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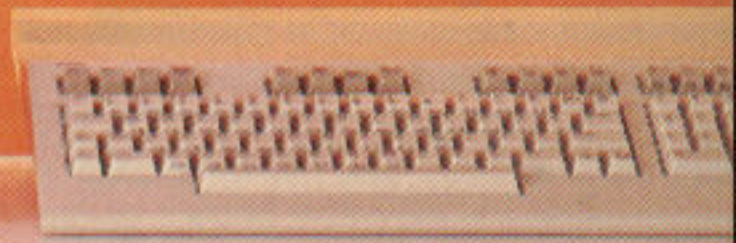
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FAMILY COMPUTING

Buyer's Guide to Computers



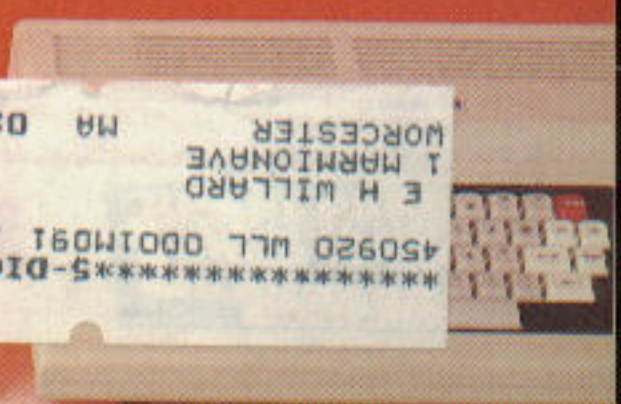
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TRS-80, COCO & MODELS III



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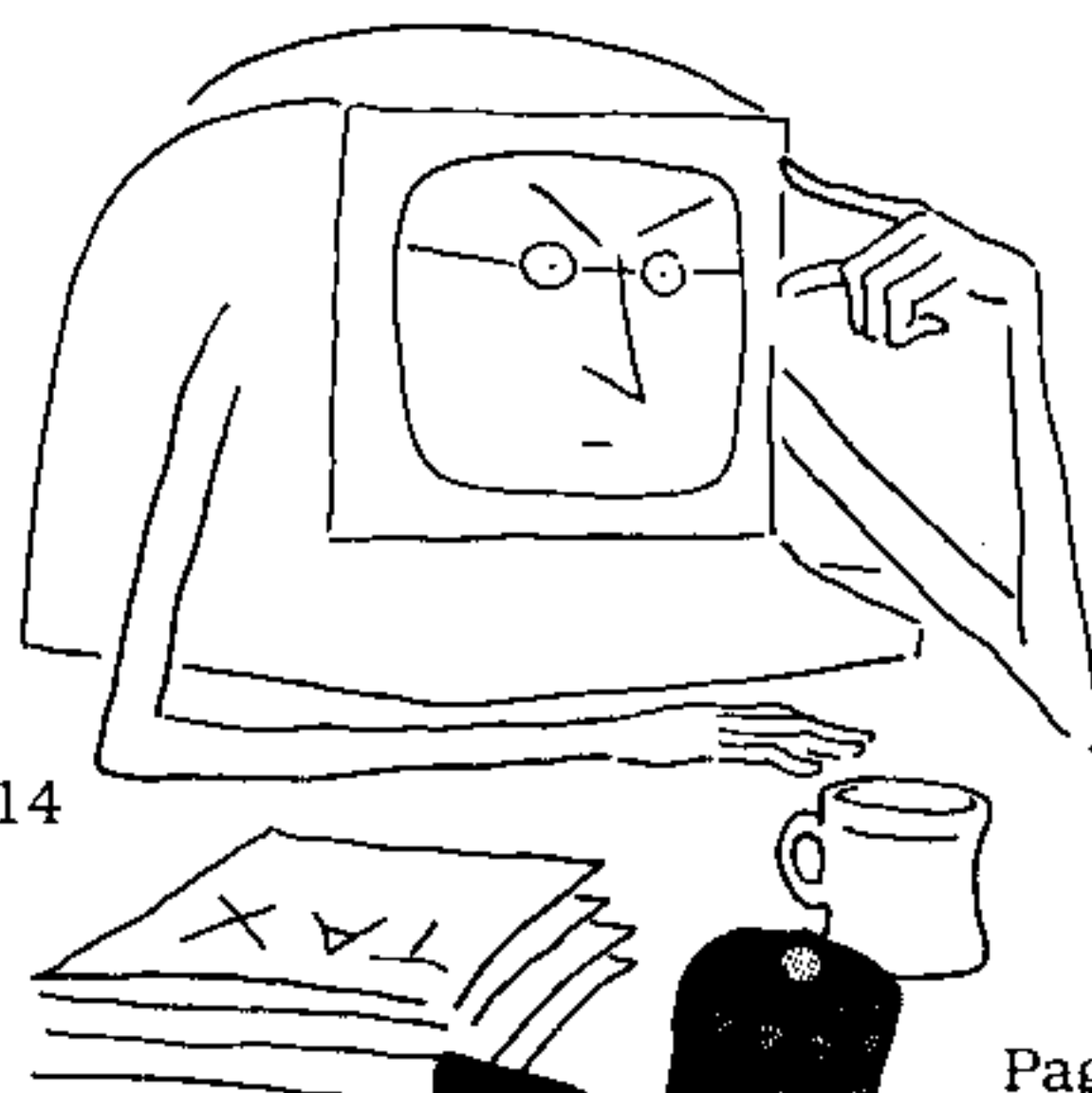
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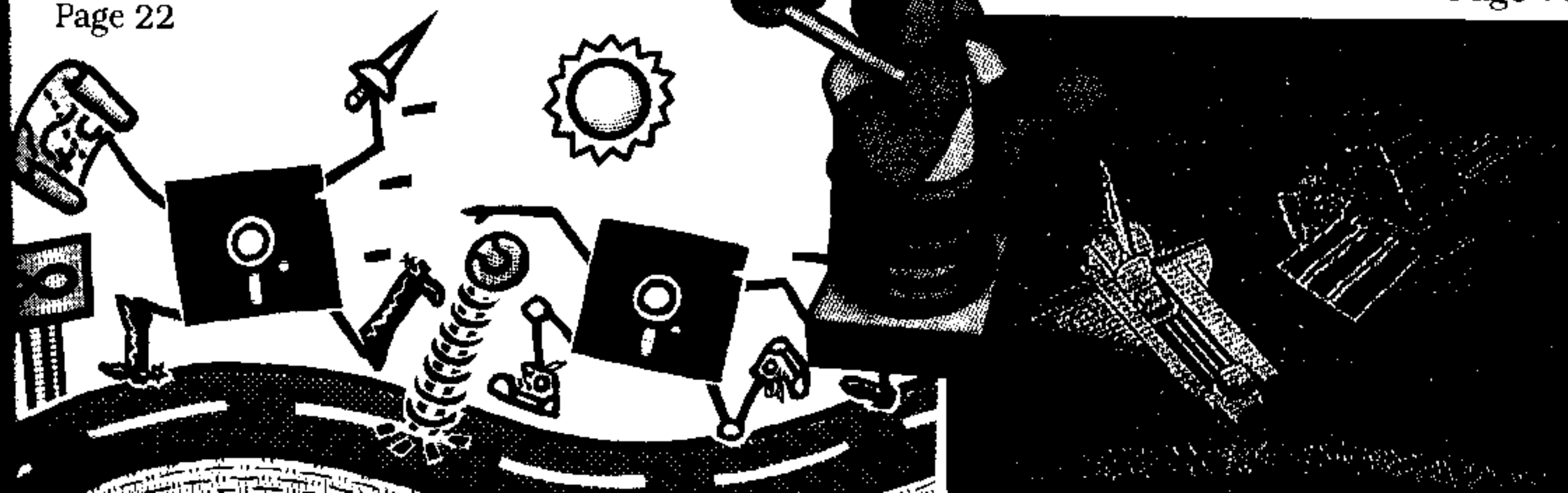
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EDITOR'S NOTE

FOR A CHANGE...

Exactly two years ago we compiled our first Buyer's Guide to Computers for the premier issue of FAMILY COMPUTING. We'd learned that the most pressing question on the minds of prospective readers was "What computer should we buy?" Our guide would help to answer that question.

Now, our Buyer's Guides to Computers are one of the magazine's most popular features. It's a favorite of both those thinking about buying their first computer, and experienced owners.

But now, added to the questions about the power of the machine, software availability, and value, loom questions about the future, or staying-power, of each computer brand.

None of us foresaw the extent of the upheaval that would, before long, set upon the computer industry, especially the home segment. From the very start, we resisted using the term "home computer," sticking to our commitment to cover the wide range of computers that were being adopted for home use. We also believed that increased sophistication on the part of computer owners would lead to the use of more powerful machines.

But while we talked about the fact that the world of computing was just emerging, and that we were part of a phenomenon still in its infancy, we forgot what that would inevitably mean. We lost sight of the implications of growth and change. Not many of us gave much thought to the fact that some computer brands would disappear, that others would become standards for at least a period of time, and that leadership in the industry would revolve.

As a result of these changes, we have had to alter our plans as well. We can no longer cover all the machines that are no longer in production. For example, in order to run machine-specific programs for a computer, advertising revenue is required to help pay the enormous costs of translations, printing, and

paper needed for those programs. Arriving at this decision was a long and painful process.

As many readers noticed, starting with the April issue, we were no longer able to run programs for Timex computers; we've also reduced the number of programs running for the TI-99/4A. From time to time, we will run articles on modifying programs for various computer brands. We hope that many of our general articles, which do not depend on brand, still will help all computer owners.

Everything about the computer industry is fast-moving, which isn't always to the immediate benefit of the consumer. But changes in brand dominance always have been part of technology. My father always longed for and dreamt about the splendors of a Packard automobile he owned in the 1930s; we were still watching TV on the Stromberg-Carlson television set we had bought in the 1950s after it was no longer manufactured; and some people still call their VHS VCRs Betamaxes, since it was Sony's technology that prevailed when the industry was forming, and for some, the name just stuck, along with the phenomenon.

Computing's going to stick, too. And that's in the home as well as in school and at the office. And all of us pioneers will be glad we were among the first to take a chance on the technology that, more than any other, can revolutionize our lives. We'll keep publishing our Buyer's Guides, software and hardware reviews and features, and shopping tips to help you keep up to date.

I don't know about you, but I'll never go back to writing these notes on a typewriter, and I'm not one to yearn for the days when I sat staring at a blank page on my legal pad. I'll stick with the computer.



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TELECOMPUTING

there isn't much you can do about it besides hanging up and redialing. Since some modems are more effective at filtering noise than others, you may have better results with a different brand.

THE PROPER PROTOCOL

Sooner or later, you're going to want to transfer or download programs to your computer, which leads us to another problem—software incompatibility. To download, you usually use a special method, built-in to your software, called "protocol transfer." The catch is, both you and the system you've called must be using the same method. Xmodem is by far the most widely used, but there are others, such as Hayes' proprietary and CompuServe's B-protocol.

Having Xmodem included in your software is an advantage. Unfortunately, there are subtle differences between each type of software that uses this protocol, and two Xmodems may not necessarily work well together. In particular, Xmodem performance on a network like CompuServe can be spotty. Luckily, many new communications packages are being written so that they'll work correctly with all Xmodem implementations. If you've yet to purchase a communications program, make sure the one you choose supports Xmodem and works well on the systems you'll use most.

It's impossible to anticipate every difficulty you might encounter, so we've outlined the most common ones. The more you telecommunicate, the greater the likelihood you'll run into strange problems. Keep a cool head and a steady hand on your manuals. If you still can't get the thing to work, you've earned the right to shut off the computer, lie down and try again later. Often, problems will vanish on their own! ☐

ELECTRONIC EDITION

FAMILY COMPUTING has started an "electronic edition" on CompuServe. Here, you may read fast-breaking news and reviews, post messages for the editors and other users, attend live conferences, and generally participate in the creation of a new electronic magazine. Type GO FAM at any CompuServe prompt to check it out!

You can also leave messages (e-mail) for FAMILY COMPUTING on The Source (account No. TI5483).

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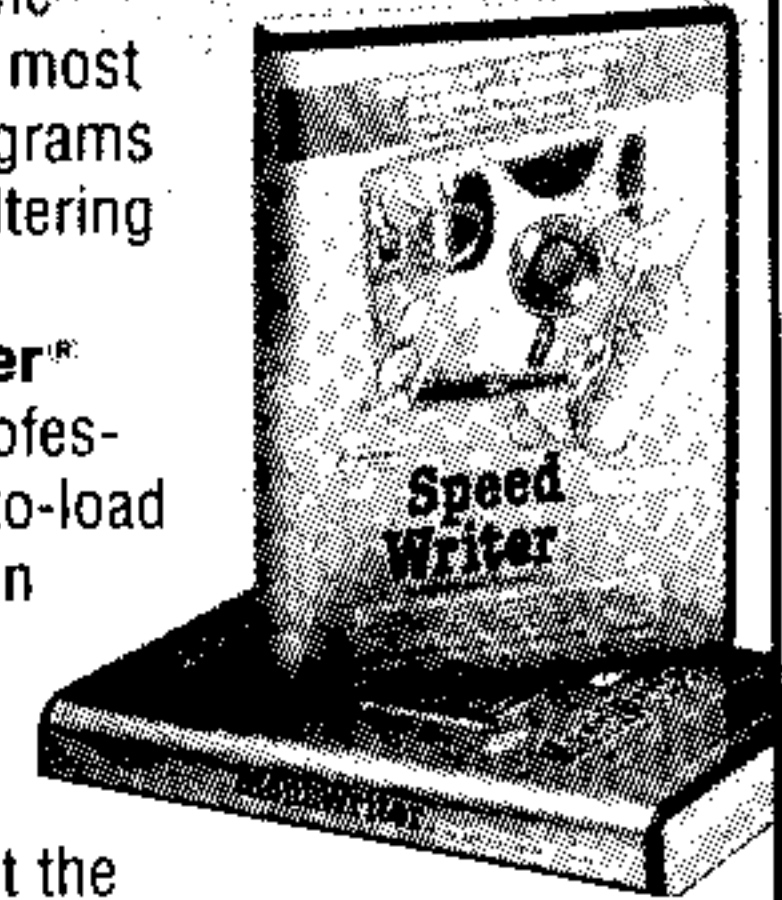
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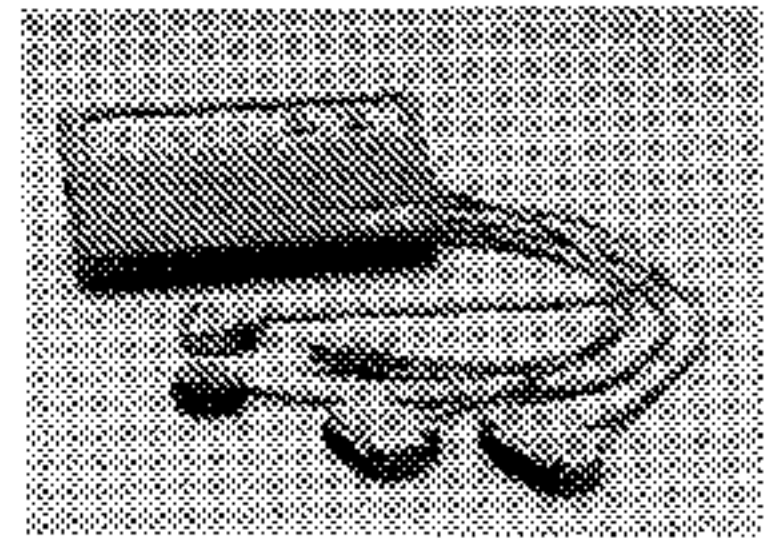


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TI 99/4A OWNERS

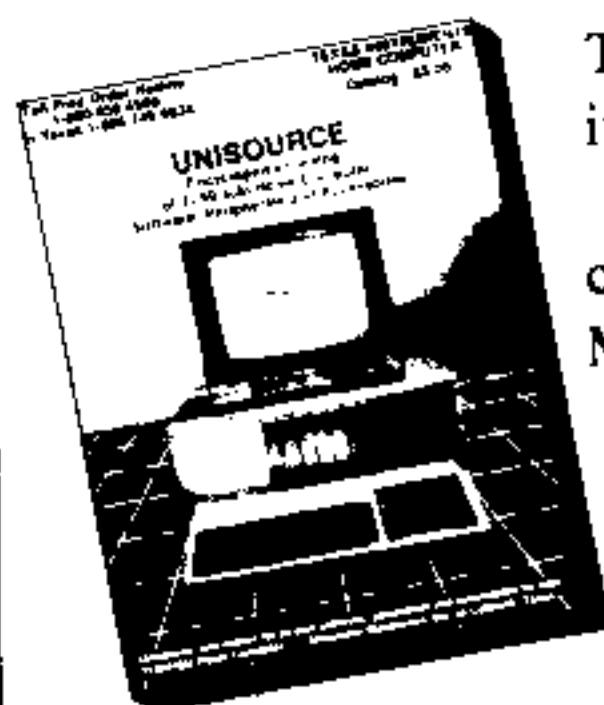
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PUZZLE

VIC-20/Scrambled Eggs

Use the version labeled "Commodore 64 w/color TV or monitor," with the following alterations. Add line 60:

```
60 AS=SS:FOR X=1 TO 20:AS=AS+SS:NEXT X
```

Change lines 10, 30, 370, 380, 430, and 440 to read as follows:

```
10 POKE 36879,25
30 BM=18:DL=900:MAX=2:MD=5:SD=44
370 POKE 214,18:PRINT:PRINT "PICK UP HOW MANY EGGS":IN
PUT VS
380 POKE 214,18:PRINT:PRINT AS:PRINT AS
430 POKE 214,18:PRINT:PRINT "VALUE FOR THIS SQUARE":IN
PUT VS
440 POKE 214,18:PRINT:PRINT AS:PRINT AS:IF VS="" THEN
220
```

Finally, if you are using a color television or monitor, change line 40 to read as follows:

```
40 BLS=CHR$(144):YWS=CHR$(28):WHS=CHR$(31)
```

If you are using a black-and-white television or monochrome monitor, change line 40 to read as follows:

```
40 BLS=CHR$(144):YWS=BLS:WHS=CHR$(31)
```

PROGRAMMING P.S.

Corrections to previous months' programs

Apple/Banner (April 1985, page 63)

To run *Banner* under ProDOS, change lines 500 and 690 to read as follows:

```
500 PRINT CHR$(4);"PR# 1"
690 PRINT CHR$(4);"PR# 0"
```

TI-99/4A/Perpetual Calendar (January 1985, page 74)

The first minus sign in line 190 should have been a plus sign:

```
190 LD(2)=28+SGN(((Y=INT(Y/4)*4)*(Y<>INT(Y/100)*100))+
(Y=2000))
```

TRS-80 Color Computer/Disk Label Maker (June 1984, page 78), **Brain Terrain** (August 1984, page 86), **The Black Mask** (October 1984, page 80), **By Invitation Only** (December 1984, page 116), **Perpetual Calendar** (January 1985, page 75), **Banner** (April 1985, page 67)

All these programs require Extended Color BASIC. In the future, when a CoCo program requires Extended Color BASIC, we'll tell you so clearly. We apologize for any inconvenience this omission may have caused.

But if you have standard Color BASIC, all is not lost! These six programs all contain a `STRING$` function, which, while it's missing in Color BASIC, can be simulated.

`STRING$`, often used in the form

```
AS=STRING$(number, code)
```

is a function that creates a string containing `number` characters, each of which has ASCII code `code`. For example, `STRING$(50,32)` creates a string of 50 spaces (the ASCII code for space is 32; see your manual). Another way to create strings of this kind is with a statement such as

```
FOR X=1 TO number:AS=AS+CHR$(code):NEXT X
```

For example, to create a string of 50 spaces we could write

```
FOR X=1 TO 50:AS=AS+CHR$(32):NEXT X
```

CoCo owners who don't have Extended Color BASIC may wish to use this approach to modify the six programs listed above to run on their computers.

TRS-80 Color Computer/Banner (April 1985, page 67)

You can print longer messages if you add line 5:

```
5 CLEAR 1000
```

Also see the note above.

TRS-80 Model III/Banner (April 1985, page 67)

On a Model III (and a Model 4 running Model III BASIC), you can print longer messages if you add line 5:

```
5 CLEAR 1000
```

VIC-20 w/8K or 16K RAM Cartridge/Optical Illusion (April 1985, page 59)

In Line 30, `SH=17` should have read `SH=16`:

```
30 SH=16:SW=22:TRU=-1:ES="" <RETURN> ":CLS=CHR$(147)
```

Corrections to programs from "Helpful Hints"

ADAM & Apple/Print Out Your Disk Directory

(April 1985, page 50)

This program was incorrect as published. The following program will work correctly:

```
10 DS = CHR$(4)
20 PRINT DS;"PR# 1"
30 PRINT DS;"CATALOG"
40 PRINT DS;"PR# 0"
```

This program will print out the directory of the "current" disk or (ADAM) digital data pack. To print the directory of the disk or pack in another drive, add the designation of that drive after `CATALOG` in line 30. For example, to print the directory of the data pack in the second ADAM data drive, or the disk in the second Apple disk drive, you'd change line 30 to

```
30 PRINT DS;"CATALOG,D2"
```

The first ADAM disk drive is referred to as `D5`.

Also, if your Apple printer card is in a slot other than slot 1, change the 1 in line 20 to the number of that slot.

IBM PCs/Print out Your Disk Directory (April 1985, page 50)

If you've specially configured your system, you may have to use the name of the device on which you want the directory printed. Thus, the command you use might be `DIR>LPT1`, `DIR>LPT2`, `DIR>LPT3`, `DIR>AUX`, `DIR>COM1`, or `DIR>COM2`.

TRS-80 Model III/Print Out Your Disk Directory (April 1985, page 50)

To print the directory of the disk in the first or second drive, the command is `DIR:0 (PRT)` or `DIR:1 (PRT)`, respectively.

TRS-80 Models III & 4/Rule Your Stationery (April 1985, page 50)

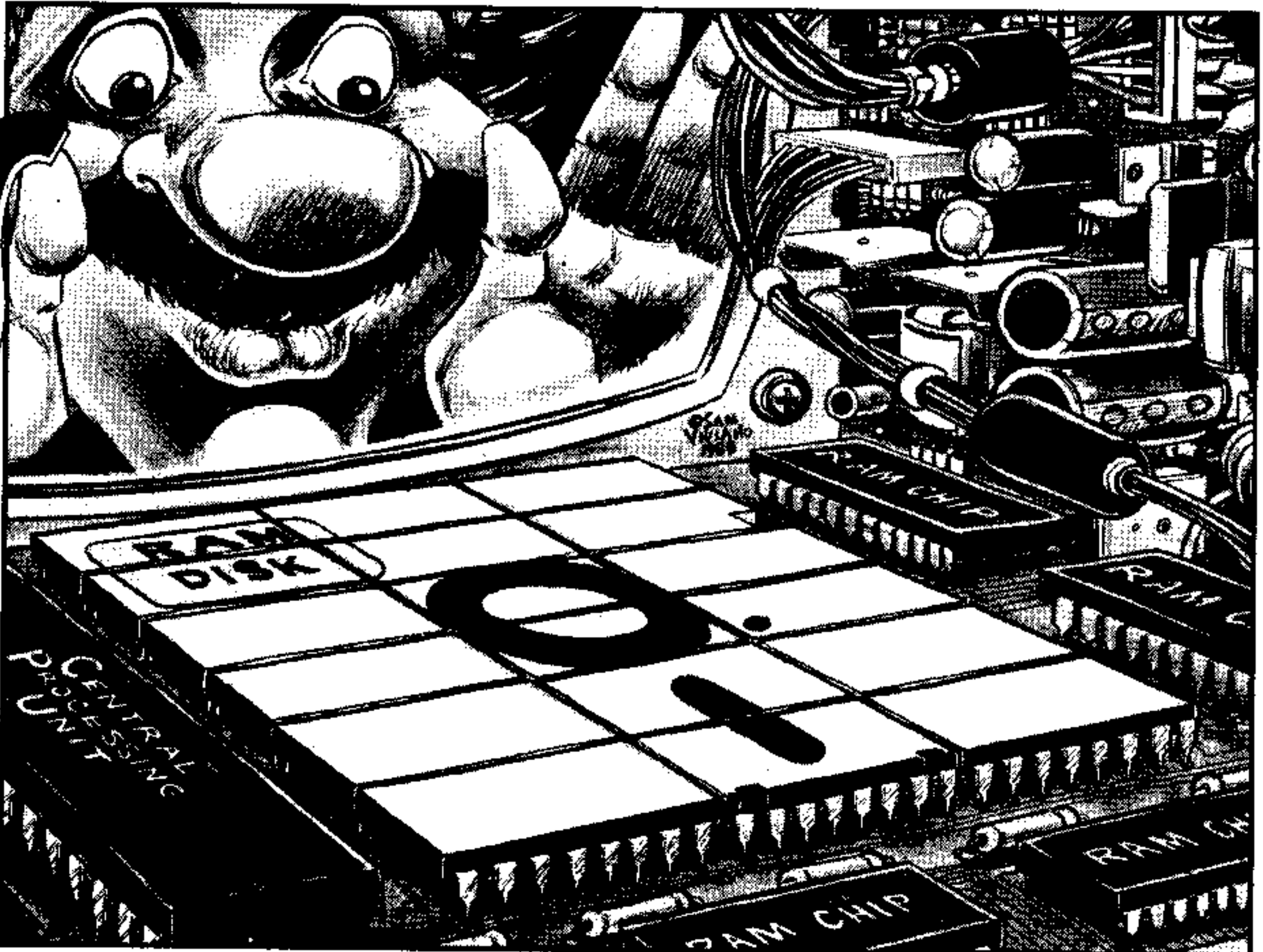
The program works fine under TRSDOS Version 6 BASIC. But on a Model III (and a Model 4 running Model III BASIC), you need to add a line to the program:

```
5 CLEAR 1000
```

D O C T O R

K U R S O R ' S

K L I N I C



What is a RAM disk?

DR. KURSOR: A RAM disk is like a superfast disk drive—one that works anywhere from two to 100 times faster than the drive you have now. It's a drive that's completely silent, almost never needs repair or adjustment, and costs about as much as a normal drive.

What I'm talking about is a chunk of Random-Access Memory (RAM) working at the lightning speed of your computer's regular memory. Using a special "RAM-disk" program, you can *trick* your computer into thinking this piece of RAM is a disk drive.

If your computer already has memory to spare, all you need is this special program to create a RAM disk. Otherwise, you'll have to buy more memory, too.

Without a RAM disk, if you add more than 64K to Apples, Ataris, and other 8-bit computers, only software that's specially written to do complicated swapping of memory blocks will use the extra K. And even many programs for 16-bit computers, which can handle more than 64K at once, don't take advantage of humongous amounts of RAM. But *all* your programs (except for some copy-protected software) can benefit from a RAM disk.

A program to convert part of RAM into a RAM disk is often included free when you buy a memory expander for an 8-bit computer (and for the 128K PCjr as well).

So what's the hitch? Well, a RAM disk forgets everything when you turn the power off, just like regular RAM, unless you've chosen a memory expander with battery backup. So when you first power up, you have to move the programs or files you want to access quickly from a

regular disk to your RAM disk—and save them back to a floppy before you turn off the power. But in between, you've got the fastest drive on the block!

A RAM disk isn't for everybody. If the programs you're using access the disk drive only occasionally, you'll spend as much time loading them into the RAM disk as you'll save in drive access time.

But if you're running a program—maybe a data-base manager or a compiler, or a Macintosh one—that keeps going to your disk, you'll be amazed at how much quicker it'll run. And if you have only one disk drive, a RAM disk will cut back on boring disk swapping when you copy a disk.

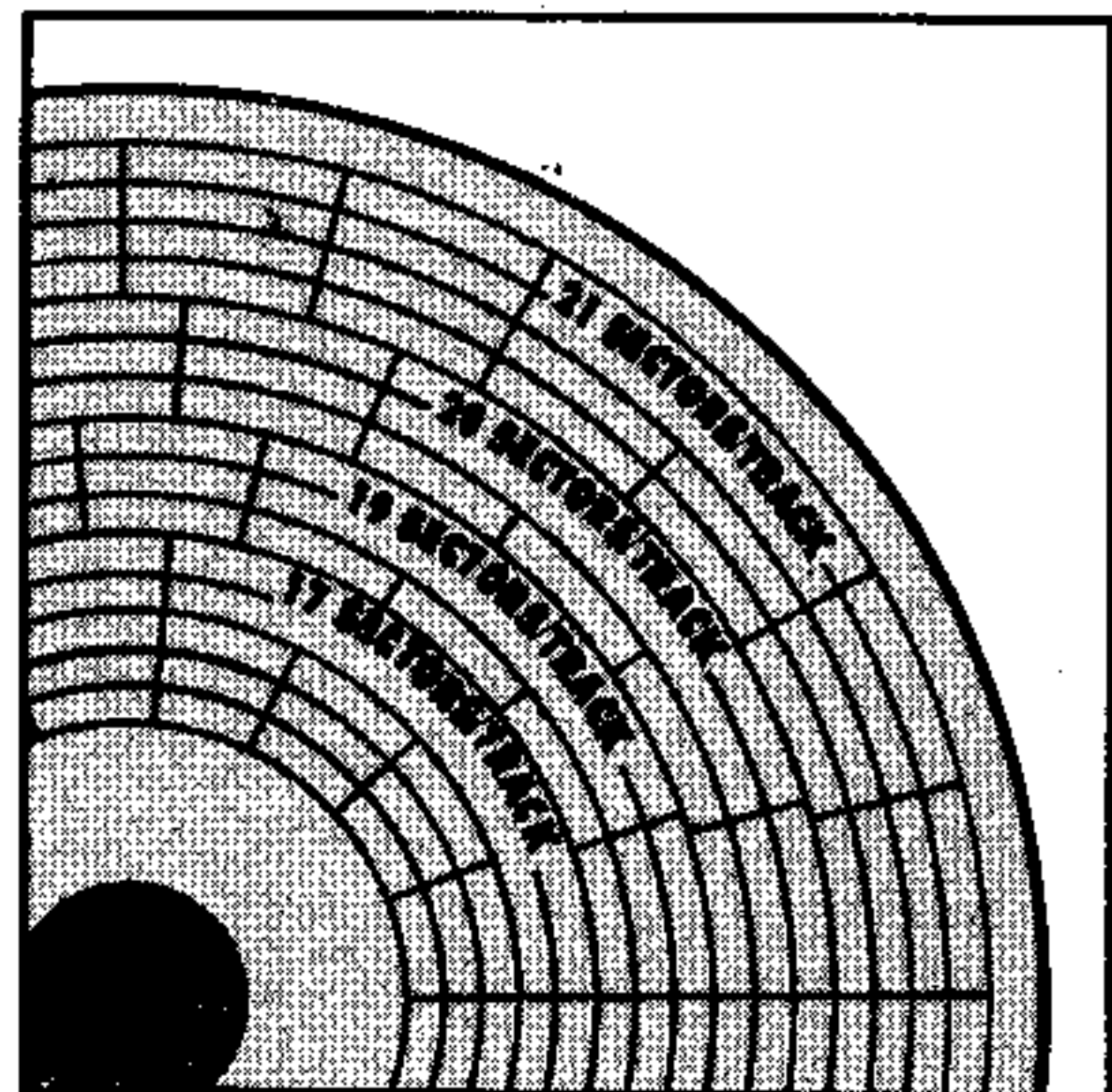
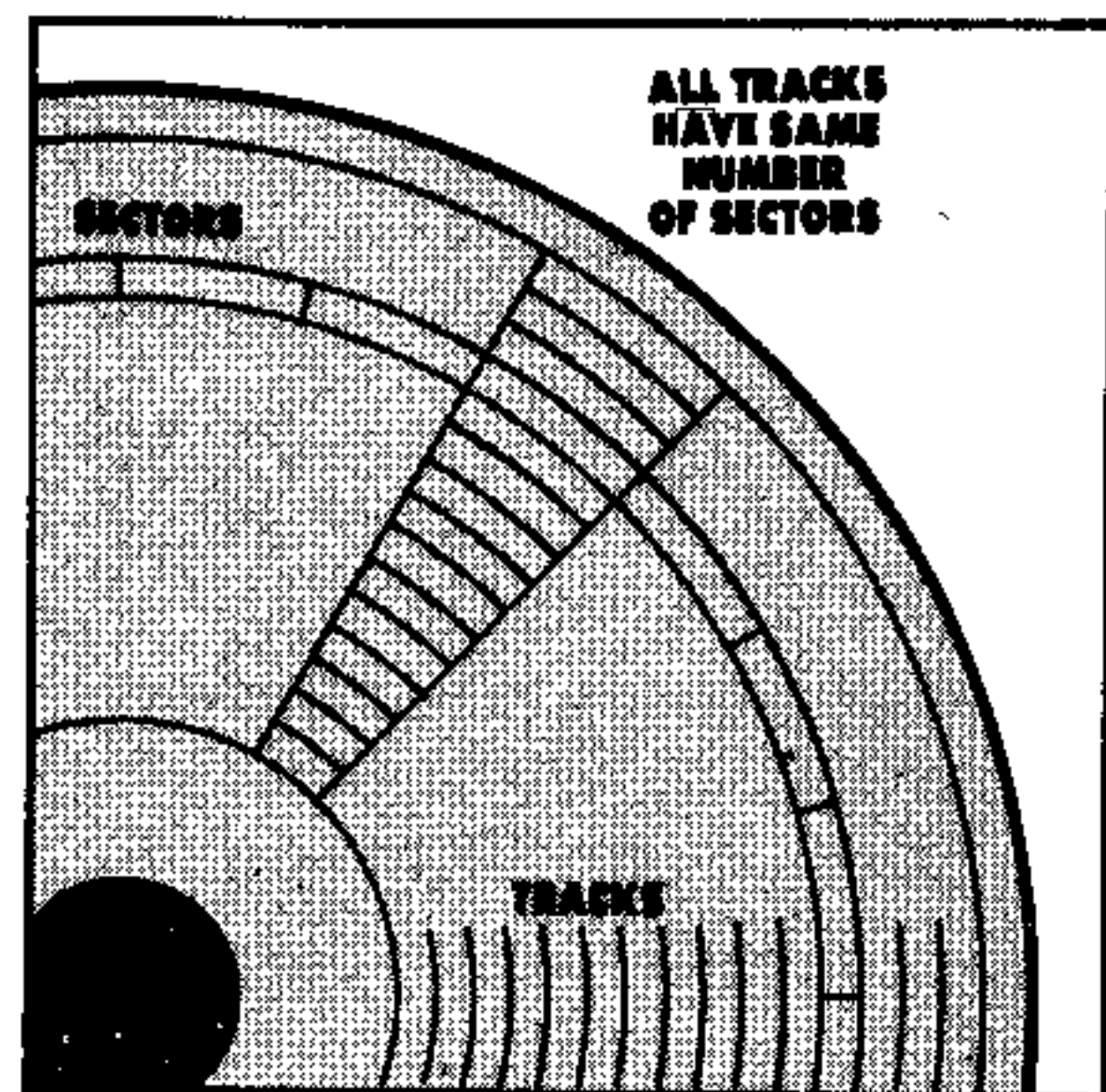
What are tracks and sectors on a disk?

DR. KURSOR: Though you can't see it, the surface of a formatted floppy disk is very organized. The data is divided into 35–80 rings, called "tracks," one inside another (see diagrams). The drive's read-write head moves in and out to reach each one.

Each track is divided into blocks called "sectors." DOS keeps track of where information is on a disk by remembering what sector it's in. A sector's the minimum amount that can be read or written at one time.

Usually, sectors get bigger the nearer you get to the outer edge of

the disk (see top diagram), even though they don't contain any more data. A few drives, like the Commodore and Macintosh, divide the bigger tracks into more sectors (see bottom diagram) and cram more info into the larger, outer tracks. This requires some fancy electronics, but gets more K onto a disk.



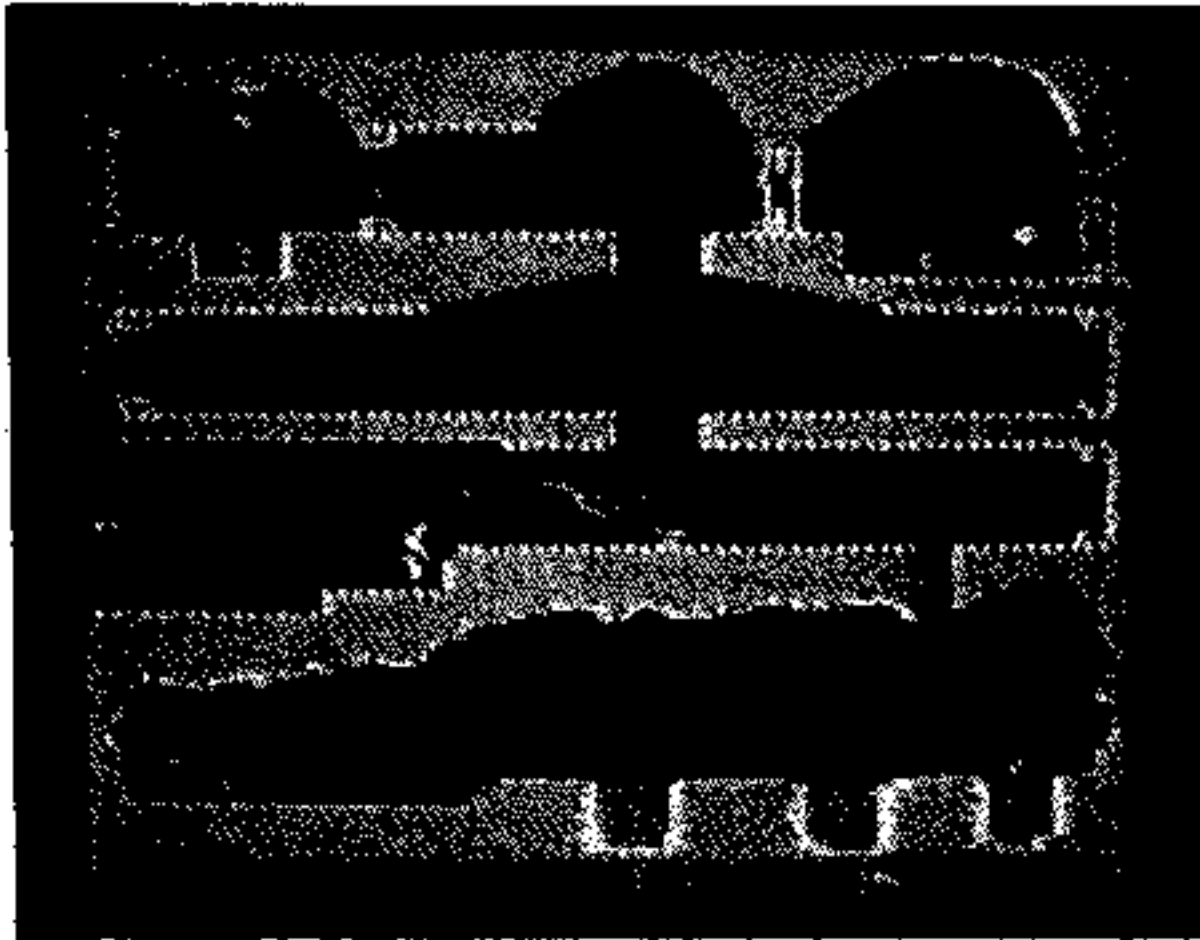
STRATEGY

TIPS, TRICKS, AND HINTS

CONAN

Datasoft. Arcade adventure. Your mission: To seek out and destroy the evil Volta, Conan's arch-enemy. (Hints and game for Apple.)

On level 3, wait on the ladder, just high up enough to avoid the ants, until the teleporter shows up.



Throw your sword from here to slay the dragon.

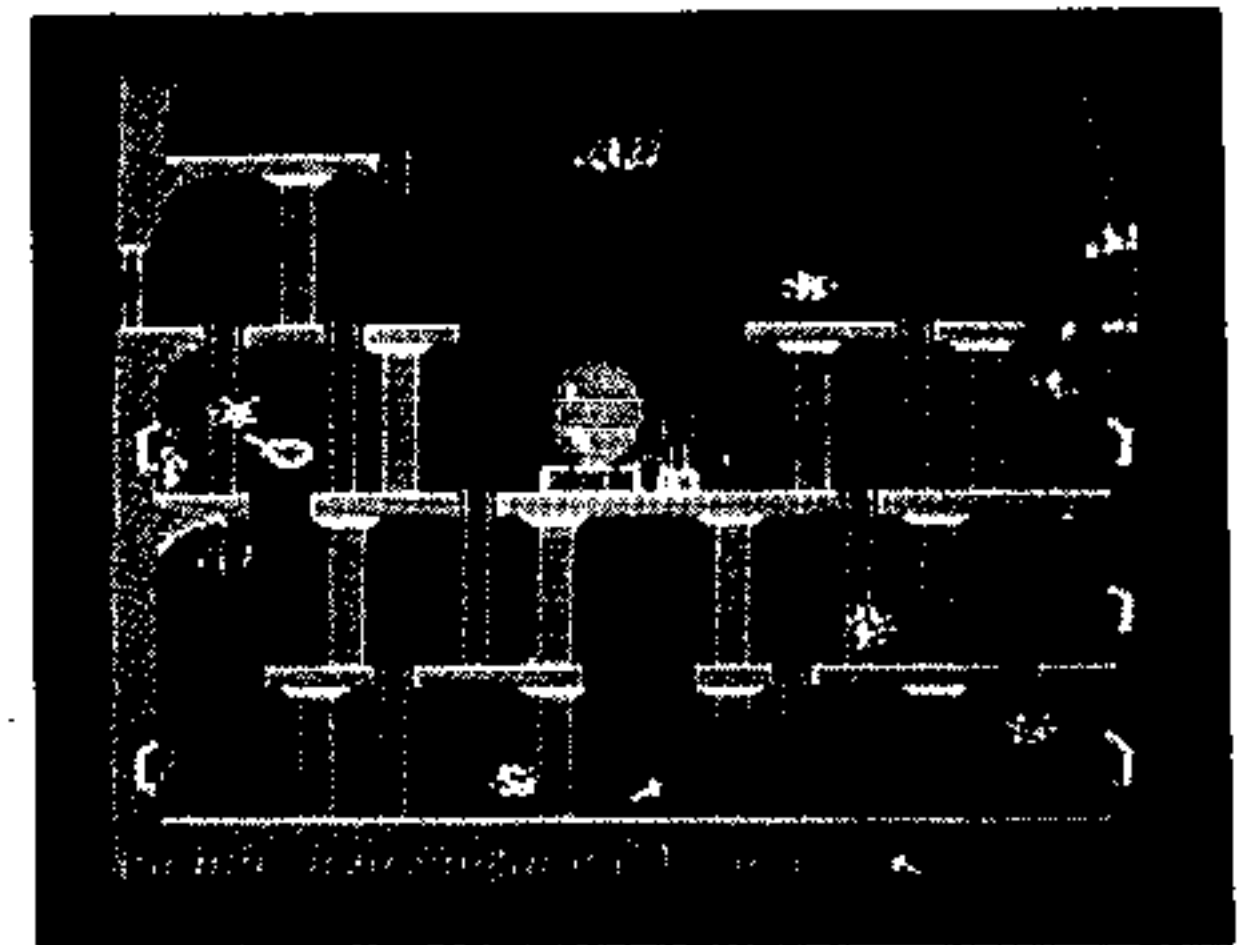
Be sure there are no ants anywhere on the screen, and run for the portal. Once on the top level, be sure to touch the bird.

On level 4, hide on the upper ladder, as close to the top as possible, until a gem or sword appears. This spot gives you easy access to all platforms.

Also on level 4, be sure to get an extra gem before you leave. It is very hard to get one on level 5.

On level 5, jump onto the first step and get as close to the wall as you can. This puts you below the dragons' fireballs but lets you kill an oncoming dragon if you throw your sword when the dragon is slightly past the lamp.

On level 6, go down the closest ladder and kill the eyes from behind the torch; the sparks can't get you there.



Stand here and you can hit the eye without being killed.

On level 7, stand on the catapult for a while. This will give you enough strength to turn a star back into a gem.

On any level, have patience. A good barbarian always thinks before he acts.—MITCHELL WELLS, 13, San Gabriel, California; MIKE FISHER, 16, St. Paul, Minnesota; SPECIAL Ks

PASTFINDER

Activision. Arcade/skill. Your mission: To collect artifacts on a radiation-filled planet and deliver them to your bases, which are scattered around the board. (Hints and game for Atari, Commodore.)

Hold down the fire button if continuous fire doesn't bother you.

Always use a scrambler and beam shield (if you have them) on squares with black boxes.

Heavy metal should always be in use.

Don't get overly distracted by shooting the objects in your way. They're just not worth risking death for.

When your radiation level starts getting high, don't waste time collecting artifacts. Head for the nearest diamond as fast as you can.

If the free lives are out of your way, i.e. below you or through a zone of high radiation, you're better off forgetting them. You'd probably lose a lot more than you'd gain by pursuing them.

After getting to the top of a set of screens, take down any scrambler or beam shield you have. When you get back to the lower levels you won't encounter too many enemy ships.

When traveling without protection on "black box" screens, try to stay to one side of the screen. This will give you the most time to react against enemy ships.

The best way to avoid enemy ships and their shots is to jump over them.—SPECIAL Ks



Roam across an alien landscape in search of artifacts.

STARCROSS

Infocom. Text adventure. Your mission: To explore an ancient alien artifact you discover while traveling through space. (Hints and game for Apple, Atari, Commodore 64, IBM, TI-99/4A, TRS-80.)

Look into the barrel of the raygun. You'll find something useful.

Although the tape library may seem useless in the beginning, make sure you bring it with you.

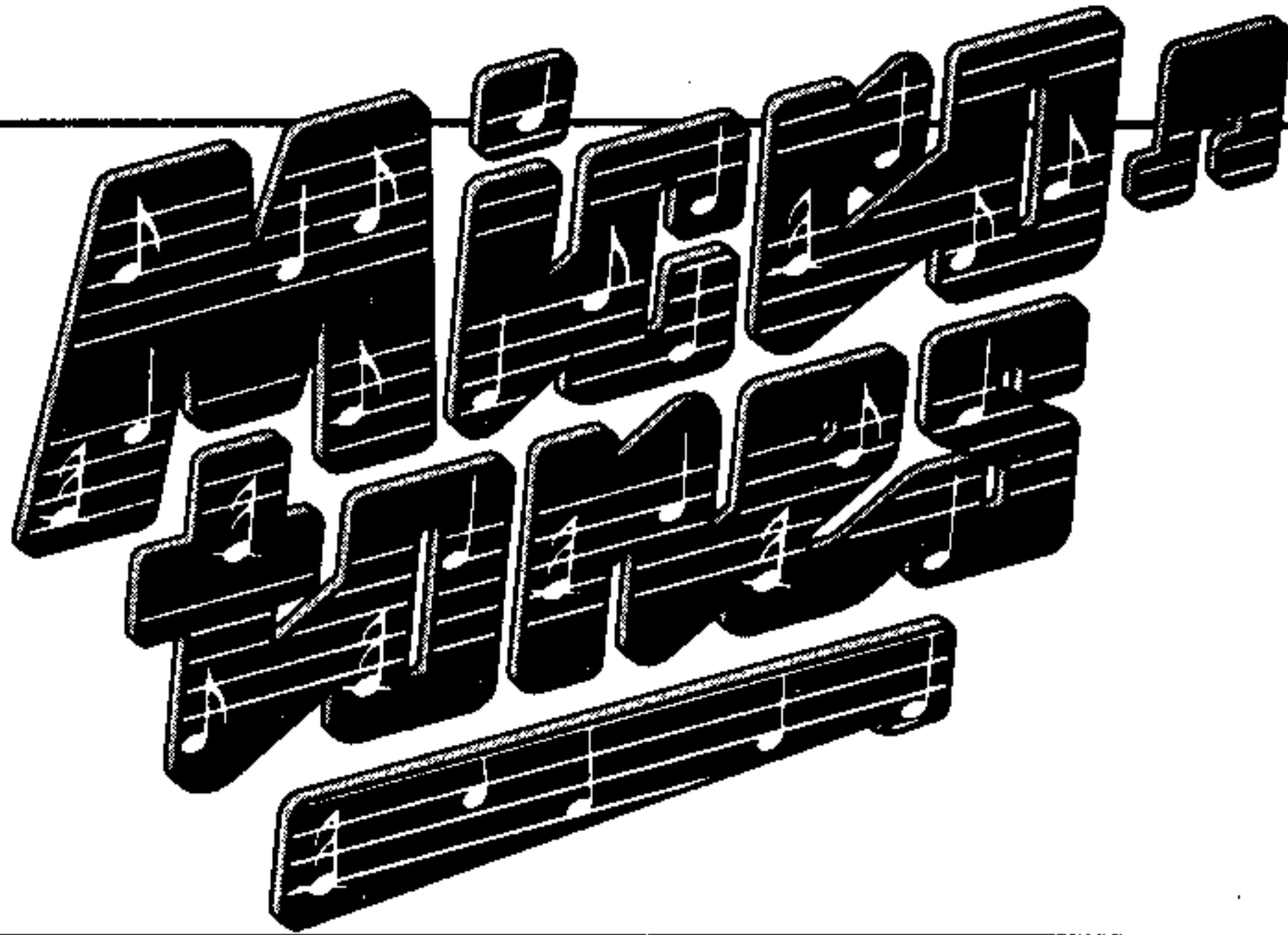
Try hitting the rat/ant nest with something heavy.

Make sure you're using the visor fragment when you look into the projector.

Get the mouse to take all your items except one disk, then stand on your remaining one.

The raygun is not used for killing.

Place all your rods into the basket.—ADAM NORTHRUP, 14, Dansville, New York; BRIAN POFF, 17, Pittsburgh, Pennsylvania; JEFFREY PANKRATZ, 13, Holcomb, New York



MUSIC PROGRAMS BY JOEY LATIMER

Tuning a guitar can be a frustrating experience. Professional guitarists often have the luxury of using expensive tuning devices with meters that show whether each individual string should be tightened or loosened. Most guitarists, however, are forced to use inexpensive products, such as tuning forks and pitch pipes, to get their guitars on pitch.



Guitarists, don't fret. In *Microtones* this month, we've come to the rescue with an almost hands-free guitar tuning program for your computer. With this program, your computer will patiently play each note you select as long as you need to hear it, and will never run out of wind! All you have to do is press the space bar to select the string you want to tune, and press the "P" key to make the string sound. Pressing the "P" key again will turn off the sound. Soon you'll be calling your computer the *Ultimate Pitch Pipe*.



APPLE/ULTIMATE PITCH PIPE

```

10 DIM L(6,7),B(6),ST(6,6),N(6)
20 FOR I = 0 TO 6:B(I) = 2^I:NEXT I
30 FOR I = 1 TO 6:FOR J = 1 TO 7
40 READ L(I,J):NEXT J:NEXT I
50 FOR I = 1 TO 6:FOR J = 1 TO 6
60 READ ST(I,J):NEXT J:NEXT I
70 FOR I = 1 TO 6:READ N(I):NEXT I
80 FOR I = 768 TO 785:READ A:POKE I,A:NEXT I
90 HGR:HOME
100 VTAB 21:HTAB 3:PRINT "*--- THE ULTIMATE PITCH PIPE
---*"
110 PRINT "PRESS <SPACE BAR> TO MOVE FROM NOTE TO"
120 PRINT "NOTE, <P> TO TURN SOUND ON AND OFF, OR"
130 PRINT TAB(13);"<Q> TO QUIT.";
140 HCOLOR= 5:HPLLOT 201,35 TO 277,35 TO 277,83 TO 201,
83 TO 201,35
150 HCOLOR= 6:FOR Q = 2 TO 6:GOSUB 320:NEXT Q
160 HCOLOR= 5:FOR I = 47 TO 197 STEP 30:HPLLOT I,38 TO
I,80:NEXT I
170 HCOLOR= 3:FOR I = 1 TO 6

```

```

180 FOR J = 1 TO 7:V = L(I,J):FOR K = 6 TO 0 STEP -1
190 IF V >= B(K) THEN V = V-B(K):HPLLOT 8-K,27+I*8+J
200 NEXT K:NEXT J:NEXT I
210 Q = 1:F = 0
220 HCOLOR= 3:GOSUB 320
230 K = PEEK(-16384)-128:IF K < 0 THEN 230
240 KS = CHR$(K):POKE -16368,0
250 IF KS = "Q" OR KS = CHR$(113) THEN TEXT:HOME:END
260 IF KS = "P" OR KS = CHR$(112) THEN F = NOT F:IF F
THEN POKE 6,N(Q):CALL 768:GOTO 230
270 IF KS <> " " THEN 230
280 HCOLOR= 6:GOSUB 320
290 Q = Q+1-6*(Q = 6):HCOLOR= 3:GOSUB 320
300 IF F THEN POKE 6,N(Q):CALL 768
310 GOTO 230
320 X = 10:Y = 31+Q*8:HPLLOT X,Y:FOR J = 1 TO 5 STEP 2
330 X = X+ST(Q,J):HPLLOT TO X,Y:Y = Y+ST(Q,J+1):HPLLOT TO
X,Y:NEXT J
340 HPLLOT TO X-10,Y:RETURN
1000 DATA 63,32,32,60,32,32,63,12,18,33,33,63,33,33
1010 DATA 60,34,33,33,33,34,60,30,33,32,32,39,34,28
1020 DATA 62,33,33,62,33,33,62,63,32,32,60,32,32,63
1030 DATA 204,-10,-10,-10,20,10,230,-18,-10,-10,20,10
1040 DATA 256,-26,-10,-10,20,10,256,26,-10,10,20,-10
1050 DATA 230,18,-10,10,20,-10,204,10,-10,10,20,-10
1060 DATA 235,176,133,99,78,58,166,6,173,48,192,44,0
1070 DATA 192,48,7,234,202,208,247,76,0,3,96

```



COMMODORE 64/ULTIMATE PITCH PIPE

```

10 DIM H(6),L(6),SS(6),COS(6),PS(2)
20 S=54272:US=CHR$(145):DS=CHR$(17):LS=CHR$(157)
30 SMS=CHR$(182)+CHR$(181):BKS=CHR$(113)+CHR$(113)
40 FOR I=S TO S+24:POKE I,0:NEXT I
50 POKE S+5,96:POKE S+6,96:POKE S+24,15
60 FOR I=1 TO 6:READ H(I),L(I):NEXT I
70 FOR I=1 TO 6:READ CO:CO$(I)=CHR$(CO):NEXT I
80 SPS=CHR$(160):FOR I=2 TO 12:SPS=SPS+CHR$(160):NEXT
I
90 SS=CHR$(99):FOR I=2 TO 25:SS=SS+CHR$(99-24*(I/5=INT
(I/5))):NEXT I
100 SS=SS+CHR$(123):FOR I=1 TO 14:SS=SS+CHR$(99):NEXT
I
110 PS(1)=SMS+US+LS+LS+BKS:PS(2)=SMS+DS+LS+LS+BKS
120 FOR I=1 TO 3:PS(I)=CHR$(98)+US+LS+PS(1)
130 PS(2)=CHR$(98)+DS+LS+PS(2):NEXT I
140 FOR I=1 TO 6:READ TS,L,R
150 SS(I)=TS+LEFT$(SS,L)+CHR$(107+2*(I>3))
160 SS(I)=SS(I)+CHR$(145+128*(I>3))+LS
170 SS(I)=SS(I)+RIGHT$(PS(1-(I>3)),R):NEXT I
180 POKE 53280,0:POKE 53281,0
190 PRINT CHR$(147);TAB(3);CHR$(5);"*--- THE ULTIMATE
PITCH PIPE ---*"
200 PRINT CHR$(28):POKE 214,5:PRINT:FOR I=1 TO 8
210 PRINT TAB(27);CHR$(28);CHR$(18);SPS:NEXT I
220 PRINT CHR$(5):FOR I=7 TO 11:POKE 214,I:PRINT
230 PRINT SS(I-5):NEXT I
240 POKE 214,18:PRINT
250 PRINT CHR$(5);TAB(4);"PRESS <SPACE BAR> TO MOVE FR
OM"
260 PRINT " STRING TO STRING, <P> TO TURN SOUND"
270 PRINT TAB(6);"ON AND OFF, OR <Q> TO QUIT."
280 P=6:F=0
290 POKE 214,P:PRINT:PRINT COS(1);SS(1)
300 GET KS:IF KS="" THEN 300
310 IF KS<>"Q" THEN 330
320 SYS 770:END
330 IF KS="P" THEN F=NOT F:GOSUB 1000:GOTO 300
340 IF KS<>" " THEN 300
350 POKE 214,P:PRINT
360 PRINT CHR$(5);SS(P-5):P=P+1+6*(P=11)
370 POKE 214,P:PRINT
380 PRINT COS(P-5);SS(P-5):IF F THEN GOSUB 1000

```



```

390 GOTO 300
1000 POKE S+4,-33*F:POKE S,-L(P-5)*F
1010 POKE S+1,-H(P-5)*F:RETURN
2000 DATA 5,71,7,12,9,104,12,143,15,210,21,31
3000 DATA 30,31,156,158,159,28
4000 DATA E,27,10,A,31,13,D,35,16
4010 DATA G,35,16,B,31,13,E,27,10

```



IBM PC W/COLOR GRAPHICS ADAPTER & IBM PCjr/ULTIMATE PITCH PIPE

```

10 KEY OFF:WIDTH 40:SCREEN 0,1
20 DIM ST$(6),PS(2),N(6)
30 US=CHR$(30):DS=CHR$(31):LS=CHR$(29)
40 SMS=CHR$(222)+CHR$(221):BKS=STRING$(2,219)
50 FOR I=1 TO 6:READ N(I):NEXT I
60 SS=CHR$(205):FOR I=2 TO 25
70 SS=SS+CHR$(205-(I/5=INT(I/5))*11):NEXT I
80 SS=SS+CHR$(216)+STRING$(14,205)
90 PS(1)=SMS+US+LS+LS+BKS:PS(2)=SMS+DS+LS+LS+BKS
100 FOR I=1 TO 3:PS(1)=CHR$(186)+US+LS+PS(1)
110 PS(2)=CHR$(186)+DS+LS+PS(2):NEXT I
120 FOR I=1 TO 6:READ TS,L,R
130 ST$(I)=TS+LEFT$(SS,L)+CHR$(188+(I>3))+CHR$(30-(I>3))
140 ST$(I)=ST$(I)+LS+RIGHT$(PS(1-(I>3)),R)
150 NEXT I
160 CLS:COLOR 13
170 PRINT TAB(3);"*--- THE ULTIMATE PITCH PIPE ---*"
180 COLOR 6:FOR I=5 TO 12
190 LOCATE I,27:PRINT STRING$(12,219):NEXT I
200 COLOR 15:FOR I=7 TO 11
210 LOCATE I,1:PRINT ST$(I-5):NEXT I
220 COLOR 14:LOCATE 18,4
230 PRINT "PRESS <SPACE BAR> TO MOVE FROM"
240 PRINT TAB(2);"STRING TO STRING, <P> TO TURN SOUND"
250 PRINT TAB(6);"ON AND OFF, OR <Q> TO QUIT."
260 P=6:F=0
270 COLOR P+3:LOCATE P,1,0:PRINT ST$(P-5)
280 KS=INKEY$:IF KS="" THEN 280
290 IF KS="Q" OR KS="q" THEN COLOR 7:CLS:SOUND 32767,0
END
300 IF KS="P" OR KS="p" THEN F=NOT F:SOUND N(P-5),-F*6
3535!:GOTO 280
310 IF KS">" THEN 280
320 COLOR 15:LOCATE P,1:PRINT ST$(P-5):P=(P+1) MOD 6+6
330 COLOR P+3:LOCATE P,1:PRINT ST$(P-5)
340 IF F THEN SOUND 32767,0:SOUND N(P-5),65535!
350 GOTO 280
4000 DATA 164.81,220,293.66,392,493.88,659.26
4000 DATA E,27,10,A,31,13,D,35,16
4010 DATA G,35,16,B,31,13,E,27,10

```



1-99/4A/ULTIMATE PITCH PIPE

```

0 DIM N(6)
0 CALL CHAR(152,"FFFFFFFFFFFFFFFF")
0 FOR I=0 TO 4
0 READ AS
0 FOR J=104 TO 144 STEP 8
0 IF (I<>2)+(J<128)THEN 80
0 AS="000000F8F8181818"
0 CALL CHAR(I+J,AS)
0 NEXT J
00 NEXT I
10 FOR I=1 TO 6
20 CALL COLOR(I+9,2,1)
30 READ N(I)

```

```

140 NEXT I
150 CALL COLOR(16,7,1)
160 CALL CLEAR
170 CALL SCREEN(16)
180 PRINT "*-THE ULTIMATE PITCH PIPE-*": : : : :
190 PRINT "E":"A":"D":"G":"B":"E": : : : : :
200 PRINT " PRESS <SPACE BAR> TO MOVE"
210 PRINT " FROM STRING TO STRING,"
220 PRINT " <P> TO TURN SOUND ON AND"
230 PRINT TAB(5);"OFF, OR <Q> TO QUIT."
240 FOR I=4 TO 16 STEP 4
250 FOR K=104 TO 144 STEP 8
260 CALL HCHAR((K-104)/8+8,I,K,3)
270 CALL HCHAR((K-104)/8+8,I+3,K+1)
280 NEXT K
290 NEXT I
300 FOR I=7 TO 14
310 CALL HCHAR(I,20,152,8)
320 NEXT I
330 FOR I=0 TO 5
340 READ L,R
350 CALL HCHAR(I+8,20,105+I+8)
360 CALL HCHAR(I+8,21,104+I+8,L)
370 CALL HCHAR(I+8,21+L,106+I+8)
380 CALL VCHAR(I+8+(R-1)*(R>0)-(R<0),21+L,107+I+8,ABS(R)-1)
390 CALL HCHAR(I+8-R,21+L,108+I+8)
400 NEXT I
410 P=10
420 F=1
430 CALL COLOR(P,3,1)
440 CALL KEY(3,K,S)
450 IF S=-1 THEN 440
460 CALL SOUND(-4250,N(P-9),30*F)
470 IF (K<>113)*(K<>81)THEN 490
480 END
490 IF (K<>112)*(K<>80)THEN 520
500 F=-(F-1)
510 GOTO 440
520 IF K<>32 THEN 440
530 CALL COLOR(P,2,1)
540 P=P+1+6*(P=15)
550 CALL COLOR(P,(P-10)*2+4,1)
560 GOTO 440
1000 DATA 000000FFFFFF000000
1010 DATA 181818FFFF181818
1020 DATA 181818F8F8000000
1030 DATA 1818181818181818
1040 DATA FFFFFFFFFFFFFFFF
2000 DATA 165,220,294,392,494,659
3000 DATA 1,3,3,4,5,5,5,-5,3,-4,1,-3

```

M I C R O N O T E S

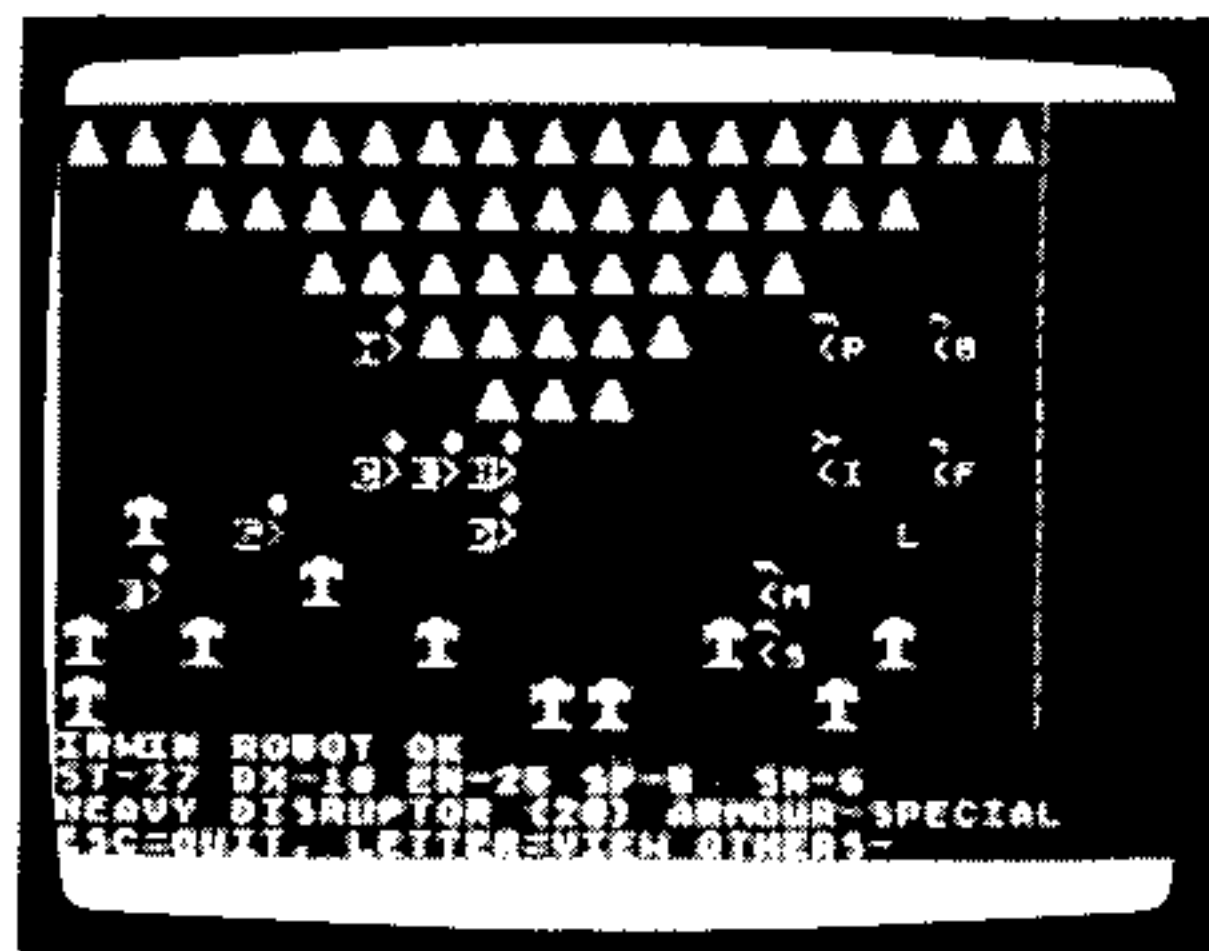
More music news. Another professional composer has come up with a way to use a C 64 in his work. **Ron Grant**, who works on soundtracks for CBS's **"Knots Landing,"** uses his C 64 much like a musical spreadsheet to create scores and figure out tempos for different parts of the show. Ron's brother **Richard** helped him out by developing **Auricle**—a program he describes as "the ear of the computer." **Auricle**, which understands English commands, includes all the mathematical variations of a "click-track book" (a listing of complicated figures for working on film soundtracks), reconciles "musical" time with "real" or "film" time, and manipulates tempos. Ron and Richard sold their first **Auricle** program to **Lance Rubin**, who used it to score a show of **"Dallas,"** saving himself a day of work in the process. **Auricle** is available for \$595.

—LINDA WILLIAMS

GAMES REVIEWS BY JAMES DELSON

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	PS	GQ	EU	V
THE ANCIENT ART OF WAR Broderbund 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 \$44 ©1984	Challenging multilevel war game lets you use built-in scenarios and opponents (Napoleon, Genghis Khan, Caesar, and more), or create your own encounters. Best for beginners and pros taking a break; for ages 12+. †	IBM PC/PCjr, 128K (d.). Planned for Apple II series, Mac.	Unlimited warranty; \$5 fee if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
B.C. II: GROG'S REVENGE Sierra Inc. P.O. Box 485 Coarsegold, CA 93614 (209) 683-6858 \$34 ©1984	Steer Thor along mountain trails, through caverns, picking up clams, and avoiding Grog the dino and other perils. Wonderful graphics and easy play make this good for ages 8+.	Reviewed on C 64 (d.). Also for Coleco ADAM (data cassette) from Coleco. Joystick.	90-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
GALACTIC ADVENTURES Strategic Simulations 883 Stierlin Rd., Bldg A-200 Mountain View, CA 94043 (415) 964-1353 \$59 ©1982-1984	Guide up to 10 different characters through a vast galaxy in exciting preprogrammed adventures or those you build yourself. Finest role-playing game ever. For ages 12+. †	Reviewed on Atari, 48K (d.). Also for Apple II series, 48K (d.).	30-day warranty; \$10 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
HITCHHIKER'S GUIDE TO THE GALAXY Infocom 55 Wheeler St. Cambridge, MA 02138 (617) 492-1031 839 (Apple, IBM, TI); 834 (Atari, C 64) ©1984	In this funny text adventure based on best-selling book, you are the lone surviving earthling, fated to wander the galaxy in a quest for truth and meaning. Good for sci-fi and text-adventure fans, ages 14+. It's tough, but "don't panic!" †	Reviewed on Apple II series, 48K (d.). Also for Atari, 32K (d.); C 64 (d.); IBM PC/PCjr, 64K (d.); Mac; TI-99/4A, 32K (d.).	90-day warranty; \$5 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	D	★ ★ ★ ★
MASTER OF THE LAMPS Activision 2350 Bayshore Frontage Rd. Mountain View, CA 94043 (415) 960-0410 \$29 ©1985	Intriguing skill/arcade game puts you in the driver's seat on a flying carpet. After you've flown through a tunnel, you must match sounds and colors with a genie's offerings; for ages 8+.	C 64 (d.), Joystick.	1-year warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
ON-COURT TENNIS Gamestar Inc. 1302 State St. Santa Barbara, CA 93101 (805) 963-3487 \$29 ©1984	Superb tennis simulation lets you choose player styles and court surfaces, then use joystick to control angle, speed, and direction of shots. Good for long-lasting play. For ages 10+. †	C 64 (d.), Joystick.	90-day warranty.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
PARIS IN DANGER Avalon Hill 4517 Harford Road Baltimore, MD 21214 (301) 254-5300 \$35 ©1983	Opposing armies face off in simulation of Napoleon's 1814 defense of France against Prussian/Austrian/Russian forces. Ages 12+ engage in both large-scale planning and close combat.	Atari, 48K (d.).	Unlimited warranty; \$10 fee if user-damaged, or for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	D	★ ★ ★ ★
QUINK CBS Software 1 Fawcett Place Greenwich, CT 06836 (203) 622-2500 \$34 ©1985	Choose from a variety of subject areas, set a skill level, and prepare yourself for an exciting thinking/knowledge game. Trivia-like game makes terrific use of the computer. For ages 12+.	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.); IBM PC/PCjr, 128K (d.).	90-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
SHORT CIRCUIT Micro Fun 2699 Skokie Valley Road Highland Park, IL 60035 (312) 433-7550 \$20 ©1985	Zip through a dazzling array of circuit boards as you try to head off the destruction of the world. Exciting game requires limited strategy, methodical movement, and a quick wrist. For age 8+.	Apple II series, 48K (d.).	30-day warranty; \$5 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
WINGS OUT OF SHADOW Baen Enterprises 8 W. 36 St. New York, NY 10018 (212) 947-8244 \$34 ©1984	Command 10 ships in combat, defend flagship against boarding enemies. Several games in one simulate space adventure. Complex for beginners, but worth the effort. For ages 12+.	Apple II/II plus/IIe, 48K (d.).	30-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★

RATINGS KEY O Overall performance; D Documentation; PS Play system; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart



other beings. Talk with them to obtain jobs (use your special skills for pay), barter for trade goods, ask them to join your band, or fight them to build up your combat experience and weapon skills.

If the planet you're on isn't to your liking, buy a spacecraft (very expensive) or fly as a passenger to another world. If you dare (and if your characters are advanced enough), try taking a job for one of the four interstellar government agencies. They'll send you on dangerous missions where you can quickly rise to higher levels of expertise.

The game is complex, takes months to play, and offers the best time I've had with a computer. What's more, once you begin to tire of the adventures supplied in the program, there's a first-rate construction set, which allows you to build your own worlds for further adventures. This game is a necessity for every dedicated adventurer, and an excellent introduction for beginners who haven't tried their hand at role-playing games.

The Hitchhiker's Guide to the Galaxy

HARDWARE REQUIREMENTS: Reviewed on Apple II series. Also for Macintosh, Atari, C 64, IBM PC/PCjr, TI-99/4A.

MANUFACTURER: Infocom

PRICE: \$39 (Apple, IBM, TI); \$34 (Atari, C 64)

CRITIC'S SUGGESTED AGE: 14+

First came Douglas Adams' brilliant, satirical, science-fiction radio program, *The Hitchhiker's Guide to the Galaxy*. Then came a best-selling book, more books, a TV series, and a soon-to-be-released movie. Now, there's a computer game based on the original story.

Who else but Infocom designer Steve Meretzky (author of the comic science adventure *Planetfall*) could create this difficult but rewarding

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- 1/84 Review of Coleco's Adam
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WHAT'S IN STORE SOFTWARE REVIEWS

text adventure? As the only surviving earthling, you wander through the galaxy in search of truth and the meaning of life (or whatever passes for it amidst the stars). By discovering how to teleport from a planet to a starship, or obtain a "Babel fish" from a vending machine (allow at least two hours for that), you'll slowly grow to be a bona fide hitchhiker, worthy of survival in the galaxy.

This is a funny game. But, like all Infocom adventures, it often is frustrating. There are many steps to follow and so many puzzles to solve that you should count on at least 100 hours of game time to finish it. Still, if you're willing to tough it out, this is one of the best examples of interactive fiction around. (See interview with Adams in this issue.)

The Ancient Art of War

HARDWARE REQUIREMENTS: IBM PC/PCjr. Planned for Apple II series, Macintosh.

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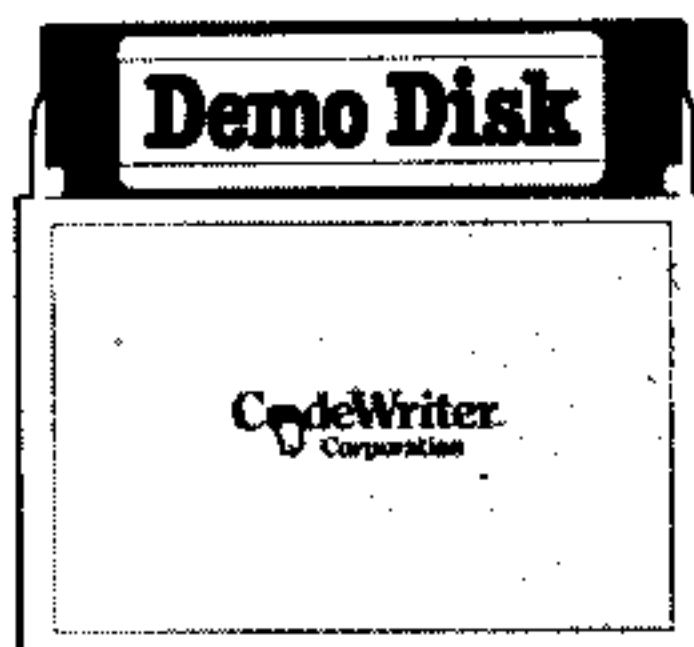
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