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# FAMILY

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# COMPUTING

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# FAMILY COMPUTING

## FEATURES

**34 THE LURE OF FANTASY AND ADVENTURE GAMES— Exploring Beyond Your Wildest Dreams**  
*by Eric Grevstad*

A close look at this increasingly popular genre of computer games; why they develop such avid fans; how they're made and who makes them.  
PLUS: HOW TO PROGRAM AN ADVENTURE IN BASIC.

**41 THE WIZARD OF WIZARDRY**  
*by Nick Sullivan*

The designer of the all-time best-selling game *Wizardry* in an exclusive interview with FAMILY COMPUTING.  
PLUS: WORKING OUT FEARS THROUGH FANTASY

**43 HOW TO CARE FOR YOUR HOME COMPUTER**  
*by Heidi Waldrop*

Common sense tips for keeping the parts and the whole of a computing system in top working condition.

PLUS: WHAT WENT WRONG?

**46 CRUNCHING NUMBERS FOR THE LITTLE LEAGUE**  
*by James H. Burns*

Teenager Perry Pierce takes a big league approach to Little League scorekeeping. He uses a computer, and a program he wrote.

Page 46

**52 HOW TO MAKE BE THE FIRST COMPUTER ON YOUR BLOCK**  
*by Joey and Elaine Latimer*

Spend an afternoon following five easy steps and you'll have the most up-to-the-minute Halloween costume around.

**54 PORTRAIT OF A COMPUTING FAMILY PART 2— The Conningtons Take Their Computer on a Shakedown Cruise**  
*by Nick Sullivan*

Surviving a faulty machine and a software shortage, the family moves on. Perseverance seems to pay off in the end.

Page 41

**56 EIGHT WAYS TO LEARN ABOUT COMPUTERS Or . . . Life Beyond a User's Manual**  
*by Lorraine Hopping*

Whether you're looking to learn about computers before you buy or after, you'll find where you can turn.

**60 BACK FROM FAMILY COMPUTING CAMP**  
*by Dick Lutz*

Becoming computer literate in one large bite worked for this family, whose recently purchased IBM PC is now critical to their home-based business.

Page 43



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**PROGRAMMING**

**65  
THE PROGRAMMER**

For enthusiasts of all levels.

**66  
BEGINNER PROGRAMS**  
*by Joey Latimer*

Halloween takes on a few new surprises with this month's programs. Prize-winning pumpkins and special treats—for the Apple, Atari, Commodore 64 and VIC-20, IBM, TI, Timex, and TRS-80.

**74  
PUZZLE**  
*by Stephen McManus*

*Dracula's Family Tree*—A computer puzzle to sink your teeth into and get your blood boiling.

**80  
READER-WRITTEN PROGRAMS**

A jogger's diary and a snake game that winds all around your screen.

Page 34



**WHAT'S IN STORE**

Product announcements and reviews.

**85  
NEW HARDWARE ANNOUNCEMENTS**

The latest in computers, monitors, printers, and accessories.

**88  
NOVELTIES AND NOTIONS**

A compendium of computer-related items.

**90  
SOFTWARE GUIDE**

Quick takes on two dozen new and noteworthy programs.

**94  
SOFTWARE REVIEWS**

**100  
BOOK REVIEWS**

Page 65



**DEPARTMENTS**

**9  
EDITOR'S NOTE**

**10  
BEHIND THE SCREENS**

People, News, and Trends

**16  
HOME BUSINESS**

Commuting with Computers: One Solution to Overdoing Overtime at the Office.  
*by Charles Gajeway*

**20  
HOME-SCHOOL CONNECTION**

Computers in the Classroom: What Parents Should Know  
*by Dana Rubin and Bobby Goodson*

**24  
COMPUTING CONFIDENTIAL**

New Man on Campus: The Computer

**28  
COMPUTING CLINIC**

Questions from Readers; Answers from Walter Koetke

**102  
THE PRIMER**

A multi-part reference guide that appears each month. This month: THE COMPONENTS, THE WORDS, THE SETTING, SHOPPING DOS AND DONTS

**112  
SIGN OFF**

Of Pirates and Principles: One Mother in Dogged Pursuit of Copycats  
*by Karen Groseclose*

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Advertiser's Index on page 99

COVER ILLUSTRATION  
BY DANIEL MAFFIA  
*The sword, key, castle, treasure, and pirates in the cover illustration are recurring elements in adventure games.*



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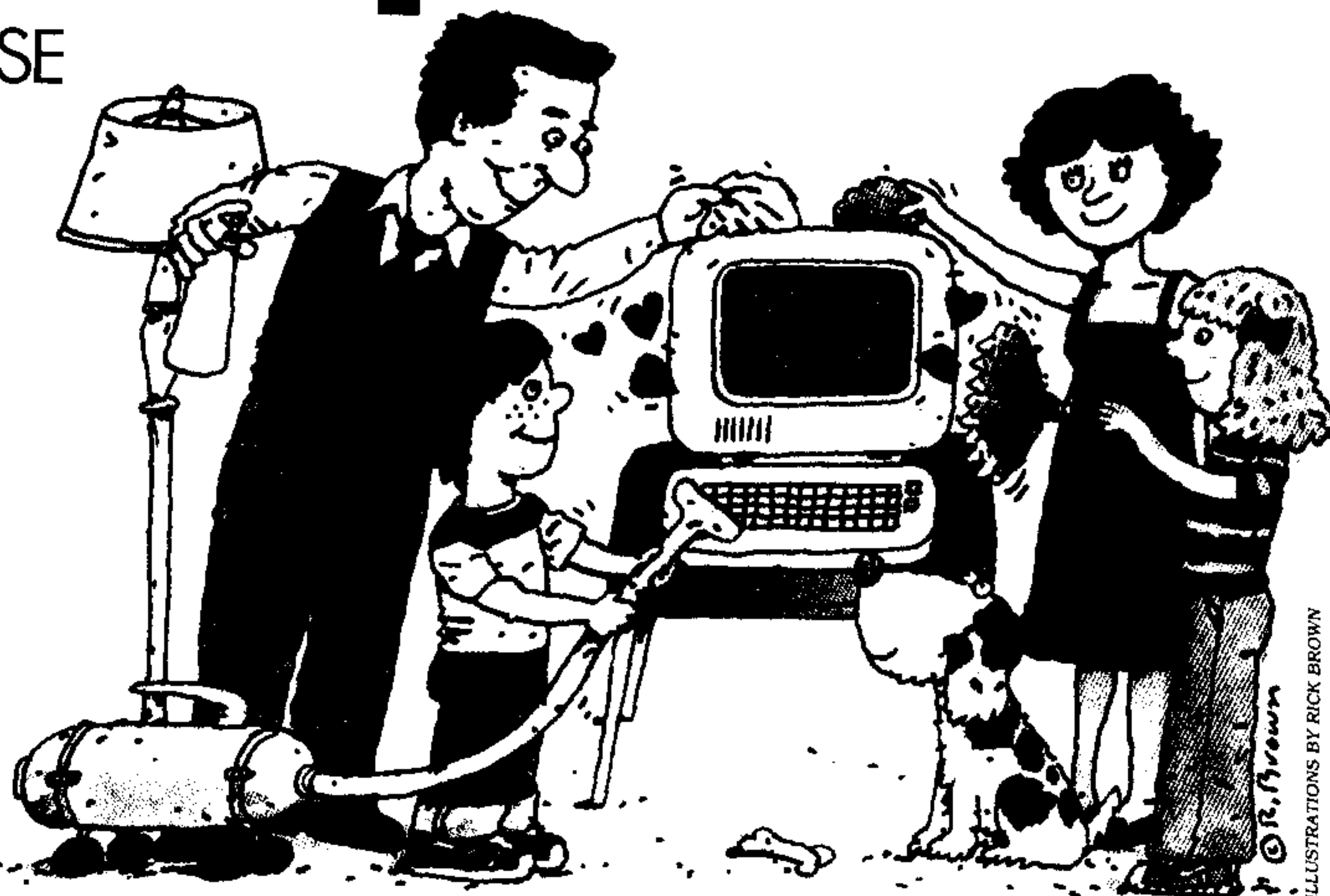
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# How to Care for Your Home Computer

COMMON SENSE  
IS THE BEST  
PRESCRIPTION

BY HEIDI WALDROP



It probably took you months to decide which computer to buy, and then once you brought it home, was it easy to set up the contraption? Now all you hear about is how fragile the machine is and how much time it takes to keep it in working order. Another household chore is just what you needed, right? Wrong. It isn't as complicated, or as time consuming as you think to keep your computer humming. Simple, common sense care can head off problems and keep the number of visits to the repair shop to a minimum.

A computer isn't a mysterious piece of machinery with a mind of its own, even though some do talk back to you. Its care is similar to that of a stereo system. Basically, a computer has electronic and mechanical parts. The electronic parts should be replaced when they blow out, and the mechanical parts need to be kept clean to function properly.

Each part of your computer requires special care. The following list offers basic guidelines and helpful hints to keep it running smoothly.

## DISK DRIVE

Because it has the most mechanical parts, the disk drive is usually the trouble spot. But following a few simple steps will help you avoid most problems. The biggest enemies are dust and dirt, so invest in a dust cover for protection, and clean the disk drive heads every other month. There are cleaning kits available that do the job quickly and efficiently. A kit usually includes a special disk made of a sponge-like

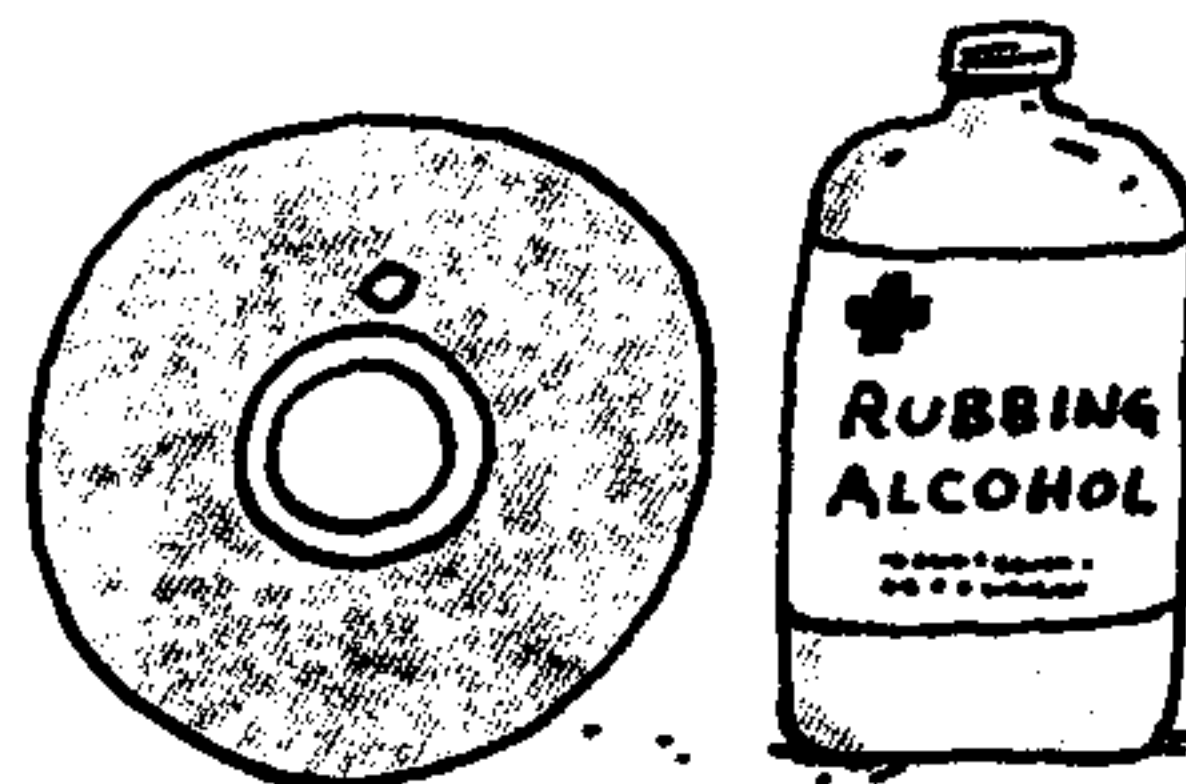
material and cleaning fluid you squeeze onto the disk before placing it into the disk drive. The disk then simply spins to clean the head. A less expensive option is to use rubbing alcohol in place of the cleaning fluid.

New or overeager computer owners sometimes clean the disk drive heads too often—don't! This is not a case when more is better. Cleaning more often than the instructions recommend can wear down the delicate heads. Be sure to read the manual carefully, and don't overdo it.

To prevent dust buildup, you should probably keep the disk drive door closed, although on some double-headed machines this puts undue pressure on the disk drive heads. Ask your dealer what's best for your computer.

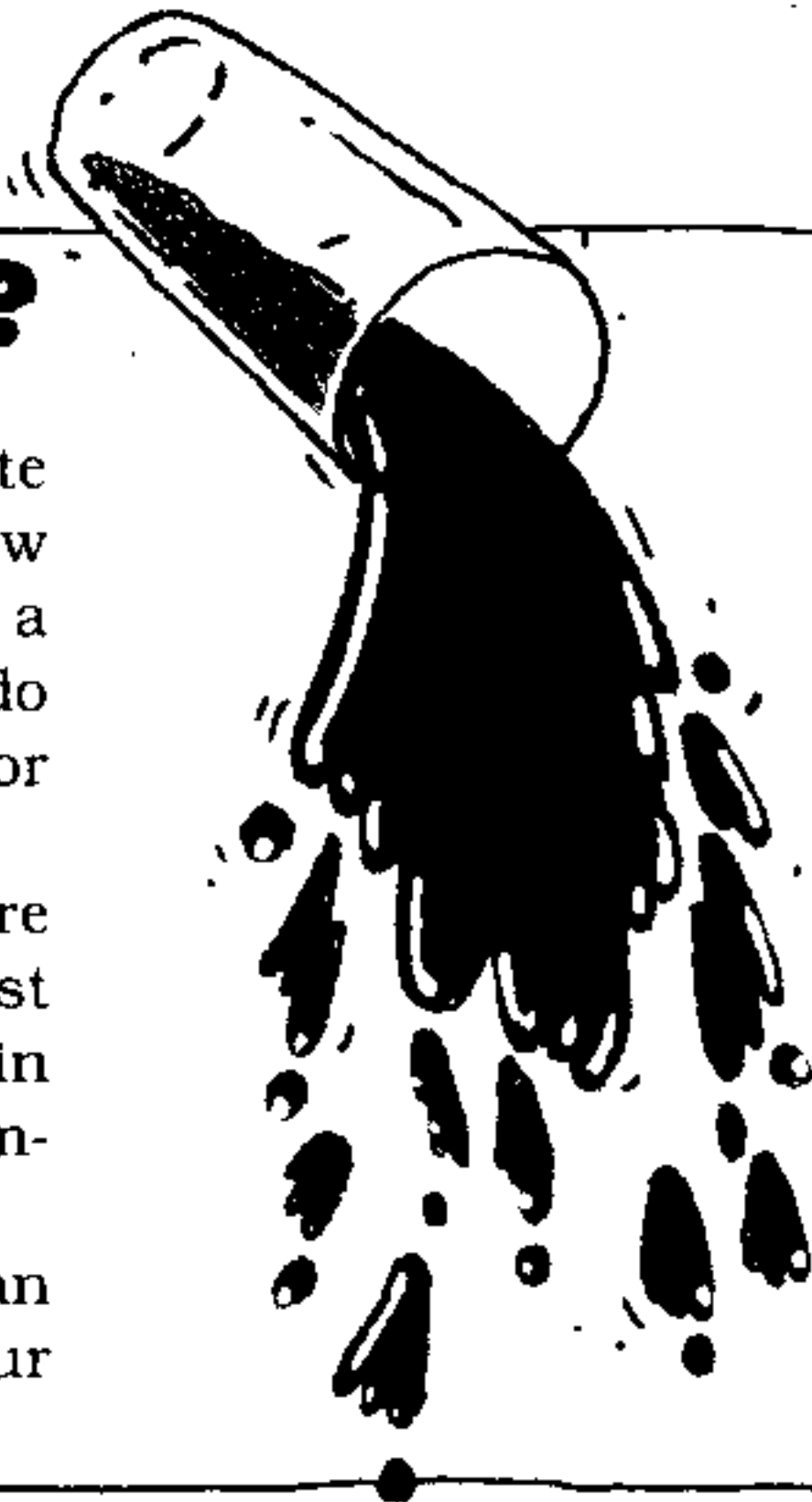
## DISKS

Taking care of disks is simple. In general, the same rules apply as for record albums. Disks need to be kept in their jackets and away from dust, extreme heat, or cold. Disks should



HEIDI WALDROP often writes on computer-related subjects. She is a frequent contributor to *Electronic Learning*, also published by Scholastic Inc.

# WHAT WENT WRONG?



The seven-year-old has just spilled chocolate milk on the keyboard of your brand new computer. After a sharp reprimand and a reminder about the house rules, what do you do next? How do you clean it up—or should you even touch it?

We've all faced times when we're sure the computer has been damaged. The first thing to do, in all situations, is to remain calm. Take a deep breath, unplug the computer, and call your dealer or repair shop.

Although it is a good idea to develop an ongoing relationship with someone in your

neighborhood who can fix your computer or advise you about repair problems, you won't want to place hysterical phone calls every time something appears to go wrong.

The following chart includes some problems that dealers around the country cite as the most common. There are many things computer owners can do on their own, but the experts stress that you should never attempt anything that makes you nervous. The biggest danger in computer care is when the inexperienced person reaches his or her hands inside the machine.

| PROBLEM   | PROBABLE CAUSE  | CURE   |
|---|---|--|
| The image on the screen blinks on and off intermittently.   | Defective cable or receptacle.  | Watch the effect on the screen as you move the cable back and forth to be sure it is a problem with the cable. You can check the specific cable by replacing it with a working one borrowed from a friend. If your cable is defective, it will need to be replaced. If moving the cable has no effect on the screen, it is most likely a receptacle problem and you will need to take the computer in.   |
| The screen shimmers, blanks, then comes back on . . . you've lost what you are working on. Or the image on the screen grows very faint. | Static, a surge of voltage through the cables, or a "brown-out."              | The best cure for this problem is prevention by both putting the computer in a static-free environment, and using a voltage-surge protector and an Uninterrupted Power Supply unit.  |
| Programs won't load properly.   | Something in the disk drive: dirt, corrosion, or the dog's bone.              | If there isn't a bone, think about the last time you cleaned the disk drive heads . . . then do it.  |
| Something is spilled on the keyboard or the casing is cracked.  | Someone wasn't following the house rules.                                     | Don't try to clean it. Just unplug the computer and take the keyboard in to your dealer.   |
| The cord has been chewed.   | The dog.  | Unplug the computer, then detach the damaged section of cord and take it in for replacement.   |
| Strange lines, letters, or symbols appear on screen.  | Most likely the ROM or RAM cards.   | If your computer has removable cards, replace them with a friend's cards to see if yours are defective. It could also be that heat has caused the ROM and RAM chips to expand and become loose. All you need to do is open the computer and press down on the chips for a good contact. (CAUTION: Opening some computers voids the warranty.)  |
| The disk drive doesn't sound right. Or "read" errors appear on the screen, e.g., "ERROR ON DRIVE B." Or a program won't run.            | Disk drive alignment or revolutions are off. Or the heads are dirty and worn. | It's normal for a disk drive to run at about 288 revolutions per minute—plus or minus four. If the speed is off, especially if it's too slow, you will get those symptoms. It happens most often when you have used someone else's disk drive to copy a program. You might be able to avoid a trip to the repair shop with the help of a speed adjustment disk, available for less than \$20. It's a good idea to have a program like this on hand for such occasions. Check your local users' group about the program for your computer—there may be a no-cost one in the public domain, as with the Atari. If you have cleaned the heads (as you should do every two months) and adjusted the revolutions, and you still have problems, most likely you have alignment problems and need to take the disk drive in for repair. |
| The computer simply won't work!   | It could be something special . . . follow your checklist.                    | <ol style="list-style-type: none"> <li>1) Are the cables all plugged in according to your chart?</li> <li>2) Is the disk in correctly? Not backwards or upside down.</li> <li>3) Are you sure the disk has information on it?</li> </ol>   |

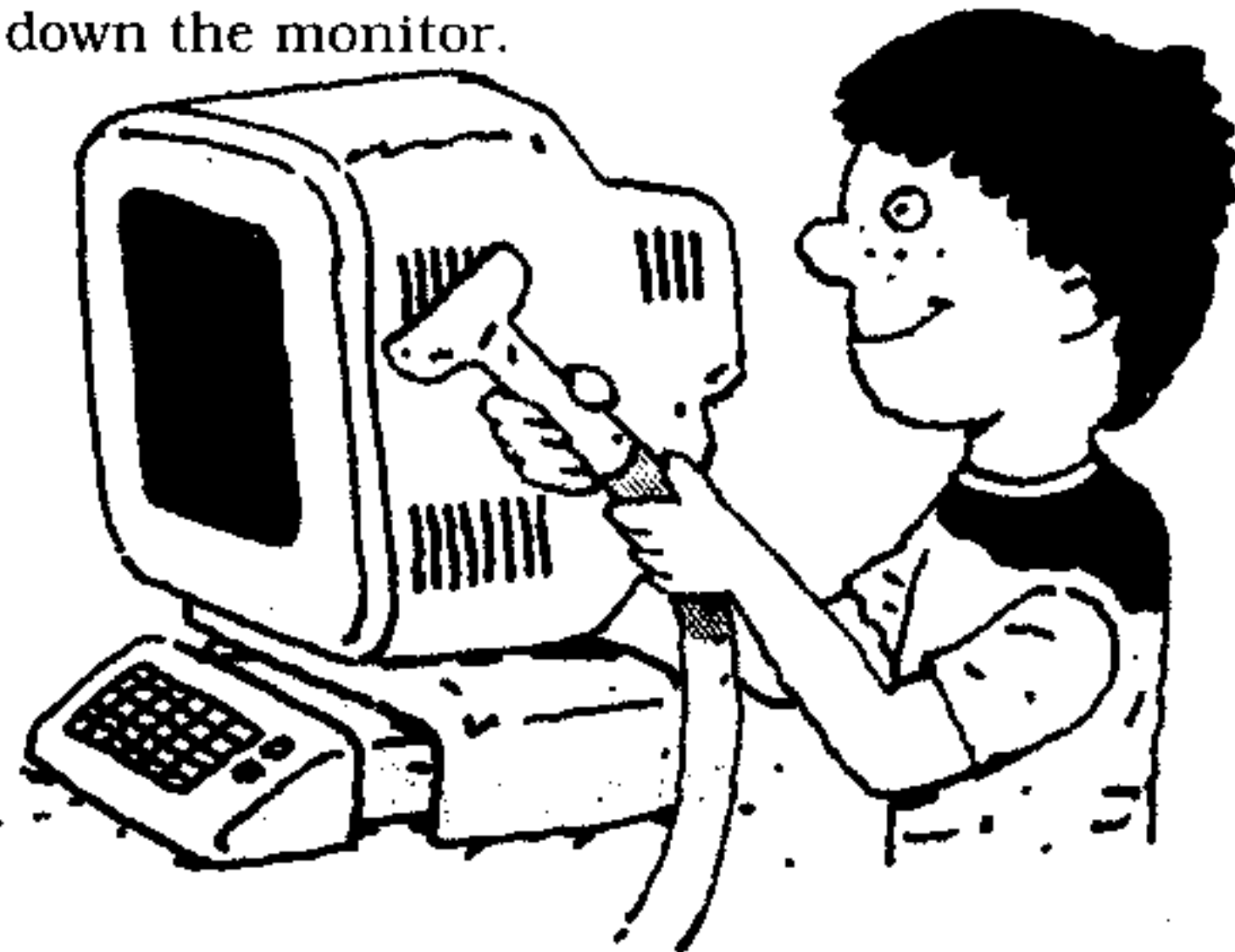
be stacked vertically, but not too tightly together, and kept away from magnetic fields, such as your monitor. Never bend the disks, or touch the surface. When writing on the label, always use a felt-tip pen. Anything hard like a ballpoint pen will damage the disk.

One prevention technique that is often overlooked is reinforcing the center hole on your disks. If your disk didn't come reinforced, that can be accomplished with a simple and inexpensive (about \$15 for a dozen rings) device called a "floppy saver" kit. The floppy saver is a strengthening ring that fits around the hole of a disk, similar to the reinforcement rings a student uses on paper for a three-ring binder. It's best to attach a floppy saver before you use a disk for the first time.

## MONITOR

The only parts of a monitor that really need attention are the vents and the screen. A dust cover will protect it from the environment, but you may also want to use the hose attachment on your vacuum cleaner to clean the vents occasionally.

The screen can be cleaned with any glass cleaner or antistatic spray and a lint-free cloth. Antistatic sprays, which provide added protection from static—and clean well, too—are available at most computer stores. Lightly apply the cleaner to the cloth, and then wipe the screen to eliminate the danger of any liquid dripping down the monitor.



## KEYBOARD/CENTRAL PROCESSING UNIT

When there's trouble here, the most common culprits are the children. Sometimes they become overzealous and punch away on the keys. That can lead to the cost of replacing broken keys or, even worse, the entire keyboard. Explain to your children that they don't need to hammer on the keys—the electrical connection will work just as well with a soft touch.

Cleaning the contacts inside your computer is something you shouldn't do too frequently, but you might try it when a program isn't working. Sometimes it's simply a matter of oxidation, dirt, or corrosion buildup that breaks the electrical current. If you are able to open your computer (such as with the Apple), it's easy to reach inside and clean the contacts

with an eraser. (Be sure not to leave bits of eraser inside.)

There are also multipurpose cleaning kits, available for about \$6, that include a special fluid, sponge-tip applicators, and lint-free towels. Some people feel more confident using a kit, but rubbing alcohol and tightly wrapped Q-tips can do the trick. CAUTION: Check with your dealer on what you can clean and what should be left to an expert. When in doubt, don't touch.

## PRINTER

The only upkeep on the printer (other than changing the ribbon) is keeping the rollers clean and the paper running smoothly. If your printer is open to the environment, it will gather dust more often, so use a cover.

Be sure to keep records of when you last replaced the print heads: follow the manufacturer's instructions to determine whether this is a do-it-yourself or a repair-shop job. If you have a daisy-wheel printer, the wheel can be cleaned with a kit much like those used for typewriters. You should be able to find one at your local computer store.

## CABLES

The first thing to do with the cables is to make a diagram of what is plugged in where, and why. It can save a lot of headaches when the cables are accidentally pulled out or the computer is moved.

To child- and dog-proof the cables that run along the wall or floor, gather them with rubber bands or cover them with electrician's tape (available at any hardware store). Avoid running cables along the floor where they can catch someone's foot or be stepped on.

A problem that comes up, although not the fault of the cables, is when a brief, but high, voltage surge through the power line. This occurs with no warning and can quickly wipe out a day's work. You can avoid it with a voltage-surge protector, which prevents high voltages from affecting your computer. Regulators come in all shapes and sizes; they cost anywhere from \$40 to \$140, but are usually worthwhile investments.

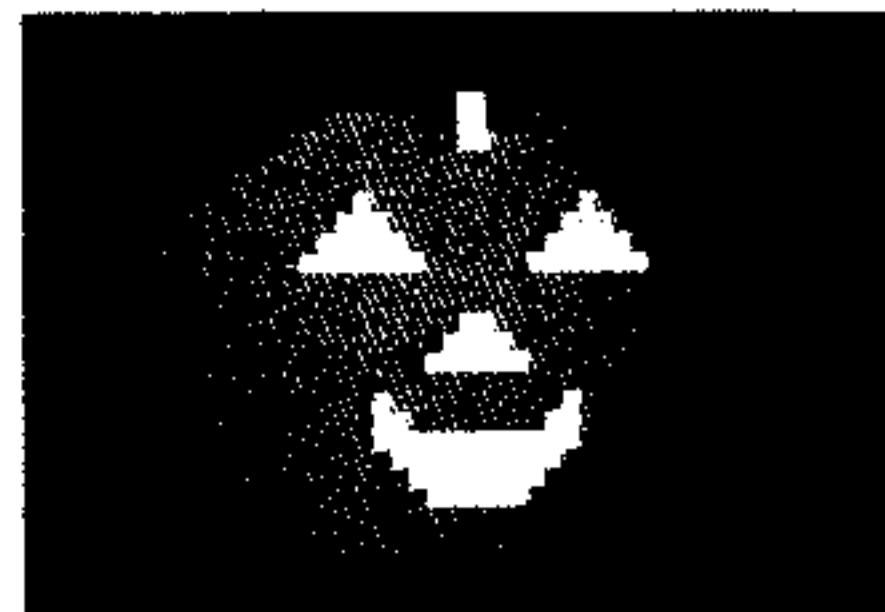
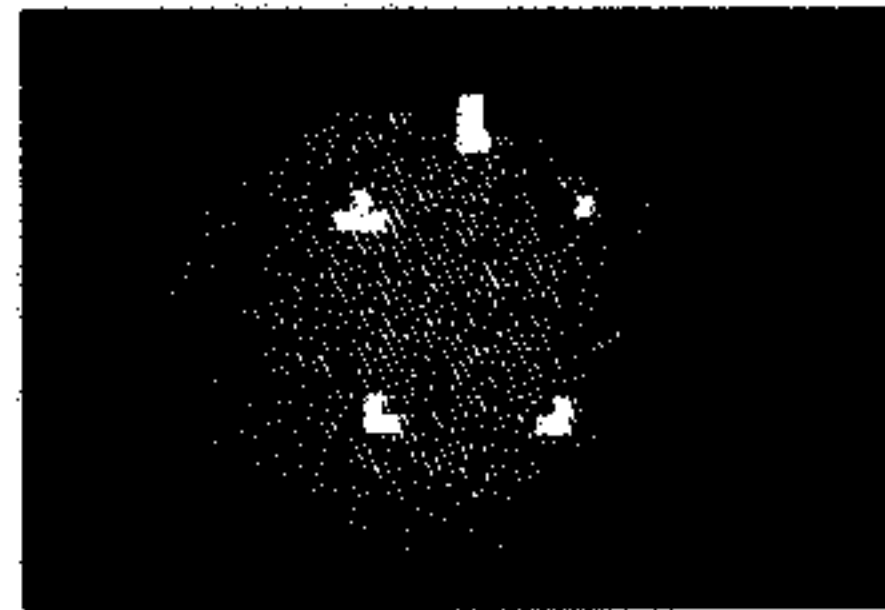
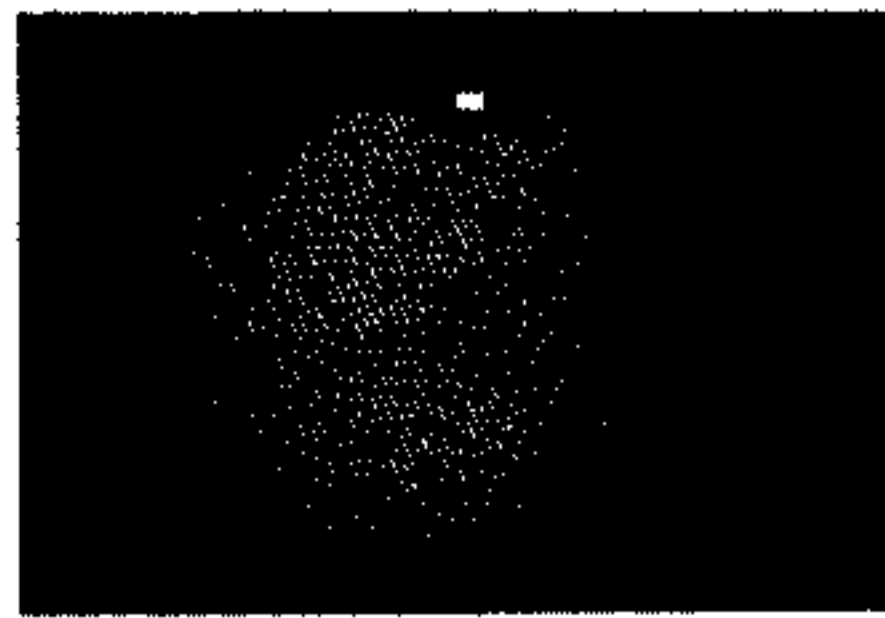
Another problem computer users encounter is a "brownout," which is caused by an overwhelming demand for power in a household—or city. To protect yourself against losing whatever's in your computer, you need an Uninterrupted Power Supply unit (called a UPS); they generally cost \$200 and up.

As a rule, good prevention techniques will help you avoid a variety of problems. Be sure to set up strict rules for home use of the computer and clear responsibilities for each member of the family. And if there's a problem, consult the accompanying chart. If you still can't get the computer running properly, call your dealer or repair shop. ■

# JACK-O'-LANTERN

BY JOEY LATIMER

Throw out your Swiss army knife; this Halloween you can carve a pumpkin with a cursor! That's right: just type this program into your computer, run it, and your computer will create a *Jack-o'-Lantern* right on your screen! Put the monitor in your front window, and watch your pumpkin be the talk of the neighborhood on Halloween night!



## Apple/Jack-o'-Lantern

```

10 GR : COLOR= 9
20 HLIN 11,16 AT 2
30 FOR Z = 2 TO 39
40 READ X: READ Y
50 HLIN X,Y AT Z
60 NEXT Z
70 COLOR= 13
80 PLOT 13,9: PLOT 25,9
90 FOR Z = 10 TO 13
100 READ X: READ Y
110 HLIN X,Y AT Z
120 READ X: READ Y
130 HLIN X,Y AT Z
140 NEXT Z
150 PLOT 19,18
160 FOR Z = 19 TO 22
170 READ X: READ Y
180 HLIN X,Y AT Z
200 NEXT Z
210 FOR Z = 27 TO 30
220 READ X: READ Y
230 HLIN X,Y AT Z
240 NEXT Z
250 COLOR= 8
260 FOR Z = 0 TO 4
270 HLIN 18,20 AT Z
280 NEXT Z
290 HOME : GOTO 290
300 DATA 22,27,9,29,8,31,7,32,6,33,5,34,4,34
,4,35,3,36,2,37,2,37,1,38,1,38,0,39
310 DATA 0,39,0,39,0,39,0,39,0,39,0,39,
1,38,1,38,2,37,2,37,2,37,3,36,3,36
320 DATA 4,35,5,35,6,34,7,34,8,33,9,32,11,31
,12,29,14,27,15,24
330 DATA 12,14,24,26,11,15,23,27,10,16,22,28
,9,17,21,29
340 DATA 18,20,17,21,16,22,15,23
350 DATA 12,26,13,25,14,24,15,23
    
```

## Atari/Jack-o'-Lantern

```

10 PRINT CHR$(125)
20 GRAPHICS 3+16
30 COLOR 1
40 FOR R=1 TO 24
50 READ X,Y,X1,Y1
60 PLOT X,Y
70 DRAWTO X1,Y1
80 NEXT R
90 COLOR 2
100 FOR R=1 TO 14
110 READ X,Y
120 PLOT X,Y
130 NEXT R
    
```

```

140 FOR R=1 TO 13
150 READ X,Y,X1,Y1
160 PLOT X,Y
170 DRAWTO X1,Y1
180 NEXT R
190 GOTO 190
200 DATA 11,1,16,1,23,1,28,1,9,2,30,2,7,3,32,
3,5,4,34,4,4,5,35,5,3,6,36,6,2,7,37,7,38,8,1,
8,1,9,38,9
210 DATA 39,10,0,10,0,11,39,11,39,12,0,12,0,1
3,39,13,39,14,0,14,1,15,38,15,38,16,1,16,2,17
,37,17,36,18,3,18
220 DATA 4,19,35,19,34,20,5,20,7,21,32,21,30,
22,9,22,11,23,28,23
230 DATA 19,0,20,0,19,1,20,1,19,2,20,2,13,5,2
6,5,14,15,25,15,14,16,15,16,24,16,25,16
240 DATA 12,6,14,6,25,6,27,6,11,7,15,7,24,7,2
8,7,10,8,16,8,23,8,29,8,19,11,20,11,18,12,21,
12,17,13,22,13
250 DATA 14,17,25,17,15,18,24,18,16,19,23,19,
17,20,22,20
    
```

## Commodore 64/Jack-o'-Lantern

```

10 PRINT CHR$(147)
20 POKE 53281,0: POKE 53280,0
30 FOR Z = 1 TO 24
40 READ X: READ Y
50 FOR P = X TO Y
60 POKE P,160
70 POKE P+54272,8
80 NEXT P
90 NEXT Z
100 FOR Z = 1 TO 15
110 READ X: READ Y
120 FOR P = X TO Y
130 POKE P,160
140 POKE P+54272,7
150 NEXT P
160 NEXT Z
170 FOR Z = 1 TO 2
180 READ X: READ Y
190 FOR P = X TO Y
200 POKE P,160
210 POKE P+54272,9
220 NEXT P
230 NEXT Z
240 GOTO 240
250 DATA 1078,1090,1114,1134,1151,1176,1189,
1218,1228,1259
260 DATA 1267,1300,1306,1341,1345,1382,1385,
1422,1424,1463
270 DATA 1464,1503,1504,1543,1544,1583,1584,
1623,1624,1663
280 DATA 1665,1702,1706,1742,1747,1781,1788,
1820,1829,1859
290 DATA 1871,1898,1912,1936,1954,1974,1996,
2012
300 DATA 1237,1237,1250,1250,1276,1278,1289,
1291
310 DATA 1315,1319,1328,1332,1354,1360,1367,
1373
320 DATA 1483,1484,1522,1525,1561,1566
330 DATA 1678,1689,1719,1728,1760,1767,1801,
1806
340 DATA 1043,1044,1083,1084
    
```

## VIC-20/Jack-o'-Lantern

```

10 PRINT CHR$(147)
20 POKE 36879,136
30 FOR Z=1 TO 25
40 READ X: READ Y
50 FOR P=X TO Y
60 POKE P,160
70 POKE P+30720,0
80 NEXT P
90 NEXT Z
    
```



## TRICK OR TREAT PROGRAMS

```

1000 GOSUB 1000
220 PRINT
230 PRINT "WHAT IS YOUR FRIEND"
240 PRINT "DRESSED UP AS?"
250 PRINT
260 PRINT "MY FRIEND IS ";
270 INPUT F$
280 PRINT CHR$(125)
290 PRINT F$;" AND"
300 PRINT C$;"."
310 PRINT "WHAT A PAIR!"
320 GOSUB 1000
330 PRINT
340 PRINT "TYPE THE SECRET WORD"
350 PRINT "TO GET A TREAT."
360 PRINT "(HINT: OOB)"
370 INPUT W$
380 IF W$="BOO" THEN 420
390 PRINT CHR$(125)
400 PRINT "THAT'S NOT IT, ";N$;"."
410 GOTO 330
420 PRINT CHR$(125)
430 FOR T=1 TO 40
440 PRINT "          HAPPY HALLOWEEN";
450 FOR X=1 TO 30
460 NEXT X
470 NEXT T
480 PRINT CHR$(125)
490 PRINT "GOODBYE ---"
500 PRINT "SEE YOU NEXT YEAR!"
510 GOSUB 1000
520 GOTO 20
1000 FOR D=1 TO 700
1010 NEXT D
1020 RETURN

```

### TI-99/4A/Trick or Treat

```

20 CALL CLEAR
30 PRINT "HI! WHAT IS YOUR NAME?"
40 PRINT "(PLEASE PRESS THE"
50 PRINT " ENTER KEY AFTER"
60 PRINT " EACH REPLY.)"
70 PRINT
80 PRINT "MY NAME IS ";
90 INPUT N$
100 CALL CLEAR
110 PRINT "TELL ME, ";N$;"."
120 PRINT "WHAT IS YOUR COSTUME?"
130 PRINT
140 PRINT "I AM ";
150 INPUT C$
160 CALL CLEAR
170 PRINT "I'VE ALWAYS WANTED"
180 PRINT "TO BE ";C$;" , TOO!"
190 PRINT "BUT I'M STILL HAPPY"
200 PRINT "BEING A COMPUTER."
210 GOSUB 1000
220 PRINT
230 PRINT "WHAT IS YOUR FRIEND"
240 PRINT "DRESSED UP AS?"
250 PRINT
260 PRINT "MY FRIEND IS ";
270 INPUT F$
280 CALL CLEAR
290 PRINT F$;" AND"
300 PRINT C$;"."
310 PRINT "WHAT A PAIR!"
320 GOSUB 1000
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340 PRINT "TYPE THE SECRET WORD"
350 PRINT "TO GET A TREAT."
360 PRINT "(HINT: OOB)"
370 INPUT W$
380 IF W$="BOO" THEN 420
390 CALL CLEAR
400 PRINT "THAT'S NOT IT, ";N$;"."
410 GOTO 330
420 CALL CLEAR
430 FOR T=1 TO 40

```

```

440 PRINT "          HAPPY HALLOWEEN";
450 FOR X=1 TO 25
460 NEXT X
470 NEXT T
480 CALL CLEAR
490 PRINT "GOODBYE ---"
500 PRINT "SEE YOU NEXT YEAR!"
510 GOSUB 1000
520 GOTO 20
1000 FOR D=1 TO 1500
1010 NEXT D
1020 RETURN

```

### Timex Sinclair 1000/Trick or Treat

```

20 CLS
30 PRINT "HI. WHAT IS YOUR NAME?"
40 PRINT "(PLEASE PRESS THE"
50 PRINT " ENTER KEY AFTER"
60 PRINT " EACH REPLY.)"
80 PRINT AT 21,0; "MY NAME IS";
90 INPUT N$
100 CLS
110 PRINT "TELL ME, ";N$;"."
120 PRINT "WHAT IS YOUR COSTUME?"
140 PRINT AT 21,0; "I AM";
150 INPUT C$
160 CLS
170 PRINT "I ALWAYS WANTED"
180 PRINT "TO BE ";C$;" , TOO."
190 PRINT "BUT I AM STILL HAPPY"
200 PRINT "BEING A COMPUTER."
210 GOSUB 1000
220 PRINT
230 PRINT "WHAT IS YOUR FRIEND"
240 PRINT "DRESSED UP AS?"
260 PRINT AT 21,0; "MY FRIEND IS";
270 INPUT F$
280 CLS
290 PRINT F$;" AND"
300 PRINT C$;"."
310 PRINT "WHAT A PAIR..."
320 GOSUB 1000
330 PRINT
340 PRINT "TYPE THE SECRET WORD"
350 PRINT "TO GET A TREAT."
360 PRINT "(HINT: OOB)"
370 INPUT W$
380 IF W$="BOO" THEN GOTO 420
390 CLS
400 PRINT "THAT IS NOT IT, ";N$;"."
410 GOTO 330
420 CLS
430 FOR T = 1 TO 35
440 PRINT "          HAPPY HALLOWEEN";
470 NEXT T
480 CLS
490 PRINT "GOODBYE ---"
500 PRINT "SEE YOU NEXT YEAR..."
510 GOSUB 1000
520 GOTO 20
1000 FOR D = 1 TO 100
1010 NEXT D
1020 RETURN

```

### Modifications for Other Computers/Trick or Treat

For the Commodore 64 and VIC-20 replace HOME in lines 10, 90, 150, 270, 380, 410, and 470 with PRINT CHR\$(147)

Also, change line 1000 to read  
1000 FOR D = 1 TO 2200

For the TRS-80s and IBM PC replace HOME in lines 10, 90, 150, 270, 380, 410, and 470 with CLS

Also, change lines 40 and 420 to read

```

40 PRINT " ENTER KEY AFTER"
420 FOR T = 1 TO 30

```

# PULSE RATE

BY JOEY LATIMER

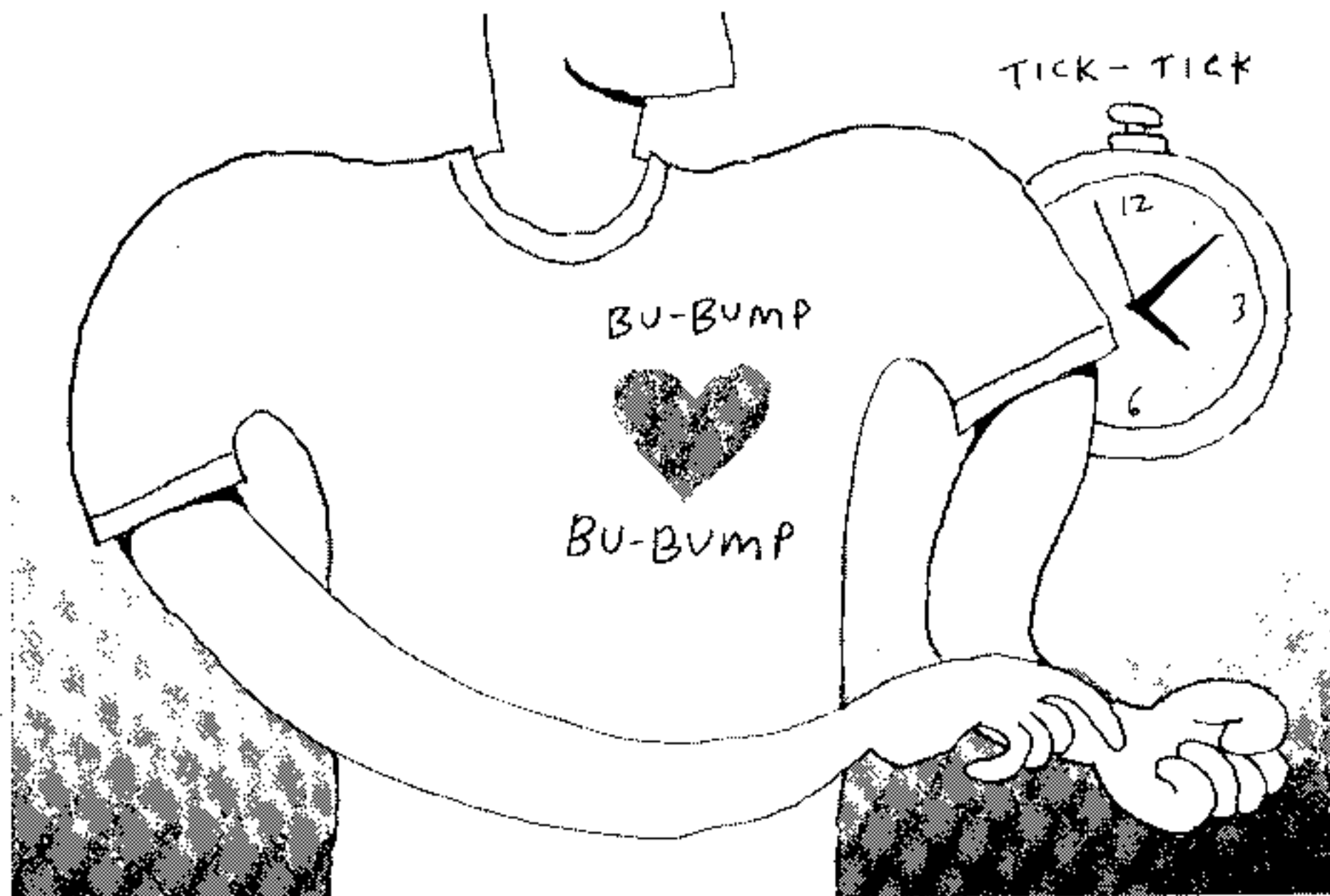


ILLUSTRATION BY JOSH GOSFIELD

After you've logged in your daily jog around the block (see "Logging Your Jogging," pages 80 to 82), you might want to test your *Pulse Rate* by typing in this program and running it. When your computer tells you to STAND BY . . . , place your fingertip (not your thumb) on the inner surface of your wrist, below the base of your thumb. (An artery runs under the skin there.) The computer will give you time to get ready and then say START! Count the number of beats until the computer asks you to stop. Then type in that number, and your computer will calculate how many times

your heart is beating per minute.

Note that the last number on line 120 controls how long the computer times you. This number varies from computer to computer because some brands run faster than others. In addition, the timing of your computer may be slightly different from ours. Before actually using the program, you should first test it against the second hand of a watch to see that it times you for exactly 30 seconds. If the program is running fast or slow, increase or decrease the number in line 120, starting first with a change of 100.

## Apple/Pulse Rate

```

20 HOME
30 PRINT "TO TEST YOUR PULSE"
40 PRINT "RATE, PLEASE PRESS THE RETURN KEY."
50 INPUT R$
60 HOME
70 PRINT "STAND BY....."
80 FOR T = 1 TO 7600
90 NEXT T
100 HOME
110 PRINT "START!"
120 FOR T = 1 TO 22000
130 NEXT T
140 HOME
150 PRINT "STOP!"
160 PRINT
170 PRINT "TYPE IN THE NUMBER OF"
180 PRINT "BEATS YOU COUNTED;"
190 PRINT "THEN PRESS THE RETURN KEY."
200 INPUT B
210 PRINT
220 PRINT "YOUR PULSE RATE IS ";
230 PRINT B * 2 " BEATS PER MINUTE."
240 PRINT "PRESS THE RETURN KEY"
250 PRINT "TO TRY AGAIN."
260 INPUT T$
270 GOTO 20
    
```

## Atari/Pulse Rate

```

10 DIM R$(1),T$(1)
20 PRINT CHR$(125)
30 PRINT "TO TEST YOUR PULSE"
40 PRINT "RATE, PLEASE PRESS THE RETURN KEY."
50 INPUT R$
60 PRINT CHR$(125)
70 PRINT "STAND BY....."
80 FOR T=1 TO 4000
90 NEXT T
100 PRINT CHR$(125)
110 PRINT "START!"
120 FOR T=1 TO 10000
130 NEXT T
140 PRINT CHR$(125)
150 PRINT "STOP!"
160 PRINT
170 PRINT "TYPE IN THE NUMBER OF"
180 PRINT "BEATS YOU COUNTED;"
190 PRINT "THEN PRESS THE RETURN KEY."
200 INPUT B
210 PRINT
220 PRINT "YOUR PULSE RATE IS "
230 PRINT B*2;" BEATS PER MINUTE."
240 PRINT "PRESS THE RETURN KEY"
250 PRINT "TO TRY AGAIN."
260 INPUT T$
270 GOTO 20
    
```

## Commodore 64 & VIC-20/Pulse Rate

```

20 PRINT CHR$(147)
30 PRINT "TO TEST YOUR PULSE"
40 PRINT "RATE PLEASE PRESS THE RETURN KEY."
50 INPUT R$
60 PRINT CHR$(147)
70 PRINT "STAND BY....."
80 FOR T=1 TO 7500
90 NEXT T
100 PRINT CHR$(147)
110 PRINT "START!"
120 FOR T=1 TO 20500
130 NEXT T
140 PRINT CHR$(147)
150 PRINT "STOP!"
160 PRINT
170 PRINT "TYPE IN THE NUMBER OF"
180 PRINT "BEATS YOU COUNTED;"
190 PRINT "THEN PRESS THE RETURN KEY."
200 INPUT B
210 PRINT
220 PRINT "YOUR PULSE RATE IS "
230 PRINT B*2"BEATS PER MINUTE."
240 PRINT "PRESS THE RETURN KEY"
250 PRINT "TO TRY AGAIN."
260 INPUT T$
270 GOTO 20
    
```

## TI-99/4A/Pulse Rate

```

20 CALL CLEAR
30 PRINT "TO TEST YOUR PULSE"
40 PRINT "RATE, PLEASE PRESS THE ENTER KEY."
50 INPUT R$
60 CALL CLEAR
70 PRINT "STAND BY....."
80 FOR T=1 TO 4000
90 NEXT T
100 CALL CLEAR
110 PRINT "START!"
120 FOR T=1 TO 10000
130 NEXT T
140 CALL CLEAR
150 PRINT "STOP!"
160 PRINT
170 PRINT "TYPE IN THE NUMBER OF"
180 PRINT "BEATS YOU COUNTED;"
190 PRINT "THEN PRESS THE ENTER KEY."
    
```

```

200 INPUT B
210 PRINT
220 PRINT "YOUR PULSE RATE IS ";
230 PRINT B*2;"BEATS PER MINUTE."
240 PRINT "PRESS THE ENTER KEY"
250 PRINT "TO TRY AGAIN."
260 INPUT T$
270 GOTO 20

```

### Timex Sinclair 1000/Pulse Rate

```

20 CLS
30 PRINT "TO TEST YOUR PULSE"
40 PRINT "RATE PLEASE PRESS THE ENTER KEY."
50 INPUT R$
60 CLS
70 PRINT "STAND BY....."
80 PAUSE 300
100 CLS
110 PRINT "START."
120 PAUSE 1800
150 PRINT "STOP."
160 PRINT
170 PRINT "TYPE IN THE NUMBER OF"
180 PRINT "BEATS YOU COUNTED;"
190 PRINT "THEN PRESS THE ENTER KEY."
200 INPUT B
210 PRINT
220 PRINT "YOUR PULSE RATE IS "
230 PRINT B*2;" BEATS PER MINUTE."
270 STOP

```

### TRS-80s and IBM PC/Pulse Rate

```

20 CLS
30 PRINT "TO TEST YOUR PULSE"
40 PRINT "RATE PLEASE PRESS THE ENTER KEY."
50 INPUT R$
60 CLS
70 PRINT "STAND BY....."
80 FOR T=1 TO 4000
90 NEXT T
100 CLS
110 PRINT "START!"
120 FOR T=1 TO 14000
130 NEXT T
140 CLS
150 PRINT "STOP!"
160 PRINT
170 PRINT "TYPE IN THE NUMBER OF"
180 PRINT "BEATS YOU COUNTED;"
190 PRINT "THEN PRESS THE ENTER KEY."
200 INPUT B
210 PRINT
220 PRINT "YOUR PULSE RATE IS";
230 PRINT B*2 "BEATS PER MINUTE."
240 PRINT "PRESS THE ENTER KEY"
250 PRINT "TO TRY AGAIN."
260 INPUT T$
270 GOTO 20

```

Line 120 as given above produces a 30-second delay on our TRS-80 Color Computer. If you have another TRS-80 or an IBM PC, try the following change:

#### Change "14000" in line 120 to

| For this computer             |       |
|-------------------------------|-------|
| TRS-80 Model I without disk   | 11200 |
| TRS-80 Model I with disk      | 10400 |
| TRS-80 Model III without disk | 11700 |
| TRS-80 Model III with disk    | 11400 |
| TRS-80 Model IV without disk  | 12000 |
| TRS-80 Model IV with disk     | 21500 |
| IBM PC without disk           | 24700 |
| IBM PC with DOS 1.10          | 24000 |



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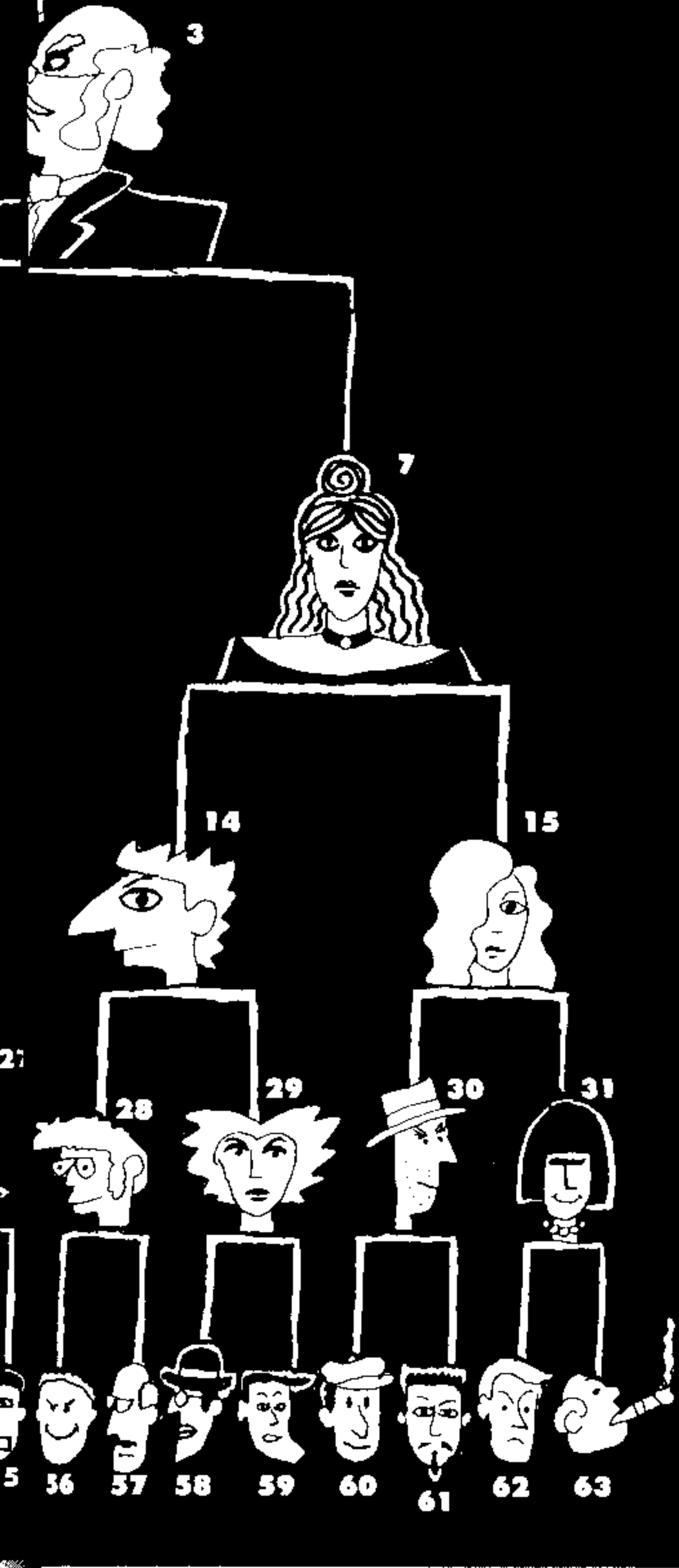
<sup>1</sup>Trademark of Commodore Int. <sup>2</sup>Trademark of MSD

# DRACULA'S FAMILY TREE

BY STEPHEN McMANUS



ILLUSTRATION BY JOSHUA GOSFIELD



1. BARON RUSOFF
2. HAUPTMANN KRISS
3. BARON von WOLFENSTEIN
4. HERREN KLOPSTOCK
5. LADY BLOOFER
6. ALESSANDRO di CAGLIOSTRO
7. NOTA BERMONDSEY
8. DURHAM HARWICH
9. AGATHA CAFFYN
10. GRETTA GARGOYLE
11. PETER HAWKINS
12. BARRY BIASTRITZ
13. ANNE MARIONETTE
14. CLIFTON GRAVES
15. ELENA MAUFAS
16. HAMPTON WHITAKER
17. VARNA KUKRI
18. ANDREW WOODHOUSE
19. EDWARD SPENCLAGH
20. LOUVENA VANDERPOOL
21. NADIA DURENYI
22. JACQUES DUBOIS
23. LORENZO SERAFINA
24. VARA SLOVAK
25. BASTILLE MONTPELIER
26. ILSA STRANG
27. STAM BROKER
28. MORRIS del GATO
29. HELLYN DEVILLE
30. MAXWELL KETTLENESS
31. ELIANNE RACHE
32. JERZY SZGANY
33. BORGIO MALDAVI
34. PETROT SKINSKY
35. HENDEL KLAUSEN
36. BARTEL BLOXAM
37. VROLOK VLKOSLAK
38. DARDALAND LUPESCU
39. URIC SZEKELYS
40. JANUS HAPSBURG
41. BURGEN NITAL
42. ISTENSZEK HOSPADAR
43. SPURGI HOSTETLER
44. ORDOG POKOL
45. TAJ GALATZ
46. ARPAD HORNFOGLASAS
47. BOSPHORUS DEIL
48. MITTEL PRUND
49. ARMINIUS PESTH
50. BOYAR WODIN
51. MALVOLIO EXETER
52. FERRIER TRANSFORMÉ
53. PARR CHARCOT
54. VLAD de la BELFRY
55. HOP GOBLIN
56. HAMLET ROMANOFF
57. DRAKO SERBIA
58. VULEO CANIM
59. ZSIGMOND BATHORY
60. NOS FERATU
61. GARLAND BISTRITA
62. VOIVODE de VILLE
63. TURK MAGYAR

As the bell tolls midnight, Count Dracula creeps stealthily down the castle corridor. The passageway is dark, save for the single candle he holds in his hand. Even the warmth of its flickering yellow flame can add no color to the Count's *very pale skin*. It is the pallor of one who never sees the light of day, but comes to *life* only at *night*. His dark clothing recedes into the background. The Count is still *dressed* in formal attire *for dinner*, although the time for that repast has passed many hours ago.

As Count Dracula reaches a door, he glances sharply behind him to make sure that his entry has gone unobserved. Inside lies the sleeping wife of one of his enemies. As he has done so often before, Dracula retaliates by choosing as his victim a woman who is important to his antagonist [indicating his possible *misogynous* (woman-hating) attitude].

Dracula leans over the sleeping woman, his repulsive *caninelike teeth* ready to draw his dinner of blood from her slender neck. Suddenly a noise can be heard out in the corridor. The instant the door opens Dracula vanishes, making his escape by *transformation*. All that can be seen through the open window is the strange sight of a *bat* flapping its wings in the moonlight.

Who was this horrible Count Dracula? Did he ever actually live? Dracula first came to public attention through a book writ-

STEPHEN McMANUS is a freelance recording engineer living in Los Angeles. He has worked with numerous musicians including Toto, Elton John, and Bette Midler. He recently sold his motorcycle to buy a VIC-20.

ten by Bram Stoker in 1896. Stoker based his imaginary count on a real person: the bloody Prince Dracula who ruled part of Transylvania (in what is now Romania) some 500 years ago.

But where did Dracula come from? That is for you to figure out!

Shown at left is a fictionalized version of Dracula's family tree. Only "blood" relatives are pictured, but marriage introduced new characteristics into the family at each generation. Your job is to find out which branch of this family tree produced Dracula by tracing the transmission of various traits from parent to child. For example, as you'll soon discover, the grand patriarch Baron Russoff passed his *very pale skin* on to everyone, but it was intermarriage at a later generation that introduced the characteristic *Dracula caninelike teeth* into one branch of the family.

One of the men shown at the bottom of the tree is Dracula's father—but which? When you run the following program, it will ask you for your guess (type in the first name only), and on your screen will appear a description of that person. If he has all of Dracula's characteristics, you have discovered the chain of ancestors from which the legendary count descended.

You may be lucky and guess right on your first try. But, it's more likely to take several tries to figure out which branches of the tree carry which characteristics. Remember to think after each try! The computer is counting your guesses and will grade you on your investigative skill at the end. How few guesses will it take you to find the right answer?

# PUZZLE

## Base Version (VIC-20)/Dracula's Family Tree

```

10 DIM B$(32),C$(23),C(5),P$(6),NU(15)
20 FOR I = 1 TO 32 : READ B$(I) : NEXT I
50 FOR I = 1 TO 23 : READ C$(I) : NEXT I
80 FOR I = 1 TO 6 : READ P$(I) : NEXT I
110 FOR I = 1 TO 15 : READ NU(I) : NEXT I
140 SC = 1
150 PRINT CHR$(147) : PRINT "GUESS #";SC
170 PRINT "WHAT WAS DRACULA'S" : PRINT "FATHER'S FIRST NAME" : INPUT N$
190 W = 0
200 FOR I = 1 TO 32
210 IF N$ = B$(I) THEN W = I
230 NEXT I
240 IF W = 0 THEN 150
250 SC = SC + 1
260 C(1) = 1 - (W > 16)
270 C(2) = 3 - (W > 8) - (W > 24)
280 OF = 6
290 FOR M = 1 TO 3
300 A = NU(M * 5 - 4)
310 B = NU(M * 5 - 3)
320 D = NU(M * 5 - 2)
330 V = NU(M * 5 - 1)
340 Q = NU(M * 5)
350 I = INT((W / V) + 0.8)
360 F = A * I ^ 3 + B * I * I + D * I
370 N = OF + (INT(F - INT(F / Q) * Q))
380 OF = OF + Q
390 C(M + 2) = N
400 NEXT M
410 PRINT CHR$(147)
420 A$ = N$ + " LIKED TO DRESS " + C$(C(3)) + ". HE HAD "
490 A$ = A$ + C$(C(2)) + " AND VERY PALE SKIN. HE "
520 A$ = A$ + C$(C(4)) + " AND WAS REPUTED TO "
550 A$ = A$ + C$(C(5)) + ". AND HE " + C$(C(1)) + ". "
600 IF LEN(A$) < 21 THEN 690
610 FOR I = 1 TO 22
620 IF ASC(MID$(A$,I,1)) = 32 THEN J = I
640 NEXT I
650 PRINT LEFT$(A$, (J - 1))
660 K = LEN(A$) - J
670 A$ = RIGHT$(A$,K)
680 GOTO 600
690 PRINT A$ : PRINT : PRINT : PRINT
730 FOR M = 1 TO 3000 : NEXT M
750 IF C(1) + C(2) + C(3) + C(4) + C(5) = 37 THEN 830
760 PRINT "SORRY. ";N$;" WAS"
770 PRINT "NOT DRACULA'S FATHER."
780 PRINT : PRINT " (PRESS THE RETURN"
800 PRINT " KEY TO GO ON)"; : INPUT I$
820 GOTO 150
830 PRINT "CONGRATULATIONS!"
840 PRINT "YOU HAVE FOUND" : PRINT "DRACULA'S FATHER. IT"
850 I = INT(SC/5) + 1 : IF I > 6 THEN I = 6
890 IF SC = 2 THEN 940
900 PRINT "TOOK YOU ";SC-1;" GUESSES," : PRINT "WHICH MAKES YOU A"
920 PRINT P$(I);" INVESTIGATOR."
930 END
940 PRINT "TOOK YOU ONE GUESS,"
950 PRINT "WHICH MAKES YOU VERY" : PRINT "LUCKY."
970 PRINT " (UNLESS YOU CHEATED!)"
980 END
2000 DATA JERZY, BORGO, PETROT, HENDEL, BARTE L, VROLOK, DARDALAND, URIC
2010 DATA JANUS, BURGEN, ISTENSZEK, SPURGI, O RDOG, TAJ, ARPAD, BOSPHORUS
2020 DATA MITTEL, ARMINIUS, BOYAR, MALVOLIO, FERRIER, FARR, VLAD, HOP

```

```

2030 DATA HAMLET, DRAKO, VULEO, ZSIGMOND, NOS , GARLAND, VOIVODE, TURK
2040 DATA COULD CHANGE INTO A BAT, WAS NOT AN ACROBAT
2050 DATA A NICE SMILE, CANINELIKE TEETH, DENTURES
2060 DATA FOR DINNER, LIKE A SLOB, IN RAGS, D OWN
2070 DATA LOVED THE NIGHT LIFE, WORKED 9 TO 5 , ROSE WITH THE CHICKENS
2080 DATA WAS HEALTHY WEALTHY AND WISE, ATE H EARTY BREAKFASTS, PAINTED SUNRISES
2090 DATA BE MISOGYNOUS, SUPPORT WOMEN'S SUFF RAGE, BE HAPPILY MARRIED
2100 DATA HAVE CLOSE WOMEN FRIENDS, FAVOR HIS NIECES, HAVE A HAPPY WIFE
2110 DATA SPOIL HIS DAUGHTERS, SUPPORT A GIRL S ORPHANAGE
2120 DATA MASTER, SUPERIOR, GOOD, FAIR, MEDIO CRE, POOR
2130 DATA 1.1, 2.2, 3.5, 4, 4
2140 DATA 5.8, 9.8, 7.6, 2, 6
2150 DATA 2.5, 5.71, 8.9, 1, 8

```

## Atari/Dracula's Family Tree

```

10 DIM A$(100),S$(1000),S(62),N$(50),C(5),NU(15),PA$(255),I$(1)
20 E=1:FOR I=1 TO 61:READ A$
30 S(I)=E:L=LEN(A$):S$(E,(L+E))=A$
40 E=E+L:NEXT I:S(62)=E
110 FOR I=1 TO 15:READ J:NU(I)=J:NEXT I
140 SC=1
150 PRINT CHR$(125);"GUESS #";SC
170 PRINT "WHAT WAS DRACULA'S":PRINT "FATHER'S FIRST NAME":INPUT N$
190 W=0
200 FOR I=1 TO 32
210 GOSUB 1000:IF N$=A$ THEN W=I
230 NEXT I
240 IF W=0 THEN 150
250 SC=SC+1
260 C(1)=33+(W>16)
270 C(2)=35+(W>8)+(W>24)
280 OF=6
290 FOR M=1 TO 3
300 A=NU(M*5-4)
310 B=NU(M*5-3)
320 D=NU(M*5-2)
330 V=NU(M*5-1)
340 Q=NU(M*5)
350 I=INT((W/V)+0.8)
360 F=A*I*I*I+B*I*I+D*I
370 N=OF+(INT(F-INT(F/Q)*Q))
380 OF=OF+Q
390 C(M+2)=N+32
400 NEXT M
410 PRINT CHR$(125)
420 PA$=""
430 I=C(3):GOSUB 1000
440 PA$=N$
450 PA$(LEN(PA$)+1)=" LIKED TO DRESS "
460 PA$(LEN(PA$)+1)=A$
470 PA$(LEN(PA$)+1)=" HE HAD "
480 I=C(2):GOSUB 1000
490 PA$(LEN(PA$)+1)=A$
500 PA$(LEN(PA$)+1)=" AND VERY PALE SKIN. HE "
510 I=C(4):GOSUB 1000
520 PA$(LEN(PA$)+1)=A$
530 PA$(LEN(PA$)+1)=" AND WAS REPUTED TO "
540 I=C(5):GOSUB 1000
550 PA$(LEN(PA$)+1)=A$
560 PA$(LEN(PA$)+1)=" AND HE "
570 I=C(1):GOSUB 1000
580 PA$(LEN(PA$)+1)=A$
590 PA$(LEN(PA$)+1)="."

```

```

600 IF LEN(PA#) < 37 THEN 690
610 FOR I=1 TO 38
620 IF PA$(I,I)="" THEN J=I
640 NEXT I
650 PRINT PA$(1,J-1)
660 K=LEN(PA#)-J
670 PA#=PA$(J+1,LEN(PA#))
680 GOTO 600
690 PRINT PA#:PRINT :PRINT :PRINT
730 FOR M=1 TO 1000:NEXT M
750 IF C(1)+C(2)+C(3)+C(4)+C(5)=197 THEN 830
760 PRINT "SORRY. ";N#;" WAS"
770 PRINT "NOT DRACULA'S FATHER."
780 PRINT :PRINT " (PRESS THE RETURN"
800 PRINT " KEY TO GO ON)";:INPUT I#
820 GOTO 150
830 PRINT "CONGRATULATIONS!"
840 PRINT "YOU HAVE FOUND":PRINT "DRACULA'S F
ATHER. IT"
850 I=INT(SC/5)+56:IF I>61 THEN I=61
890 IF SC=2 THEN 940
900 PRINT "TOOK YOU ";SC-1;" GUESSES.":PRINT
"WHICH MAKES YOU A"
910 GOSUB 1000
920 PRINT A#;" INVESTIGATOR."
930 END
940 PRINT "TOOK YOU ONE GUESS."
950 PRINT "WHICH MAKES YOU VERY":PRINT "LUCKY
."
970 PRINT " (UNLESS YOU CHEATED!)"
980 END
1000 S=S(I):F=S(I+1)
1010 A#=S$(S,(F-1))
1020 RETURN
2000 DATA JERZY,BORGO,PETROT,HENDEL,BARTEL,VR
DLOK,DARDALAND,URIC
2010 DATA JANUS,BURGEN,ISTENSZEK,SPURGI,ORDOG
,TAJ,ARPAD,BOSPHORUS
2020 DATA MITTEL,ARMINIUS,BOYAR,MALVOLIO,FERR
IER,PARR,VLAD,HOP
2030 DATA HAMLET,DRAKO,VULEO,ZSIGMOND,NOS,GAR
LAND,VOIVODE,TURK
2040 DATA COULD CHANGE INTO A BAT,WAS NOT AN
ACROBAT
2050 DATA A NICE SMILE,CANINELIKE TEETH,DENTU
RES
2060 DATA FOR DINNER,LIKE A SLOB,IN RAGS,DOWN
2070 DATA LOVED THE NIGHT LIFE,WORKED 9 TO 5,
ROSE WITH THE CHICKENS
2080 DATA WAS HEALTHY WEALTHY AND WISE,ATE HE
ARTY BREAKFASTS,PAINTED SUNRISES
2090 DATA BE MISOGYNOUS,SUPPORT WOMEN'S SUFFR
AGE,BE HAPPILY MARRIED
2100 DATA HAVE CLOSE WOMEN FRIENDS,FAVOR HIS
NIECES,HAVE A HAPPY WIFE
2110 DATA SPOIL HIS DAUGHTERS, SUPPORT A GIRL
S' ORPHANAGE
2120 DATA MASTER,SUPERIOR,GOOD,FAIR,MEDIOCRE,
POOR
2130 DATA 1.1, 2.2, 3.5, 4, 4
2140 DATA 5.8, 9.8, 7.6, 2, 6
2150 DATA 2.5, 5.71, 8.9, 1, 8

```

## MODIFICATIONS FOR OTHER COMPUTERS

### Apple/Dracula's Family Tree

Use the base version, except change lines 150, 260, 270, 410, 600, 610, and 730 to read

```

150 HOME: PRINT "GUESS #";SC
260 C(1) = 1 + (W > 16)
270 C(2) = 3 + (W > 8) + (W > 24)
410 HOME
600 IF LEN(A#) < 39 THEN 690
610 FOR I = 1 TO 38
730 FOR M = 1 TO 1000: NEXT M

```

### Commodore 64/Dracula's Family Tree

Change lines 600 and 610 of the base version to read

```

600 IF LEN(A#) < 40 THEN 690
610 FOR I = 1 TO 39

```

### IBM PC/Dracula's Family Tree

Change lines 150, 410, 600, 610, and 780 of the base version to read

```

150 CLS: PRINT "GUESS #";SC
410 CLS
600 IF LEN (A#) < 39 THEN 690
610 FOR I = 1 TO 38
780 PRINT: PRINT: PRINT " (PRESS THE ENTER"

```

### TI-99/4A/Dracula's Family Tree

Most dialects of BASIC allow more than one statement on a single program line; see lines 20, 50, 80, 110, 150, 690, 730, 780, 800, 840, 900, and 950 of the base version. However, TI BASIC requires that each statement have its own line number. We have allowed extra line numbers for this purpose. So, for example, if you have TI BASIC you would expand line 20 of the base version into three lines:

```

20 FOR I = 1 TO 32
30 READ B$(I)
40 NEXT I

```

If you have TI Extended BASIC, you may place several statements on one program line, but they must be separated by a double colon (":") instead of a single colon. So, for example, you would enter line 20 as

```

20 FOR I = 1 TO 32 :: READ B$(I) :: NEXT I

```

In addition, for either BASIC you must change lines 150, 170, 410, 420, 490, 520, 550, 600, 610, 650, 670, 730, 780, and 890 to read

```

150 CALL CLEAR :: PRINT "GUESS #";SC
170 PRINT "WHAT WAS DRACULA'S FATHER'S FIRST
NAME " :: INPUT N#
410 CALL CLEAR
420 A# = N# & " LIKED TO DRESS " & " C$(C(3))
& ". HE HAD "
490 A# = A# & C$(C(2)) & " AND VERY PALE
SKIN. HE "
520 A# = A# & C$(C(4)) & " AND WAS REPUTED TO
"
550 A# = A# & C$(C(5)) & ". AND HE " &
C$(C(1)) & "."
600 IF LEN(A#) < 26 THEN 690
610 FOR I = 1 TO 27
650 PRINT SEG$(A#,1,(J-1))
670 A# = SEG$(A#,(J+1),(K+2))
730 FOR M = 1 TO 500 :: NEXT M
780 PRINT :: PRINT :: PRINT " (PRESS THE
ENTER"
890 IF SC = 2 THEN 940

```

(Of course, for TI BASIC you must divide the statements in lines 150, 170, 730, and 780 into separate lines.)

### TRS-80s/Dracula's Family Tree

Change lines 10, 150, 360, 410, 600, 610, and 780 of the base version to read

```

10 CLEAR 1000: DIM B$(32), C$(23), C(5),
F$(6), NU(15)
150 CLS: PRINT "GUESS #";SC
360 F=A*I*I*I+B*I*I+C*I
410 CLS
600 IF LEN(A#) < 31 THEN 690
610 FOR I = 1 TO 30
780 PRINT: PRINT: PRINT " (PRESS THE ENTER"

```

# WHAT'S IN STORE

## NEW HARDWARE ANNOUNCEMENTS\*

### COMPUTERS

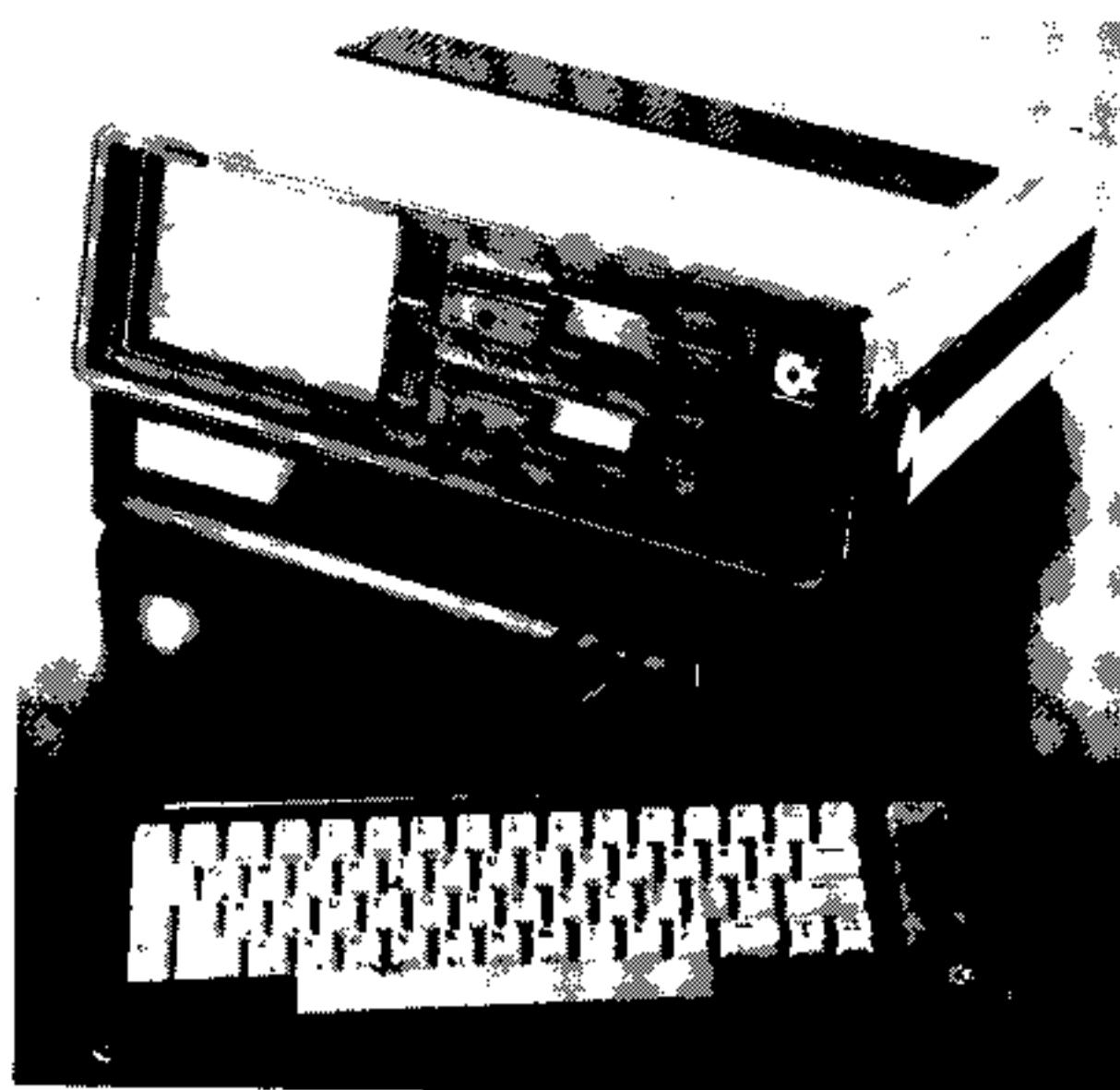


#### COM/PAC

MANUFACTURER: Mattel Electronics, 5150 Rosencrans Ave., Hawthorne, CA 90250; (213) 978-5150  
PRICE: \$340

The COM/PAC, the latest computer product from Mattel, marketers of the Intellivision video game machine, is a low-priced computer system. It includes the Aquarius keyboard unit with 4K RAM (expandable to 52K), built-in Microsoft BASIC, two hand controllers for game playing, a 40-column thermal printer, and a data recorder to store programs on audio cassettes.

The Aquarius keyboard has 49 calculator-style keys. It can display 256 characters, including upper- and lower-case letters, and 16 colors. Aquarius LOGO, which Mattel has promised, will come in a plug-in cartridge.



#### Executive 64

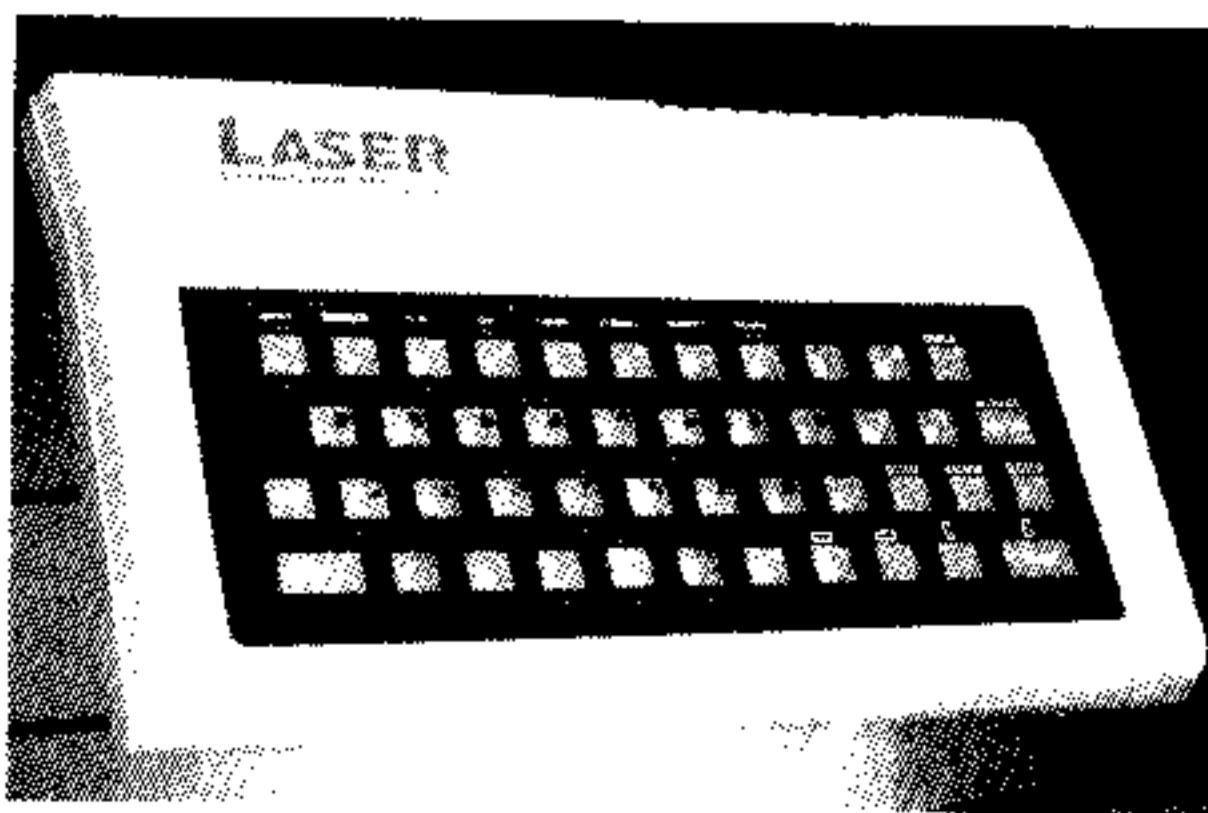
MANUFACTURER: Commodore Business Machines Inc., 1200 Wilson Dr., W. Chester, PA 19380; (215) 431-9100  
PRICE: \$995

*\*These products have been announced by the manufacturers, but are not necessarily in the stores or even in production yet. Some are still under development. Call or write the manufacturer to find out when they will be available.*

Commodore has announced a sequel to its popular Commodore 64—the Executive 64. The new portable, designed primarily for the traveling businessperson, has 64K RAM, a detachable keyboard with upper- and lower-case capability, a built-in, 6-inch color monitor, and a built-in disk drive with 170K capacity. The new unit weighs 27.6 pounds and measures 5-by-14½-by-14½ inches. This briefcase-size computer is fully compatible with VIC-20 and Commodore 64 peripherals, including the VIC modem for telecommunications. A regular monitor and printer can be hooked into the unit.

#### Laser 200

MANUFACTURER: Video Technology Inc., 2633 Greenleaf, Elk Grove Village, IL 60007; (312) 640-1776  
PRICE: \$100



Hong Kong-based Video Technology has manufactured products for American marketers before, but the Laser 200 marks its first brand-name entry into the United States.

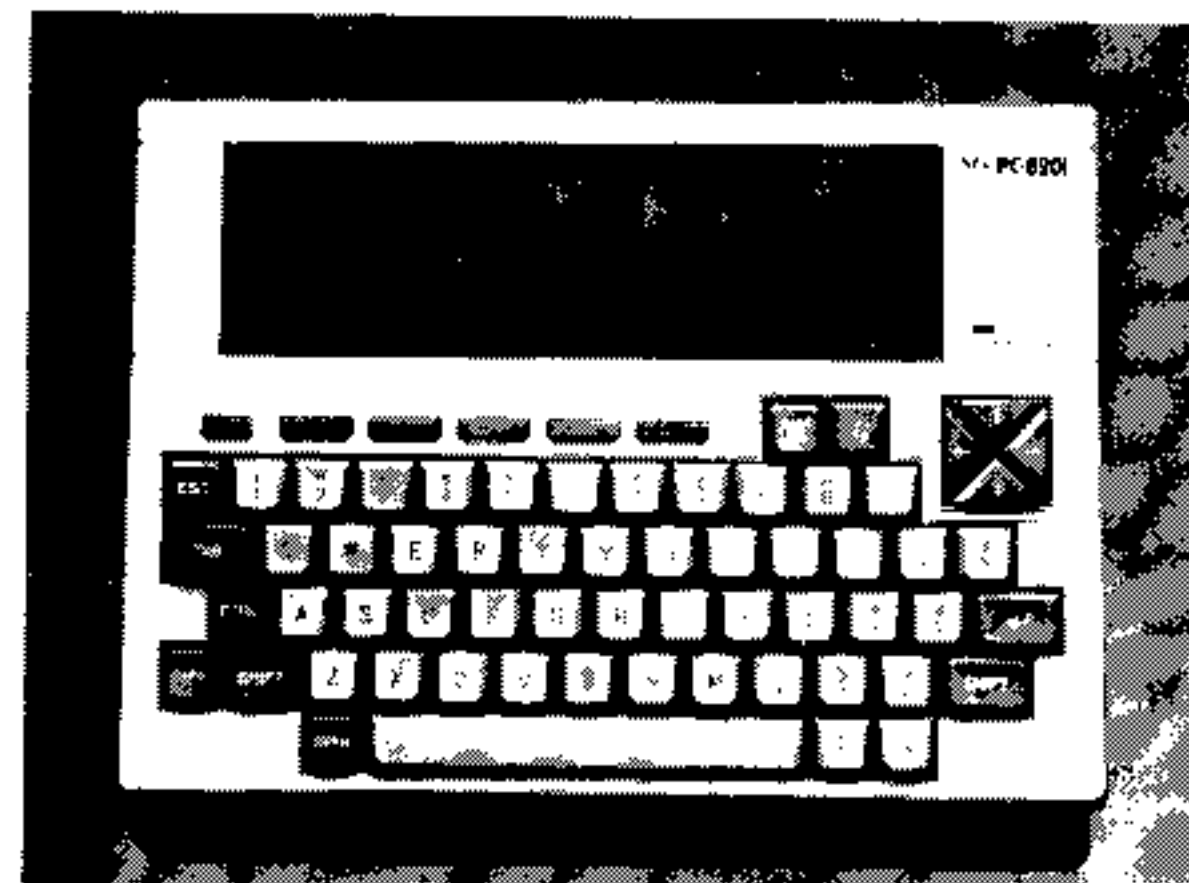
The Laser 200 has the earmarks of a start-up computer, with rubber "chiclet" keys, and a "goof proof" keyboard that beeps when you make an entry. Like the Timex Sinclair 1000, the Laser 200 features single-stroke key-word entries. To enter a command such as RESTORE, you merely type "R." The Laser 200 comes equipped with only 4K RAM, but is expandable to 16K or 64K with expansion modules. You can hook the Laser 200 up to a monitor or a TV, to a regular cassette recorder, and to a printer or a modem.

#### NEC PC-8201

MANUFACTURER: NEC Home Electronics U.S.A., 1401 Estes Ave., Elk Grove Village, IL 60007; (312) 228-5900  
PRICE: \$799

The newest portable is the NEC PC-8201, a battery-operated computer with 16K RAM, expandable to 64K.

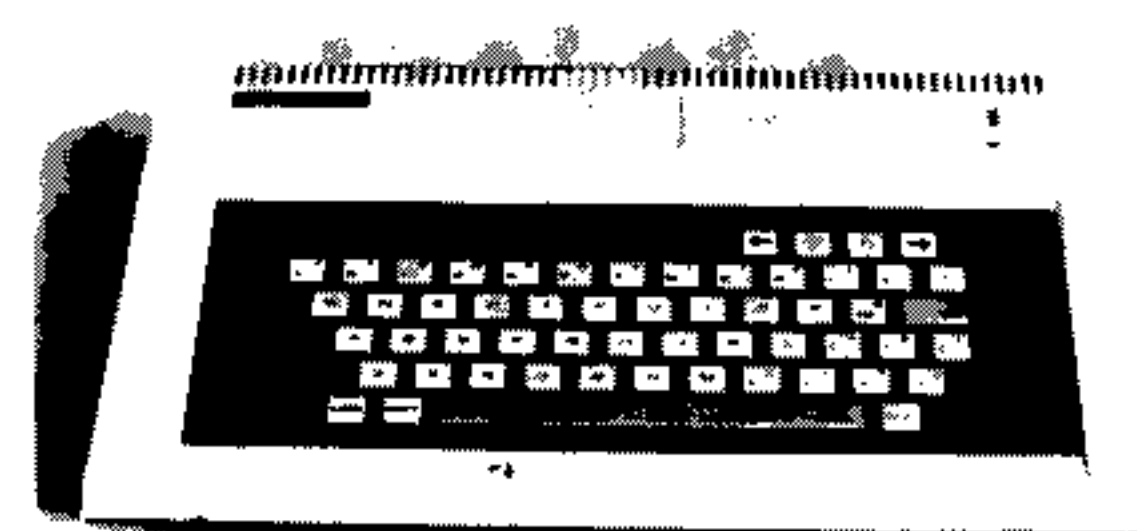
Its sizable 32K ROM also expands to 64K. Text-editing and telecommunications software is built in, as is BASIC. However, the telecommunications software will not work without a modem, which must be acquired separately.



The screen display is LCD, the "liquid crystal" type seen on many watches and calculators. Eight lines of text, at 40 characters each, can be displayed on the built-in screen at one time. The screen's black-on-white display can be reversed to white-on-black, and the contrast can be altered to suit the user. The keyboard has 67 keys, including four separate cursor controls, and can produce both upper- and lower-case letters. The 3.8-pound portable, which measures 11⅝-by-8¼-by-2½ inches, can be connected to a disk drive, printer, or desk-top computer, and works with either a TV or a monitor.

#### Tomy Tutor

MANUFACTURER: Tomy Corp., 901 E. 233rd St., P.O. Box 6252, Carson, CA 90749; (213) 549-2721  
PRICE: \$150



Tomy Corp., a large toy manufacturer, is positioning its first computer as a learning tool for the "computer novice," and says that an eight-year-old can learn to use the computer without parental guidance. The 16K RAM computer is expandable to 64K, and comes with built-in BASIC and high-resolution graphics. Built-in sound channels allow for three musical tones, with a range of eight octaves per tone. The raised keys pro-



## WHAT'S IN STORE NEW HARDWARE

duce both upper- and lower-case characters. The Tomy Tutor requires a special cassette recorder, works with either a TV or a monitor, and will accept a speech synthesizer.

### MISCELLANEOUS

#### Atari Touch Tablet

MANUFACTURER: Atari Inc., 1265 Borregas Ave., P.O. Box 427, Sunnyvale, CA 94086; (408) 745-2000

PRICE: \$79



By placing a stylus or finger on the touch tablet, the user may "paint" pictures and draw diagrams or scripts that will immediately appear on the computer's screen. The drawing area measures 4½-by-6 inches. Two push-button switches on the tablet and one on the stylus can be used to select options from a menu, and start or stop drawing.

#### Casio PT-50

MANUFACTURER: Casio, Inc., 15 Gardner Rd., Fairfield, NJ 07006; (201) 575-7400

PRICE: \$199



The Casio PT-50, a lightweight, 31-key computer instrument, simulates the sound of an organ, harpsichord, trumpet, violin, and other instruments. The unit accepts plug-in ROM cartridges, which play back prerecorded tunes. Or, the user can play his or her own music and store it in memory (on cassette tapes) for future playback. The player can back the music with any of 16 rhythms, ranging from disco to tango. No matter how slowly the music was originally recorded, the user can play it back at the proper speed by tapping one key at the desired tempo.

#### F.R.E.D.

MANUFACTURER: Androbot, Inc., 101 E. Daggett Dr., San Jose, CA 95134; (805) 493-1215

PRICE: \$300

F.R.E.D. (Friendly Robot Educational Device), a junior-size member of Androbot's line of personal robots, can be mobilized by a home computer—or by a remote infrared controller. Using a computer, you write a program in a specially developed LOGO-like language, and transmit the information to the robot via the controller. Using just the controller, you use the keypad to control the robot.



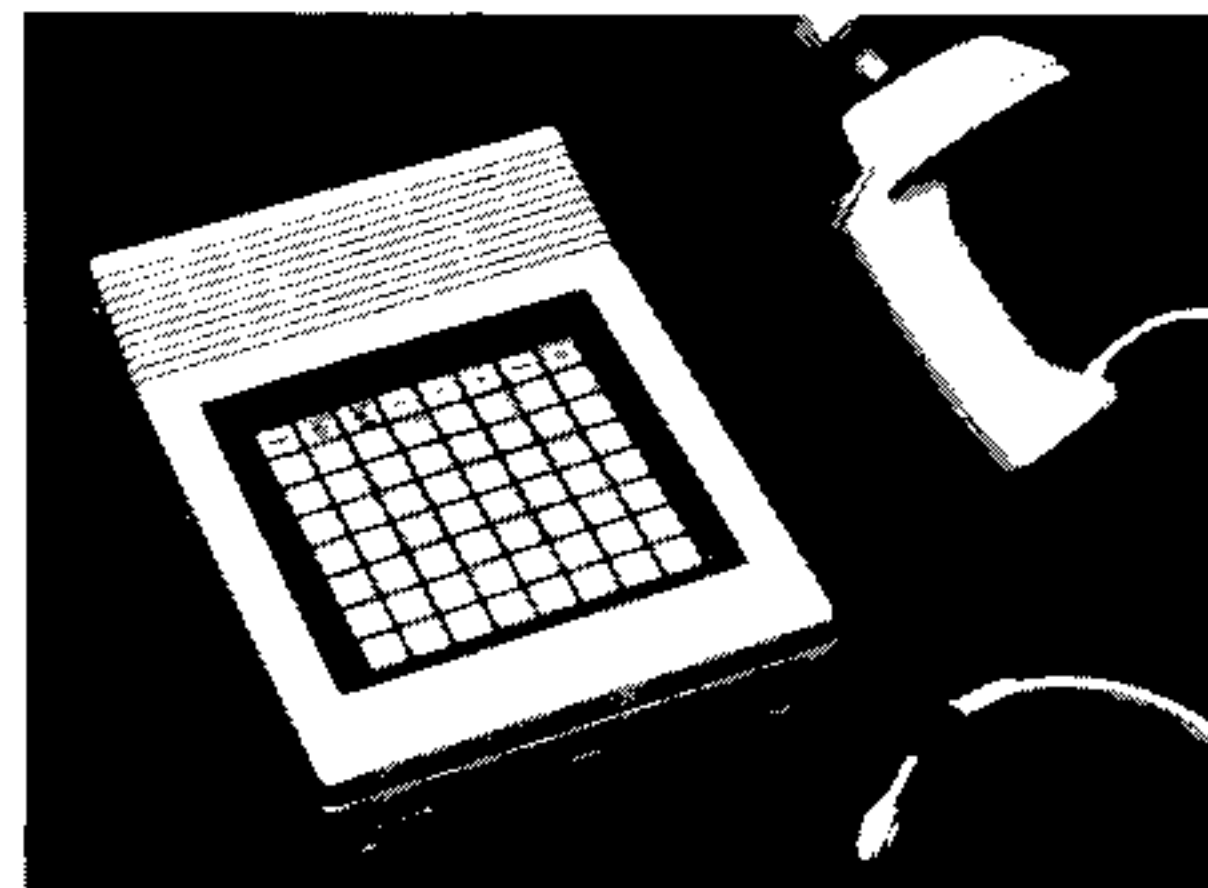
F.R.E.D. comes with a mini-Androwagon, so he can transport small items from room to room. With his drawing pen attached, F.R.E.D. will follow preprogrammed steps to create geometric shapes on paper. And when he's moving around on a tabletop, mechanical sensors will prevent him from slipping over the edge. Androbot says future software will include a voice synthesizer that allows for user-programmable speech.

#### MBX Expansion System

MANUFACTURER: Milton Bradley; marketed by Texas Instruments, P.O. Box 53, Lubbock, TX 79408; (800) 858-4565

PRICE: \$129

The MBX Expansion System includes a 64-position membrane keypad, built-in electronic speech synthesis and voice recognition, and a microphone that allows users to give verbal instructions to the computer. The system will work only with the TI 99/4A computer. Texas Instru-

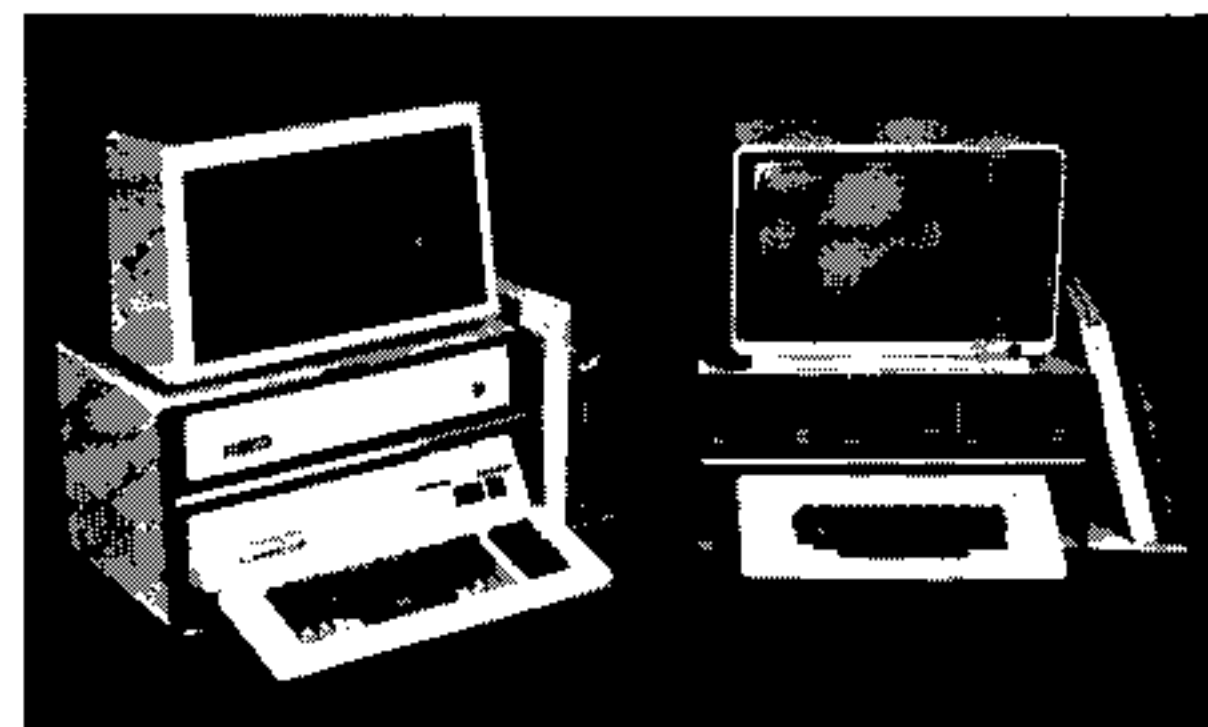


ments will also market 10 Milton Bradley game and educational software packages for the MBX.

#### Pro-Tech Locking Stands

MANUFACTURER: Seagull Enterprises, 88 W. Britannia St., Taunton, MA 02780; (617) 823-9684

PRICE: \$165



These locking stands are designed to protect Apple computers from tampering and theft. They secure the computer itself, up to three disk drives, and any type of monitor or TV, with a rear-locking system. The locking stands are made of steel, and are color-coordinated with Apple computers. Monitors are secured to the stand with a 22-inch steel cable. A Pro-Tech Security Pad (\$99) is available to anchor your printer to a table.

#### Surge Sentry

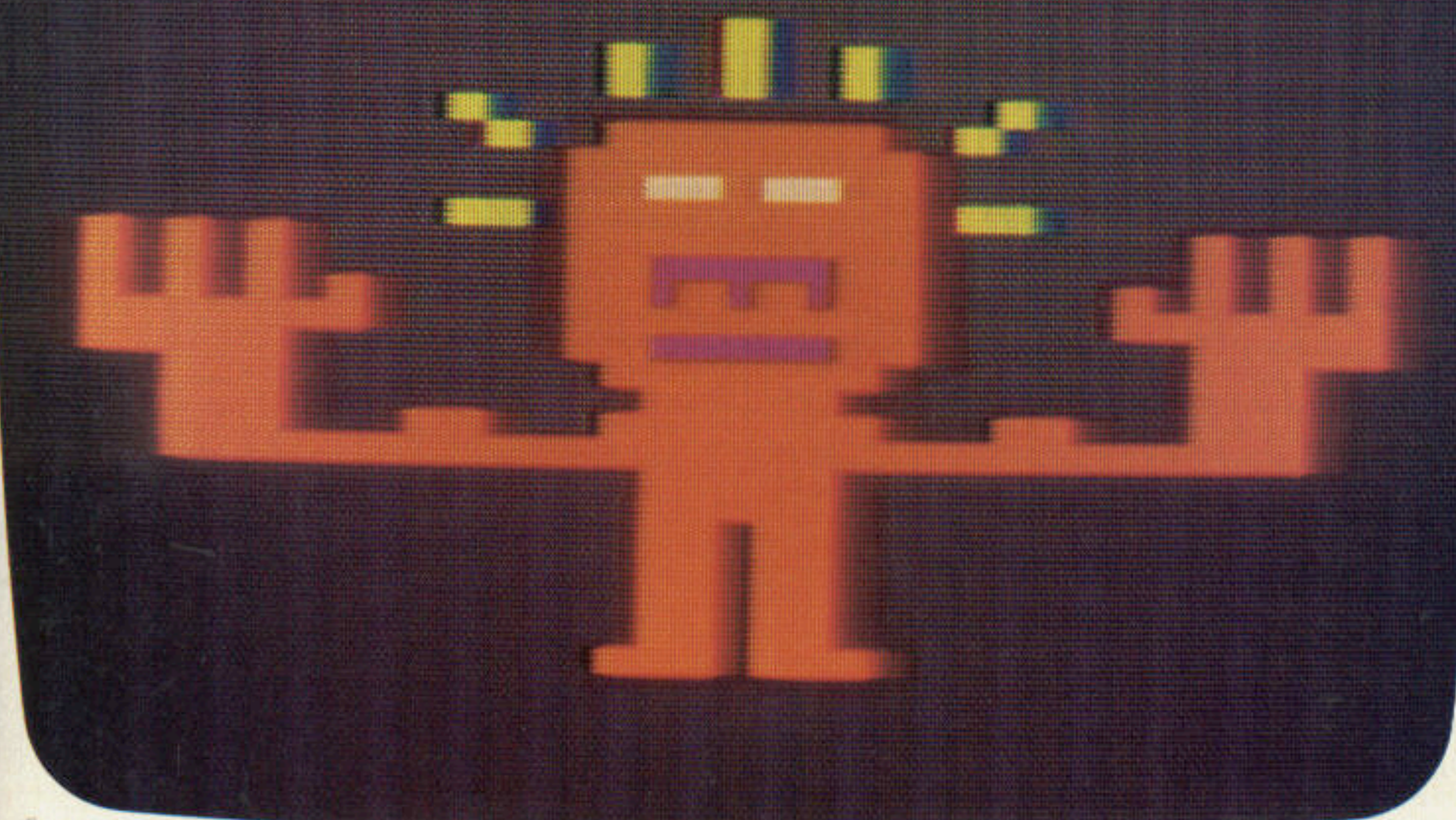
MANUFACTURER: RKS Industries, 4865 Scotts Valley Dr., Scotts Valley, CA 95066; (800) 892-1342; from California (408) 438-5760

PRICE: \$89 (and up)

Electrical power surges can wreak havoc with your computer, destroying data in memory or even burning out chips. Surge Sentry, which simply plugs into an outlet, is designed to protect your microcomputer from these power surges, drops, and any electrical "noise." An indicator light tells you that the device is working properly. Surge Sentry is backed with a one-year "no questions asked" warranty. Call toll free for information about the entire RKS line.

| GAMES  |   |  |   |         |   |    |    |    |   |
|--|---|--|---|---------|---|----|----|----|---|
| Title<br>Manufacturer<br>Price   | Brief<br>Description  | Hardware/<br>Equipment<br>Required   | Backup<br>Policy  | Ratings |   |    |    |    |   |
|  |   |  |   | O       | D | EH | GQ | EU | V |
| CHOPLIFTER<br>Creative Software<br>230 E. Caribbean Dr.<br>Sunnyvale, CA 94089<br>(408) 745-1655<br>\$29.95 ©1982                                      | Guide helicopter past enemy tanks, airplanes, and satellites into foreign embassy compound to rescue hostages in this easy-to-learn, moderately interesting arcade game.  | VIC-20, cartridge; joystick required   | Defective cartridges replaced free.                                       | ★       | ★ | ★  | ★  | E  | ★ |
| CROSSFIRE<br>Sierra On-Line<br>Sierra On-Line Bldg.<br>Coarsegold, CA 93614<br>(209) 683-6858<br>\$34.95 (cartridge)<br>\$29.95 (all others) ©1981     | Shoot down aliens attacking from up and down, right and left, in this easy-to-learn, difficult-to-master, but unremarkable arcade game.   | Apple II/II+ /IIf, 48K disk; Atari 400/800, cartridge, 16K cassette, 48K disk; VIC-20, cassette; IBM PC, 48K disk; joystick optional | Defective material replaced free w/ in 90 days; \$5 fee thereafter.       | ★       | ★ | ★  | ★  | A  | ★ |
| DEMON ATTACK<br>Imagic<br>981 University Ave.<br>Los Gatos, CA 95030<br>(408) 399-2200<br>\$34.95 ©1982  | Steer ships over lunarscape to fend off and shoot down waves of alien creatures in this addictive arcade game.  | Atari 400/800, cartridge; VIC-20, cartridge; joystick required   | Defective cartridges replaced free w/ in 2 years.                         | ★       | ★ | ★  | ★  | E  | ★ |
| ESCAPE FROM RUNGISTAN<br>Sirius Software, Inc.<br>10364 Rockingham Dr.<br>Sacramento, CA 95827<br>(916) 366-1195<br>\$29.95 ©1982                      | Use your wits and arcade skills to escape from prison and hostile foreign country. Takes patience to solve puzzles in this exciting text adventure/arcade game hybrid.†   | Apple II/II+ /IIf, 48K disk  | Defective disks replaced free; \$5 fee if user damaged.                   | ★       | ★ | ★  | ★  | A  | ★ |
| FLIGHT SIMULATOR<br>Microsoft Corp.<br>10700 Northup Way<br>Bellevue, WA 98004<br>(206) 828-8080<br>\$49.95 ©1982                                      | Learn to launch, land, and fly an airplane while having a lot of fun with this educational, real-life simulation of flight.†  | IBM PC, 64K disk; IBM requires color card.   | Defective disks replaced free w/ in 1 year.                               | ★       | ★ | ★  | ★  | A  | ★ |
| GUESS WHAT'S COMING TO DINNER<br>Educational Software<br>4565 Cherryvale Ave.<br>Soquel, CA 95073<br>(408) 476-4901<br>(800) 692-9520<br>\$24.95 ©1983 | Guide the snake across the screen. As it consumes flies, frogs, and mice in its path, it gets longer and more difficult to maneuver.  | Atari 400/800, 16K cassette, 32K disk; joystick required   | Defective material replaced free.   | ★       | ★ | ★  | ★  | A  | ★ |
| HUNT THE WUMPUS<br>Texas Instruments<br>P.O. Box 53<br>Lubbock, TX 79408<br>(800) 858-4075<br>\$24.95 ©1980  | Search for the Wumpus' lair, while avoiding his hungry jaws and the steamy slime pit, in this arcade game best suited for younger, less-demanding audiences.  | TI-99/4A, cartridge; joystick optional   | Defective cartridges replaced free w/ in 90 days; \$10.25 fee thereafter. | ★       | ★ | ★  | ★  | E  | ★ |
| THE MISSING RING<br>Datamost, Inc.<br>8943 Fullbright Ave.<br>Chatsworth, CA 91311<br>(213) 709-1202<br>\$29.95 ©1983                                  | Roam uncharted corridors of an enchanted palace in search of magical rings. Fend off monsters, acquire new powers, learn magic spells in this stimulating, simple introduction to text adventures, with graphics. | Apple II/II+ /IIf/III w/ emulator, 48K disk  | Defective disks replaced free.  | ★       | ★ | ★  | ★  | E  | ★ |
| PINBALL CONSTRUCTION SET<br>Electronic Arts<br>2755 Campus Dr.<br>San Mateo, CA 94403<br>(415) 571-7171<br>\$40 ©1983                                  | Design, "build," modify, then play electronic pinball game. Use prefab or original elements to create endless variety of pinball fields. Innovative program appealing to all ages.†                               | Apple II/II+ /IIf, 48K disk; Atari 400/800, 48K disk; joystick required  | Defective disks replaced free w/ in 90 days; \$7.50 fee thereafter.       | ★       | ★ | ★  | ★  | A  | ★ |
| QIX<br>Atari, Inc.<br>1312 Crossman Ave.<br>P.O. Box 61657<br>Sunnyvale, CA 94086<br>(800) 538-8543<br>\$44.95 ©1983                                   | Trap the whirling Qix by carving out territories of your own in this game of skill and strategy. Easily learned, more difficult to master.  | Atari 400/800, cartridge; joystick required  | Defective cartridges replaced free.                                       | ★       | ★ | ★  | ★  | E  | ★ |

**RATINGS KEY** O Overall performance; D Documentation; EH Error handling; 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



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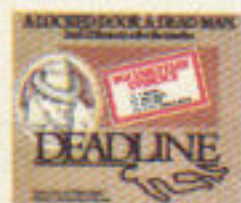
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