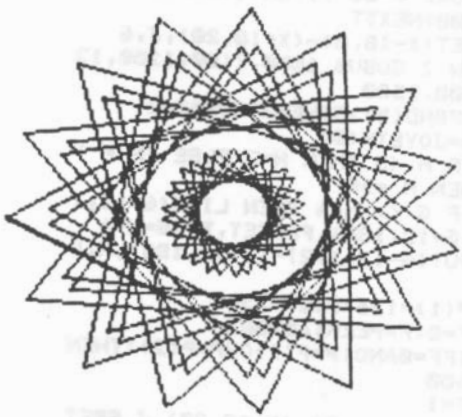
Well, if you had a backup on tape, you might be able to relax a little, anyway. The following routine, from Al Morgan (who, for those of you who follow his endeavors, has changed his base of operation from Massachusetts to New York) will allow you to copy your ROM Pack into memory and then transfer it to tape.

That does not necessarily mean that you can then just load it back in and run it from RAM, but you could do some dissambly and examine. Also, with a little knowledge of machine language, some of the routines will be pretty obvious to you,

A word of extreme caution: This program requires plugging ROM Carts in and out with the power ON! It should be used ONLY with Tandy/Radio Shack carts, since it is safe to plug them in without removing the power. Otherwise some of your chips -- including the CPU -- could get zapped.

So, here's a listing of ROM Pack insurance from Al Morgan:

```
10 CLS:PRINT"THIS PROGRAM WILL A
LLOW YOU TO  SAVE A ROMPAC TO TA
PE."
20 PRINT:PRINT"INSERT ROMPACK.
YOU WILL NOT      CONTROL."
30 PRINT:PRINT"PRESS ANY KEY WHE
N YOU HAVE        INSERTED ROMPAC
."
35 POKE&HFF23,36
40 IF INKEY$=""THEN40
45 PRINT:PRINT"PROGRAM IS NOW BE
ING DUMPED.       PLEASE STANDBY.
"
50 IF MEM>20000 THEN N=&H4000 EL
SE N=&H2000
55 A=N
60 FOR X=&HC000 TO &HCFFF
70 POKE N,PEEK(X):N=N+1
75 PRINT CHR$(PEEK(X));
80 NEXT X
90 CLS:PRINT"ROMPAC HAS BEEN DUM
PED TO RAM."
92 PRINT:INPUT "ENTER NEW FILE N
AME";N$
100 PRINT:PRINT"NEW REMOVE ROMPA
C AND PREPARE      TAPE RECORDER.
"
110 PRINT:PRINT"PRESS ANY KEY TO
 CONTINUE"
120 IF INKEY$=""THEN120
130 CSAVEM N$,A,A+4096,A
140 CLS:PRINT"FILE NOW COPIED"
160 IF INKEY$=""THEN160
170 POKE &HFF23,37
180 END
```



Graphics by R. Foulke

Software Stocking-Stuffers from RCS!!!

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*TRS-80 is a trademark of Tandy Corp.

*RCS is not affiliated with the RAINBOW

VIPERS (Cont'd from Pg. 5)

```
245 LINE(140,172)-(164,188),PRES
ET,BF
255 LINE(0,190)-(256,190),PSET
260 TIMER=0:G=12:Z=1:VF=0:YS=0
265 ON Z GOSUB 2000,2100,2200,23
00,2400,2500
270 FORX = X1 TO X2 STEP X3:FORT
=1TO100:NEXTT
273 GET(X-18,0)-(X+18,20),J,G
275 ON Z GOSUB 1000,1100,1200,13
00,1400,1500
277 IFRND(5)>3THENGOSUB5000
280 H=JOYSTK(0)
285 IF H <3 THEN H=3 ELSE IF H >
58 THEN H =58
290 IF G <> H*4 THEN LINE(G-12,1
72)-(G+12,188),PRESET,BF:G=H*4
295 PUT(G-12,172)-(G+12,188),H,P
SET
305 P(1)=126:P(2)=254
310 F=0:P=PEEK(65280)
315 IFF=0AND(P=P(1)ORP=P(2))THEN
GOTO400
320 F=1
325 PUT(X-18,0)-(X+18,20),J,PSET
327 IFRND(5)>4THENGOTO270
328 IF TIMER =>14400 THEN GOTO60
0
330 NEXTX:GOTO265
400 REM SHOOT ROUTINE
405 GET(G-1,15)-(G+1,170),A,G
410 LINE(G,15)-(G,170),PSET
415 PLAY"T100L50O5BBBB"
420 PUT(G-1,15)-(G+1,170),A,PSET
425 M$="T255;L255;O5CBAGFEDCO4CB
AGFEDCO3CBAGFEDCO2CBAGFEDC"
430 ON Z GOSUB 3000,3100,3200,33
00,3400,3500
435 IFYS=250ORYS=11250THENZ=2
440 IFYS=750ORYS=11750THENZ=3
445 IFYS=1750ORYS=12750THENZ=4
450 IFYS=3000ORYS=14000THENZ=5
455 IFYS=5000ORYS=16000THENZ=6
460 IFYS=10000ORYS=21000THENGOSU
B4000:Z=1
465 GOTO320
500 PUT(X,0)-(X+44,16),J,PSET
505 X1=20:X2=210:X3=33
510 FOR X = X1 TO X2 STEP X3
515 PUT(X,0)-(X+44,6),C,PSET
520 PUT(X,0)-(X+44,16),J,PSET
525 NEXTX:GOTO505
600 SCREEN0,1
605 CLS
610 TS=YS-VF
615 PRINTSTRING$(9,"*"):PRINT@9,
"DAMAGE REPORT"
620 PRINT@23,STRING$(9,"*")
625 C=0
627 I=1
630 T$="                    ....YOUR
TOTAL SCORE IS....."
635 PRINT@224,MID$(T$,I,32)
640 FORJ=1TO90:NEXTJ
645 I=I+1:C=C+1
650 IFC=15THENPRINT@336,TS:FORX=
1TO600:NEXTX
655 IFC=38THEN665
660 IF1>LEN(T$) THEN627ELSE635
665 CLS:PRINT"NEXT SHOOTER PLEAS
E"
670 PRINT@448,"PRESS <ENTER> TO
CONTINUE":INPUTD$
675 IFD$="Y"THEN675
680 GOTO100
1000 PUT(X-9,0)-(X+9,16),B,PSET
1005 RETURN
1100 PUT(X-12,8)-(X+11,12),C,PSE
T
1105 RETURN
1200 PUT(X-12,3)-(X+12,12),D,PSE
T
1205 RETURN
1300 PUT(X-8,3)-(X+8,15),G,PSET
1305 RETURN
1400 PUT(X-14,5)-(X+14,12),F,PSE
T
1405 RETURN
1500 PUT(X-12,2)-(X+12,22),E,PSE
T
1505 RETURN
2000 X1=RND(12)+17:X2=200:X3=RND
(10)+24:RETURN
2100 X1=RND(12)+17:X2=230:X3=RND
(20)+14:RETURN
2200 X1=RND(20)+17:X2=220:X3=RND
(20)+14:RETURN
2300 X1=RND(20)+50:X2=200:X3=RND
(20)+14:RETURN
2400 X1=RND(12)+20:X2=210:X3=RND
(10)+24:RETURN
2500 X1=RND(15)+17:X2=245:X3=RND
(20)+14:RETURN
3000 IFPPOINT(G,8)=2THENPLAYM$:Y
S=YS+50
3010 RETURN
3100 IFPPOINT(G,11)=2THENPLAYM$:
YS=YS+100
3110 RETURN
3200 IFPPOINT(G,11)=2THENPLAYM$:
YS=YS+200
3210 RETURN
3300 IFPPOINT(G,8)=2THENPLAYM$:Y
S=YS+250
3310 RETURN
3400 IFPPOINT(G,10)=2THENPLAYM$:
YS=YS+500
3410 RETURN
3500 IFPPOINT(G,8)=2THENPLAYM$:Y
S=YS+1000
3510 RETURN
4000 A$="V31;T30;O4CL2DEL1CP1CL2
DEL1CP1L2CDECDECDEL1CP2"
```

(Continued on Page 17)

```
4005 B$="V31;T30;O4FL2GAL1FP1FL2
GAL1FP1L2FGAFGAFGAL1FP2"
4010 PLAYA$+B$:PLAYA$
4015 C$="V31;T255;L255;O1CDEFGAB
O2CDEFGABO3CDEFGABO4CDEFGABO5CDE
FGAB"
4020 PLAYC$+C$:PLAYC$+C$
4025 YS=YS+1000:RETURN
5000 LINE(X,17)-(X,171),PSET,B
5005 PLAY"T100L302CCCCCCCC"
5010 S$="O1T200L64AEBBAEBBAEBB"
5015 IFPPOINT(X,182)=1THENPLAYS$
+S$+S$+S$:GOSUB7000:VF=VF+1000
5020 LINE(X,17)-(X,171),PRESET,B
F
5025 RETURN
6000 CLS:
6005 PRINT"ALIEN VIPER FIGHTERS
ARE"
6010 PRINT"ORBITING YOUR BASE ST
ATION."
6015 PRINT
6020 PRINT"YOUR MISSION, SHOULD
YOU CHOOSE"
6025 PRINT"TO ACCEPT IT, WILL BE
 TO DEFEND"
6030 PRINT"BASE STATION 'OMEGA'
WITH YOUR"
6035 PRINT"LASER BLASTER."
6040 PRINT
6045 PRINT"YOUR RIGHT JOYSTICK W
ILL MOVE"
6050 PRINT"THE LASER BLASTER AND
 YOUR RED"
6055 PRINT"BUTTON WILL FIRE THE
LASER"
6060 PRINT:PRINT:PRINT
6065 INPUT"TO CONTINUE PRESS <EN
TER>";C$
6070 CLS
6075 PRINT@32,"FIRST 5 HITS = 50
 POINTS EACH"
6080 PRINT"SECOND 5 HITS = 100 P
OINTS EACH"
6085 PRINT"THIRD 5 HITS = 200 PO
INTS EACH"
6090 PRINT"FOURTH 5 HITS = 250 P
OINTS EACH"
6095 PRINT"FIFTH 5 HITS = 500 PO
INTS EACH"
6100 PRINT"SIXTH 5 HITS = 1000 P
OINTS EACH":PRINT
6105 PRINT:PRINT"IF YOU GET THIS
 FAR YOU'LL GET"
6110 PRINT"A BONUS OF 1000 POINT
S AND THE"
6115 PRINT"POINT SYSTEM WILL STA
RT OVER":PRINT:PRINT
6120 INPUT"TO CONTINUE PRESS <EN
TER>";C$
6125 CLS:PRINT@79,"BE"
6130 PRINT@109,"CAREFUL!!!"
6135 PRINT@227,"IF YOU GET HIT B
```


in the back work -- but, to get to something more sophisticated, you need to do a little programming on your own.

We're throughly satisfied with the Tandy disc. The Exatron -- from what we been told and seen -- appears a little more difficult to operate. Exatron does offer a couple of added features at added cost, but we don't really have good information on them, yet. If we get it, we'll pass it along.

Obviously, Exatron is a different system than Tandy. Our sources tell us most disc-based software will probably use the Tandy system, so there may be problems down the line if you go with something else.

There are a couple of things we do wish Tandy had included -- like an AUTO function, a few more utilities (perhaps using that upper 16K of RAM?) and we wish the controller itself was physically a little smaller. However, the system works flawlessly. Use of the 2K of low RAM for some of the Tandy DOS does create some problems using their Machine Language programs, but, given Tandy's excellent support, we feel those will soon be solved, one way or the other.

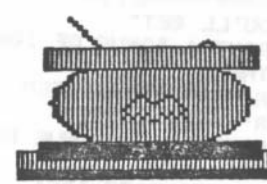
From our extensive discussions, the Exatron system seems to work well, too. Single density discs and incompatability may be a problem in the future, but time will tell.

As we recieve more information on these systems -- and others -- RAINBOW readers will be kept up to date.

```
Y AN ALIEN"
6140 PRINT@301,"YOU LOSE"
6145 PRINT@361,"1,000  POINTS"
6150 PRINT@395,"EACH TIME!"
6155 PRINT:PRINT
6160 INPUT"TO CONTINUE PRESS <EN
TER>";C$
6165 RETURN
7000 FORC=1TO13
7005 CIRCLE(G,175),C,4
7007 CIRCLE(G,175),C,2:NEXTC
7010 FORD=1TO13
7015 CIRCLE(G,175),D,3:NEXTD
7020 RETURN
```

ZELDA (Cont'd from Pg. 2)

```
100 BB$="NUHG2DEDEDEDRUFUFUFUH2G
NUL":BF$="NUHL2F2RNDRNDRE2L2GNUL
":DIMA(13), B(4):G=0:FORI=32TO22
4STEP16:G=G+1:A(G)=I:NEXTI:G=0:F
ORI=26TO74STEP16:G=G+1:B(G)=I:NE
XTI
110 PRINT@96,"ZELDA NEEDS YOUR H
ELP. SHE HAS":PRINT"TO ZAP 10 BA
TS INTO HER GLASS":PRINT"BOTTLE
SO SHE CAN MAKE HER BREW.";:PRIN
T"YOU CAN DIRECT HER MAGIC BLAST
":PRINT"BY PRESSING 1 WHEN THE B
ATS ARE":PRINT"ON THE LEFT,  2
WHEN THEY ARE"
120 PRINT"IN THE MIDDLE, &  3  W
HEN THEY":PRINT"ARE ON THE RIGHT
.";:FORI=1TO600:NEXT
130 DB=0:PMODE3,1:PCLS(4):SCREEN
0,0:LINE(0,182)-(256,192),PRESET
,B:PAINT(10,186),3,1:CIRCLE(126,
160),43,5,.55:PAINT(126,160),2,5
140 LINE(82,134)-(171,144),PSET,
BF:LINE(82,134)-(171,144),PRESET
,B:PAINT(126,135),3,1:LINE(92,12
0)-(104,134),PRESET
150 PMODE4,1:SCREEN0,1:DRAW"S16B
M126,160;C0"+BB$
160 DRAW"S10BM15,110;C0E9G4H2L7G
2R3F4D6ENU6ENU6EU6END3END2NR2FDF
2LDNL2GFGHL2RDFR3E8DGFG2DNH2FD6G
L3GD18HNU18L2FNU17L2FU16NE6D16L7
U16H2L4U4E8"
170 PAINT(24,98),0,0:PAINT(24,14
8),0,0
180 LINE(10,178)-(42,181),PRESET
,BF:LINE(200,181)-(248,120),PRES
ET,B:LINE(210,120)-(238,110),PRE
SET,BF:LINE(205,110)-(243,105),P
RESET,B:LINE(80,178)-(172,186),P
RESET,BF:GOSUB370:SCREEN1,1:TIME
R=0
190 GOSUB260
200 GOSUB350:GOSUB260:DRAW"S12BM
"+X$+","+Y$+";C5"+BB$+"C0"+BF$+"
C5"+BF$+"C0"+BB$+"C5"+BB$:DRAW"B
M"+A$+","+B$+";C0"+BB$
210 IF DB=>10THEN330
220 FORI=1TO2:PLAY"V31;O1;L190;E
":NEXT
230 Q$=INKEY$
240 IFQ$="1"THEN270ELSEIFQ$="2"T
HEN280ELSEIFQ$="3"THEN290
250 GOTO200
260 X$=A$:Y$=B$:C=RND(13):D=RND(
4):A$=STR$(A(C)):B$=STR$(B(D)):R
ETURN
270 W=RND(4):LINE(55,97)-(A(W),B
(D)),PRESET:COLOR5,0:LINE-(55,97
),PSET:GOSUB300:GOTO200
280 W=RND(5)+4:LINE(55,97)-(A(W)
,B(D)),PRESET:COLOR5,0:LINE-(55,
97),PSET:GOSUB300:GOTO200
290 W=RND(4)+9:LINE(55,97)-(A(W)
,B(D)),PRESET:COLOR5,0:LINE-(55,
97),PSET:GOSUB300:GOTO200
300 PLAY"V8;O5;L255;C;O1;E":IF A
(W)=A(C) THEN320
310 RETURN
320 DB=DB+1:DRAW"BM"+A$+","+B$+"
;C5"+BB$:PMODE4,1:SCREEN1,0:FORK
=1TO3:PLAY"O5;L255;GCGC;O1;DD":N
EXTK:PMODE4,1:SCREEN1,1:GOSUB360
:RETURN
330 K=TIMER:PMODE4,1:SCREEN1,0:S
OUND220,16:CLS(0):PRINT@130,"YOU
 TOOK";:PRINT USING"#####.#";K/6
0;:PRINT"  SECONDS. ";
340 FORI=1TO4000:NEXT:GOTO130
350 FORJ=1TO2:F=RND(40)+110:FORH
=0TO5STEP5:CIRCLE(F,133),3,H,.7,
.5,1:NEXTH:NEXTJ:RETURN
360 BH=(178-(DB*5)):BH$=STR$(BH)
:DRAW"BM224,"+BH$+";C0"+BB$:RETU
RN
370 FORJ=10TO250STEP40:M=RND(10)
+10:FORI=4TO32STEP2:CIRCLE(J,M),
I,0,.7:NEXTI:NEXTJ:RETURN
380 REM 'ZELDA'S BAT BOTTLE!' BY
 FRED B. SCERBO, IMB, COPYRIGHT
1981, ILLUSTRATED MEMORY BANKS,
P.O.BOX 289, WILLIAMSTOWN, MA.,
01267-0289.
```



From Zelda's Bat Bottle

ANTIMATED HANGMAN

There must be a hundred "Hangman" games on the market, but ANTIMATED HANGMAN from Soft Sector Marketing is (1) About the best we've seen and, (2) Was written to use all the excellent functions of the Color Computer.

You can have hours of enjoyable fun by sending $14.95 to Soft Sector (6250 Middlebelt, Garden City, MI, 48135). The whole thing is in color and it will run on a non-extended Color Computer.

The words are variable length, some easy and others difficult. While the missed guesses built the scaffold for the poor hangman, he makes noises, moves his head about and lifts his arms in frustration. When you miss a guess, you get a not-so-complementary response. When you guess right, there's praise.

We must say it is almost worth it to lose. Poor hangman falls through the scaffold trap door, and comes out with a pitful sound. It really is a game that can be played for quite some time.

Because its written in BASIC, you can change the word list to your liking. That's helpful for teaching the kids spelling words and so on.

We suppose no hangman game is very deep, but Soft Sector's ANTIMATED HANGMAN is a real good game and it has enough sound and graphic action to keep on amusing the player for quite some time.

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