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APRIL 1985

VOLUME 3
NUMBER 4

COLOR PRINTERS
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How to Make a Computer Call

Inside: K-POWER

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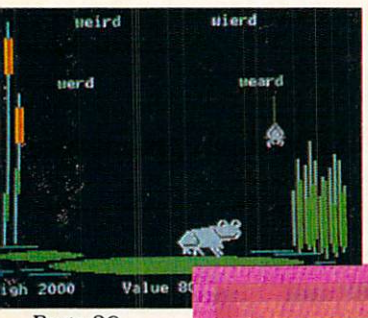

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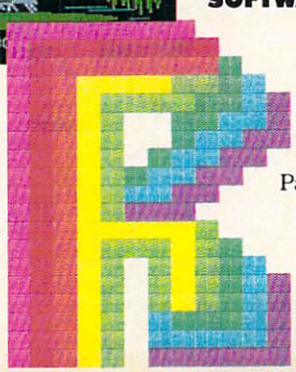

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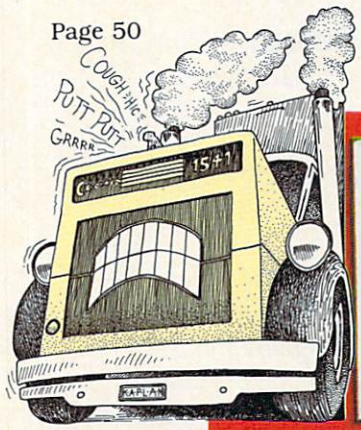

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FAMILY COMPUTING (ISSN 0738-6079) is published monthly by Scholastic Inc., 730 Broadway, New York, NY 10003. Subscriptions: in the U.S. and possessions, 12 issues for $19.97; outside the U.S. add $6 (surface mail) or $25.97 (airmail). Office of publication: 351 Garver Rd., P.O. Box 2700, Monroe, OH 45050-2700. Second-class postage paid at Monroe, OH 45050-9998 and additional offices. POSTMASTER: Send address changes and notice of undelivered copies to FAMILY COMPUTING, P.O. Box 2511, Boulder, CO 80302. Printed in U.S.A. Copyright © 1985 by Scholastic Inc. All rights reserved.

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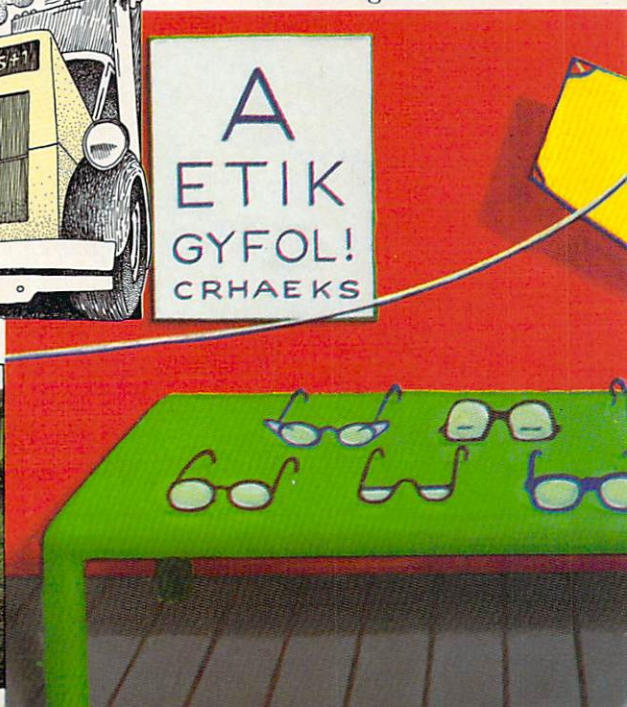

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TELECOMPUTING

TIPS ON MAKING A COMPUTER CALL

BY JOE GELMAN

Imagine a robot that can do everything—except hear and speak. Attaching a modem to your computer is much like adding a pair of eyes and ears to a robot. By allowing you to connect your computer to the phone lines and make calls to other computers, a modem turns your computer into a much more sensitive and sociable machine.

Last month's cover story, "The Great Computer-Phone Link," outlined the necessary ingredients for successful telecomputing. In short, you need a modem and communications software—and don't forget the phone! Here's a quick guide to putting these elements together, with a few tips on how to make the system setup work better for you.

Before you use a modem, the FCC (Federal Communications Commission) requires you to supply your local phone company with the FCC registration number and ringer equivalence number—information that is usually found on the underside of the modem. Also, FCC rules forbid using a modem on a party line or pay phone.

Now, let's get going and make that first phone call.

THE HOOKUP

The style of modem you use (external or internal) affects the type of hookup. The easiest modem to install is the self-contained, plug-in type. These modems are available for computers with internal card slots (ADAM, Apple, IBM) or those with special built-in ports (Atari, Commodore, Timex, TRS-80 Color Computer). The beauty of these modems is that you can just plug them in.

External modems connect to a computer through a serial interface of some kind. The modem connects to the interface via a connecting cable. The right cable is key! Your best bet is to obtain the proper cable at the same time you purchase the modem, making sure it's wired specifically for your computer. Anchor Automation sells cables that connect its modems to every popular computer; Apple sells "accessory kits" to connect its modems to computers. Most modems don't come with a cable, but the store where you buy one should be able to provide you with a cable that works.

If you have an external modem and your computer doesn't already have a serial interface, you may have to buy a serial card. Make sure you plug it into the proper slot inside your computer. The manual should mention which slot to use.

There are usually small DIP switches on serial cards. These can be set ON or OFF (up or down) to control certain functions of the card, such as "printing" or "communications." Read through the manual before installing the card, to determine what settings you'll be using. The DIP switches are easier to get at before the card's plugged in.

THE PHONE LINK

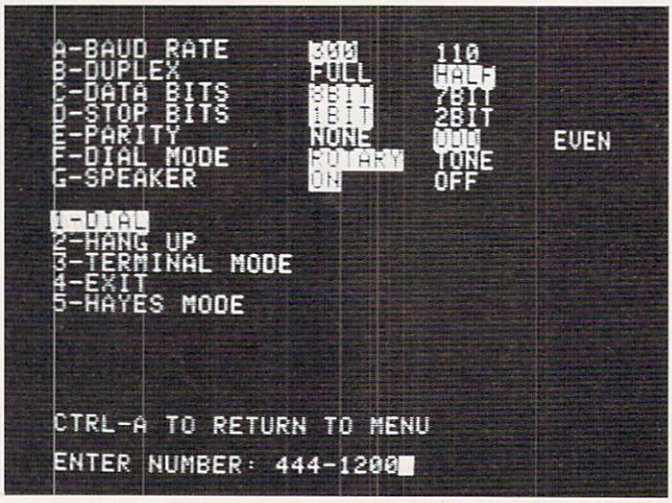
Once you've connected the modem to the computer, you're ready to hook into the phone system. If you live in a household with an old-fashioned "hard-wired" telephone connector, it's better to switch than fight. All direct-connect modems—and almost all modems today are direct-connect—require the newer "modular," or plug-in style connectors. Unless you've purchased an acoustic-coupled modem, the kind with cups that the phone handset fits into, you'll need to upgrade.

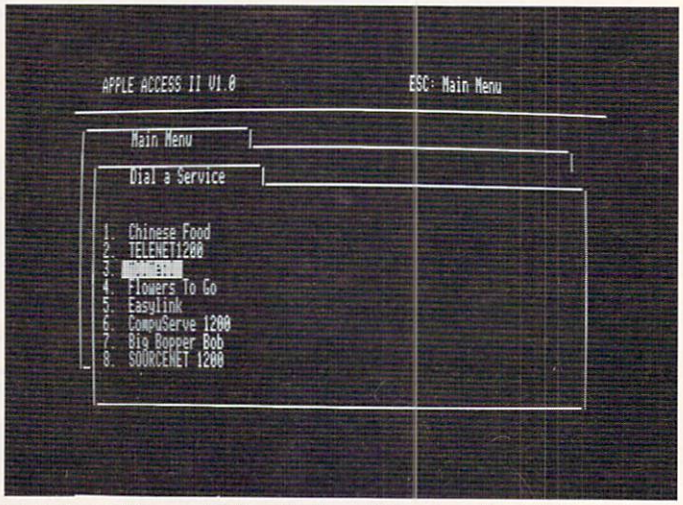
Fortunately, you can buy an inexpensive adapter box at Radio Shack (the Modular Jack/Wiring Block, for $4), or any store that carries phone supplies. Alternatively, inquire about your local phone company's upgrade policy. They may convert a hard-wired line to a modular line for a nominal charge.

Another handy item is a "duplex jack," which virtually turns one phone jack into two, or, alternatively, can "add" an extra jack to your modem. This is useful if you want to keep both your phone and your modem connected to outside phone lines at the same time. With only one line available, you'd have to unplug the line from your phone and plug it into your modem to make a "computer" call, then reverse the process to make a "voice" call. The duplex jack is available at Radio Shack and other phone-supply stores.

Note: If you're installing a separate telephone line for the modem, and

JOE GELMAN *is a contributing technical editor for* FAMILY COMPUTING. *He wrote "The Great Computer-Phone Link" in the March issue, and the Buyer's Guide in this issue.*





Left: Software built into the Zoom Modem/IIe (Zoom Telephonics) lets you choose modem settings easily by selecting a letter or number. Right: *Apple Access II* software (for Apple IIe and IIc) lets you store often-dialed phone numbers. Make your choice (Chinese food?), hit RETURN, and the modem automatically will dial the number.

PICK OF THE MONTH

The Netweaver's Sourcebook—A Guide to Micro Networking and Communications

By Dean Gengle
Addison-Wesley, $14.95

Computers, telecommunications, networks, the Information Age—keeping up with all these new developments and the jargon surrounding them is practically a full-time job. Dean Gengle has done a lot of the work for you.

Gengle addresses the reader as a potential "netweaver"—or creator of a network—and presents all kinds of information that such a person might want. The book's a combination of philosophy, sociology, psychology, and plain talk about modems and micros.

This soup-to-nuts approach covers many topics: goal-setting, privacy, telephone systems, the home-to-office connection. They're all clearly labeled, so the reader can pick and choose. If you use a modem with any frequency, you'll learn something from this book.

the modem has autodial capability (meaning the phone number can be dialed from the computer keyboard), you won't need a duplex jack.

If you subscribe to the "call waiting" service, be aware that incoming calls will interfere with the modem and may break your connection with the computer at the other end. This can be very annoying if you're in the middle of an "electronic" chat, or have finally gotten through to that BBS that's always busy. Solutions? Have "call waiting" disconnected; get a separate phone line for your computer; or buy one of the new and very expensive modems, which override the "call waiting" signals.

MAKING A CALL

Once the hardware is in place, it's time to boot your communications software. We'll assume you've read the manual that came with the software (always a good idea!) and understand the basic operating procedure. Make sure you know how to adjust the baud rate, duplex, and parity settings—you may want to change them in the middle of a call. If these values are set incorrectly, you'll have trouble communicating. It pays to find out what settings the computer you're calling expects before placing the call.

Preliminary testing of your modem is easier if it's "intelligent" (Hayes Smartmodem and compatibles), because it can talk back to you. Typing AT (the "attention" command) will cause the modem to respond OK. If you can get that much to happen, there's a good chance your hookup is correct. Testing "plain vanilla" modems that can't talk back requires calling another system. And, of course, the true acid test for any modem is to call up another system with a modem attached—and actually communicate.

If you have a friend to call, great. If not, check magazine listings or ask a users' group for local BBS (bulletin board system) phone numbers to call.

Even if you have 1200-baud capability, it's a good idea to test the modem at 300-baud. The lower speed is more reliable (it's less sensitive to noise on the phone line), and most BBSs still run at only 300 baud.

Calling a friend: Set your communications program to half-duplex (so you can see your own typing). If the program allows you to adjust parity, set it to NONE. Your friend should use these same settings on the other end. If you make the call, you're the "originator" and your friend is the "answerer." Many modems automatically select the proper mode (ORIGINATE or ANSWER). If yours doesn't, you manually select the appropriate setting. Actually, all that matters is that each modem be set differently, regardless of who originates the call.

Calling a commercial system: The main difference between calling a friend and calling a commercial network such as CompuServe or The Source is the duplex setting. Because commercial systems will "echo" the characters you type back to you, you'll see a doubling of the characters on the screen (e.g. HHEELLPP) if you're set to half-duplex. Set your program to full-duplex before calling a commercial system. When calling some BBSs you'll need to set your computer to full-duplex, as well. Others operate on half-duplex.

When making a call from your computer—either dialing on the keyboard or on the phone—you can tell you've reached another computer when you hear a high-pitched tone. Autodial modems automatically will connect when they hear this tone; on manual modems, you'll have to flick the switch from "voice" to "data," or to "originate."

CALL-MAKING CHECKLIST

1. Connect the modem to the computer.
2. Plug in the modem's power supply or battery (if needed).
3. Autodial modems: Connect the phone line to the modem. Manual-dial: Connect modem *and* phone to outside-line.
4. Set the modem to "originate" (if needed).
5. Boot your communications software.
6. Check the settings. To call a bulletin board or commercial network, try: 300 baud, full-duplex, no parity. To call a friend, try: 300 baud, half-duplex, no parity.
7. Dial the number you wish to reach, either from the computer keyboard (for autodial modems) or from the phone.
8. If you have a manual-dial modem, wait for the high-pitched tone, then switch from "voice" to "data," or to "originate."
9. Complete the connection. In most cases, pressing ENTER once or twice, or pushing CONTROL-C, will accomplish this.
10. If calling a BBS, follow instructions for log-on (entering ID, password, etc.). If connected to an individual, just start typing (HELLO, CAN YOU READ ME?) and wait for a response. Good luck!

Once you've connected to a distant computer a few times, it's easy as pie. But the first few times you might encounter problems. If one thing's out of place, the modem will not work correctly. Just slow down, follow our "Call-Making Checklist," and start over. In an upcoming issue, we'll run a guide to troubleshooting, giving solutions to common problems.

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).*

To operate these electronic services, FAMILY COMPUTING *uses modems supplied by Hayes Microcomputer Products, Inc.*

HELPFUL HINTS

SHORT PROGRAMS FOR SHORTCUTS

A well-placed little program or a simple programming trick can make all the difference in the way you feel about your computer. Here's a mix of hackers' hints to make your computer deliver more pleasure and add more excitement to the time you spend with it. Most important, they can help you extend its usefulness in a variety of ways.

EDITED BY ROXANE FARMANFARMAIAN

Print out Your Disk Directory and Find Out How Much Free Space Is Left on Your Disk.

Want a printout of your disk directory for your files? How about a quick check to see how much room you've still got on your disk, just in case you're getting close to capacity? These programs will do both, for ADAM, Apple, Atari, Commodore, IBM, TRS-80 CoCo, or Model III computers.

ADAM (Boot SmartBASIC)

```
10 PR#1
20 CATALOG
30 PR#0
```

Apple

To check free disk space, RUN the FILEM program on the DOS master or ProDOS user disk. To get a printout of the disk directory, type in the same program as for the ADAM.

Atari

```
10 DIM LINE$(128)
20 OPEN #1,6,0,"D:*.*"
30 TRAP 70
40 INPUT #1;LINE$
50 LPRINT LINE$
60 GOTO 40
70 CLOSE #1
```

Commodore 64 & VIC-20

```
LOAD "$",8
OPEN 4,4
CMD 4:LIST
PRINT#4
CLOSE 4
```

IBM

Type DIR>PTR at the DOS prompt.

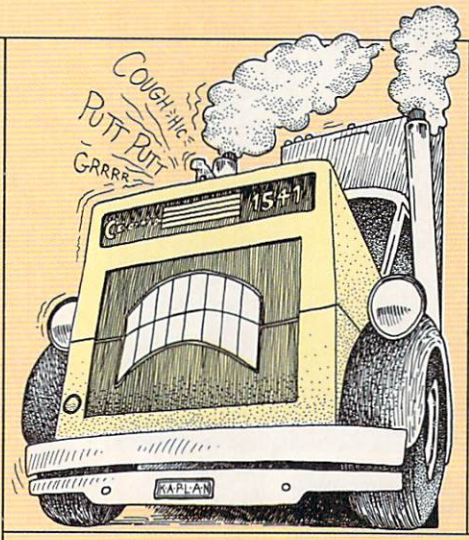
TRS-80 CoCo

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

TRS-80 Model III (Boot DOS)

Type the following at the TRSDOS READY prompt. If you have only one drive, type: DIR: 0(PRT)

If you have two drives and you wish to have a printout for the disk in your second drive, type DIR: 1(PRT)



Stop Your 1541 Disk Drive from Sounding Like a Mack Truck.

Commodore 64 and VIC owners: To stop your disk drive's read/write head from "grinding" or "bumping," try the following program. RUN it before loading any software; it will stay in effect until the drive or computer is turned off.

```
10 OPEN 15,8,15
20 PRINT#15,"M-W";CHR$(106);CHR$(0);
CHR$(1);CHR$(133)
30 CLOSE 15
40 END
```

GILBERT D. HELLAND
Scott Air Force Base, Illinois

Rule Your Stationery with Your IBM or TRS-80 Model III/4.

Ever wish you could put lines on your writing paper or stationery? Well, here's the program to do it for you. Just type it in, place an 8½ × 11-inch piece of paper in your printer (fanfold paper works, too), and type RUN. If you want to shorten or lengthen the lines, change the number 79 in line 10. To change the number of lines on your paper, change the 60 in line 100.

```
10 CLS:FOR X=1 TO 79:A$=A$+CHR$(95):NEXT X
20 PRINT "DO YOU WANT THE LINES ON YOUR PAPER"
30 PRINT "SINGLE, DOUBLE, OR TRIPLE SPACED?"
40 PRINT:INPUT "ENTER 1, 2, OR 3";SP
50 IF SP<1 OR SP>3 THEN 40
60 CLS:PRINT "WHEN YOUR PRINTER IS READY, PLEASE"
70 PRINT "PRESS ANY KEY."
80 K$=INKEY$:IF K$="" THEN 80
90 FOR I=1 TO 6:LPRINT:NEXT I
100 FOR I=1 TO 60 STEP SP+1:LPRINT A$
110 FOR J=1 TO SP:LPRINT:NEXT J
120 NEXT I
```

THOMAS GASPER
Mascoutah, Illinois

Save or Load Using Your 1541 Disk Drive Even When You Get a ?DEVICE NOT PRESENT Error on Your Screen!

Commodore users, does this scenario ring a bell? You boot your disk, type in a new program, RUN it and print it out—everything's dandy. You then make all the right moves to save it to disk and . . . the computer pulls a fast one on you by throwing a ?DEVICE NOT PRESENT error onto the screen. Nothing you do seems to re-establish communication between the computer and the disk drive. You've no choice but to let the program die on the screen.

Wait! Press RUN-STOP/RESTORE and type in these two BASIC statements:

```
CLOSE 15
OPEN 15,8,15,"I"
```

This re-establishes communication.

ILLUSTRATIONS BY MICHAEL KAPLAN

The Programmer

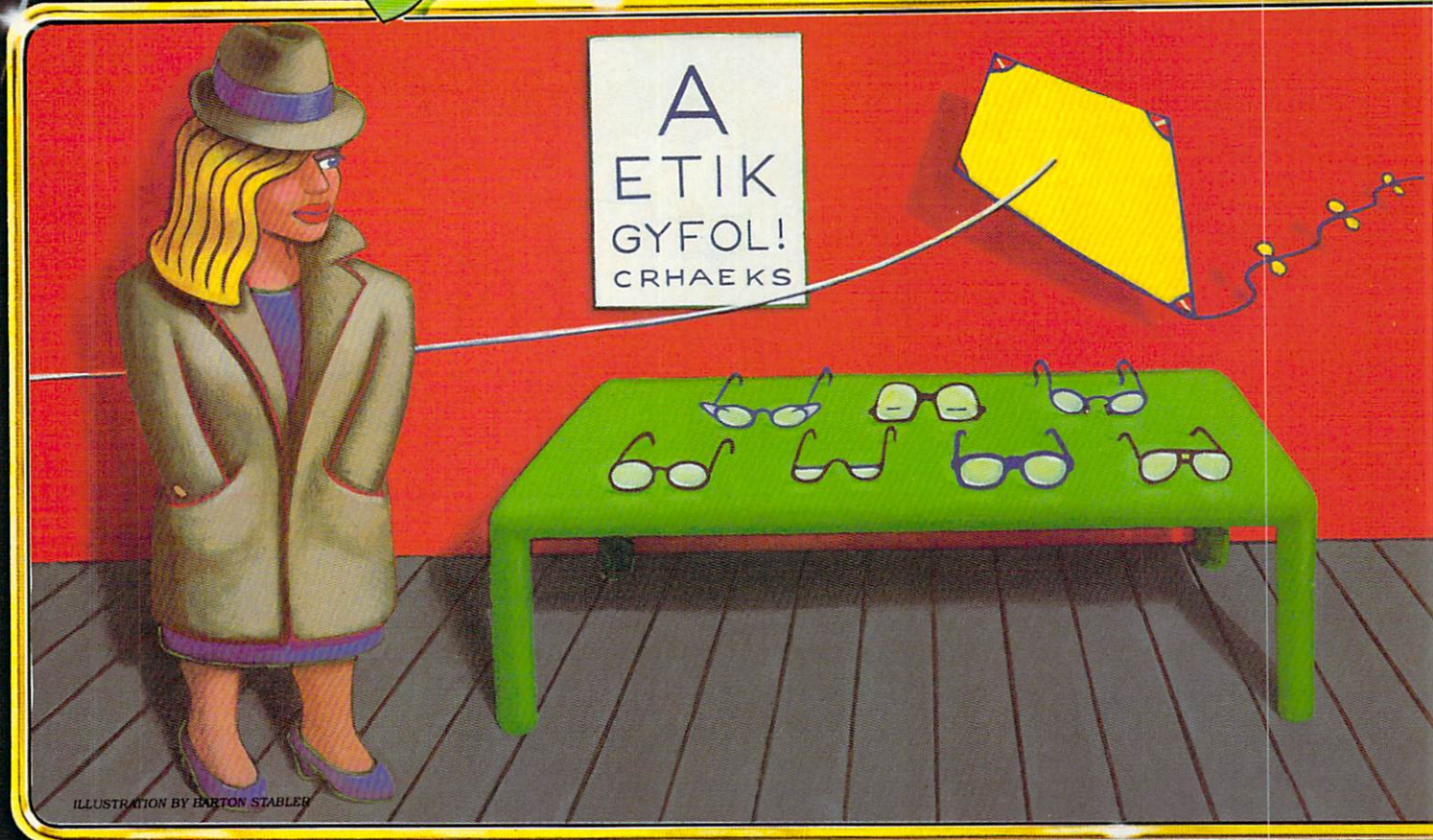


ILLUSTRATION BY BARTON STABLER

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PUZZLE
Page 54

The facts of the case
are as clear as that chart
on the wall—
but is your eyesight sharp enough
to pick them out
before it's too late?

SPRING PROGRAMS
Page 59

Let yourself soar with *Kite*,
and announce
the coming of Spring
with a
high-tech *Banner*.

PROGRAMMING P.S. Page 71 Notes to previous month's programs.

ILLUSTRATION BY JIM CHERRY III

MORE THAN MEETS THE EYE
Can You Find the Hidden Message?

PUZZLE BY PETER FAVARO AND SARAH KORTUM
PROGRAM BY LANCE PAAVOLA AND STEVEN C. M. CHEN

While sitting in the waiting room of noted optometrist Dr. Seymour Shades, Private Eye Lynette Leighton noticed that the man next to her was buried in a jumbled-word puzzle. At least he has something to pass the time with, she thought, glancing at her watch. Preoccupied and already late for her next appointment, she hardly thought twice about it when the word-puzzle man left and his seat was taken by someone else. But suddenly, a voice broke into her reverie.

"Hey, Doll, fancy meetin' youse here!"

Lynette's senses were awakened by the gravelly voice and the distinctive smell of the $3 aftershave that were the calling cards of none other than . . .

"Fingers! What are you doing out of jail?" Lynette asked, amazed at seeing the notorious jewel thief, Frank ("Fingers") Larsen, who was convicted in *The Case of the Missing Lapis Lazuli* (*November 1984* FAMILY COMPUTING).

"The warden is a very close friend of my uncle, the bank president, so I got time off for good behavior."

As they spoke, Lynette noticed that Fingers was working on the same kind of jumbled-word puzzle as had the man before him. She glanced around the waiting room and noticed several seedy-looking types furiously scribbling away in a similar vein. Some came in, jotted something down, then got up and left without even visiting the doctor. Then Lynette noticed something else. A newspaper, lying on the seat to her right, was opened to display a full-page advertisement, announcing a week-long rare-gem exhibition and auction at Timpany's Jewelry Store.

Lynette sensed that there was more than one puzzle to be solved in the room, and glanced around for more clues. The room was decorated with antique eye charts in ornate frames. She studied them carefully,

ILLUSTRATIONS BY JOSH GOSFIELD

and noticed that one chart seemed to be peeling away from the frame, revealing part of another eye chart underneath. She read this chart carefully in spite of Fingers' continual interruptions: "Hey Toots! How do youse spell 'of'? Is it O-V or O-V-E?"

The longer Lynette studied the eye chart, the more certain she became that it contained a jumbled word message, and that her optometrist was engaged in something a little more shady than fitting prescription sunglasses. She jotted down each line of the eye chart, then got up and left the waiting room.

At her office, Lynette tried using her computer to generate every possible word, large or small, that each line of the chart contained. But she discovered pretty quickly that this wasn't the best way to go about it, as the letters in the longer jumbles formed an astronomical number of word combinations. She figured she had to decide which letter or letters from each jumble were most likely to begin the correctly unscrambled word, and tell her computer to show only combinations that began with these letters. Using this method, she was able to select one word out of the possible combinations for each line, which when read together with the words from the other lines, told the day and place of a planned robbery.

But one crucial piece of information was missing: the time. In order to catch the robbers in the act and put Fingers and his optometrist pal in the slammer, Lynette had to find the clue in the eye chart that would point her to the time of the robbery.

HOW TO PLAY

This month's program, *Optical Illusion*, is a handy tool for unscrambling word jumbles and anagrams of all kinds. It's based on a routine that generates all the possible combinations of the letters in any given word. Use the program (and your wits!) to unscramble the mystery message in Dr. Shades' eye chart.

Type each line of the program into your computer exactly as shown, carefully making the appropriate modifications (if needed). Before RUNning the program, SAVE it to disk or cassette.

Please be a careful typist—each letter, number, space, and punctuation mark makes a difference in whether or not the program runs correctly. If you have trouble later on, chances are that a simple typing error is at fault. Try proofreading what you've typed in against the listing in the magazine—it's likely you'll soon discover your mistake.

Before RUNning the program, you *must* set your computer to all uppercase letters. When you first type RUN, the program will prompt you to ENTER JUMBLED WORD OR "Q" TO QUIT. This is your cue to type in one of the scrambled lines of Dr. Shades' chart, then press RETURN or ENTER. The program will count the letters and tell you how many combinations of those letters exist. It will then prompt you to press the space bar or the RETURN (or ENTER) key, depending on whether you wish to view all of the possible combinations, or provide one or more letters from the word and view only those combinations that begin with the letter or letters you supplied.

This is an important decision. As words grow longer, the number of ways to scramble their letters increases rapidly. For example, a three-letter word can be jumbled no more than six different ways, but a six-letter word has up to 720 possible combinations!

To view all the combinations, press the space bar. The combinations will be displayed by screenfuls. When the program pauses at the end of a screen, press the space bar to continue the process, or any other key to return to the initial prompt, where you may enter another jumbled word.

To view fewer combinations, press the RETURN or ENTER key. At the next prompt, enter one or more letters you've chosen from the jumble. Press RETURN or ENTER, and the computer will tell you how many combinations begin with the letter(s) you've selected. If you still feel there are too many, press RETURN or ENTER once again, and the computer will permit you to enter another (larger) group of letters, reducing further the number of possible combinations. If you're satisfied, press the space bar, and the computer will begin displaying the combinations.

To make this month's puzzle program useful for solving any jumbled-word puzzle, not just the one on the eye chart, we omitted the section that tests your answer and tells you whether you're right or wrong. Once you think you've solved this month's puzzle, you can check your answer against the solution on page 62. No peeking!

Base Version (TRS-80 Model III)/*Optical Illusion*

```
10 CLEAR 1000
20 DIM C$(20),LINK(20),PS(20),R(20):Q$=CHR$(34)
30 SH=12:SW=64:TRU=-1:TX=0:E$=" <ENTER> "
40 A$="PRESS <SPACE BAR> TO DISPLAY ALL OF THEM,"+E$
50 B$=", OR ANY OTHER KEY TO ENTER ANOTHER WORD."
60 CLS:P$="ENTER JUMBLED WORD OR "+Q$+"Q"+Q$
70 P$=P$+" TO QUIT.":GOSUB 1000:PRINT
80 T$="":GOSUB 3000:IF T$="Q" THEN END
90 LT=LEN(T$):IF LT<2 OR LT>20 THEN 60
100 BOT=1:LW=0:WD$=""
110 FOR X=1 TO LT:V$=MID$(T$,X,1)
120 IF V$<"A" OR V$>"Z" THEN 150
130 WD$=WD$+V$:LW=LW+1
140 C$(LW)=V$:PS(LW)=1:LINK(LW)=LW
150 NEXT X:IF LW<2 THEN 60
160 CLS:H$="":LH=0:GOSUB 4000:V=LW:GOSUB 5000
170 P$=WD$+" HAS"+M$+"LETTERS, FORMING"+FAC$
180 P$=P$+"COMBINATION(S).":GOSUB 1000:PRINT
190 P$=A$+"TO CHOOSE THE FIRST LETTER(S)"+B$
200 GOSUB 1000:GOSUB 6000:IF K=32 THEN 420
210 IF K<>13 THEN 60
220 CLS:P$="SELECT A LETTER OR LETTERS FROM "+WD$
230 P$=P$+", AND I WILL DISPLAY ALL COMBINATIONS"
240 P$=P$+" BEGINNING WITH THAT LETTER OR GROUP"
250 P$=P$+" OF LETTERS.":GOSUB 1000
260 T$="":GOSUB 3000:H$=T$:LH=LEN(H$):F=0
270 FOR Y=1 TO LH:T$=MID$(H$,Y,1)
280 FOR X=BOT TO LW:IF C$(LINK(X))<>T$ THEN 310
290 T=LINK(X):LINK(X)=LINK(BOT):LINK(BOT)=T
300 BOT=BOT+1:F=F+1:X=LW
310 NEXT X:NEXT Y:IF F=LH THEN 360
320 CLS:P$="SORRY, "+WD$+" DOES NOT CONTAIN ONE"
330 P$=P$+" OR MORE OF THE LETTERS YOU ENTERED."
340 GOSUB 1000:FOR X=1 TO SH:PRINT:NEXT X
350 GOSUB 7000:CLS:BOT=1:LH=0:GOTO 170
360 CLS:GOSUB 4000
370 P$="THERE ARE"+FAC$+"COMBINATIONS BEGINNING"
380 P$=P$+" WITH "+H$+".":GOSUB 1000:PRINT
390 P$=A$+"TO CHANGE INITIAL LETTERS"+B$:GOSUB 1000
400 GOSUB 6000:IF K=13 THEN BOT=1:GOTO 220
410 IF K<>32 THEN 60
420 CLS:IF LW-BOT>0 THEN 450
430 N$=H$:IF BOT<=LW THEN N$=N$+C$(LINK(BOT))
440 GOSUB 2000:GOTO 650
450 LVL=2:WC=0:Q=0:MAX=INT(SW/(LW+1))
460 FOR X=1 TO LW:PRINT C$(LINK(X));:NEXT X
470 WC=WC+1:IF WC<MAX THEN PRINT " ";:GOTO 530
480 PRINT:WC=0:Q=Q+1:IF Q<SH THEN 530
490 Q=0:PRINT:P$="PRESS <SPACE BAR> TO CONTINUE"
500 P$=P$+" DISPLAYING COMBINATIONS OR ANY OTHER"
```

```
510 P$=P$+" KEY TO EXIT.":GOSUB 1000:GOSUB 6000
520 CLS:IF K<>32 THEN 60
530 T=LINK(LW):FOR X=LW TO LW-LVL+2 STEP -1
540 LINK(X)=LINK(X-1):NEXT X
550 LINK(LW-LVL+1)=T:PS(LVL)=PS(LVL)+1
560 IF PS(LVL)>LVL THEN 640
570 FLAG=0:FOR X=BOT TO LW-1:FOR Y=X+1 TO LW
580 IF C$(LINK(X))<>C$(LINK(Y)) THEN 600
590 IF R(LINK(X))>R(LINK(Y)) THEN FLAG=TRU:Y=LW
600 NEXT Y:NEXT X
610 IF LVL>2 THEN LVL=2
620 IF FLAG THEN 530
630 GOTO 460
640 PS(LVL)=1:IF LVL<>LW-LH THEN LVL=LVL+1:GOTO 530
650 PRINT:N$="NO MORE!":GOSUB 2000
660 GOSUB 7000:GOTO 60
1000 IF LEN(P$)<=SW THEN N$=P$:GOSUB 2000:RETURN
1010 Y=SW+1:Z=1:FOR X=Y TO 2 STEP -1
1020 IF MID$(P$,X,1)=" " THEN Z=0:Y=X:X=2
1030 NEXT X:N$=LEFT$(P$,Y-1):GOSUB 2000
1040 P$=RIGHT$(P$,LEN(P$)-Y+Z):GOTO 1000
2000 IF LEN(N$)=SW THEN PRINT N$;:RETURN
2010 PRINT TAB((SW-LEN(N$))/2+TX);N$:RETURN
3000 INPUT T$:ON TRU*(T$="") GOTO 3000:RETURN
4000 FAC=1:IF BOT>=LW THEN 4070
4010 R(LINK(BOT))=1:FOR X=BOT+1 TO LW:R(LINK(X))=1
4020 FAC=FAC*(X-BOT+1):T$=C$(LINK(X))
4030 FOR Y=X-1 TO BOT STEP -1
4040 IF T$<>C$(LINK(Y)) THEN 4060
4050 R(LINK(X))=R(LINK(Y))+1:FAC=FAC/R(LINK(X)):Y=BOT
4060 NEXT Y:NEXT X
4070 V=FAC:GOSUB 5000:FAC$=M$:RETURN
5000 M$=STR$(V)+" ":RETURN
6000 K$=INKEY$:IF K$="" THEN 6000
6010 K=ASC(K$):RETURN
7000 P$="PRESS ANY KEY TO CONTINUE.":GOSUB 1000
7010 GOSUB 6000:RETURN
```

Atari/*Optical Illusion*

```
10 DIM A$(54),B$(41),C$(20),CL$(1),H$(20),N$(40)
20 DIM P$(140),Q$(3),T$(40),V$(1),WD$(20)
30 DIM LINK(20),PS(20),R(20)
40 OPEN #1,4,0,"K":POKE 82,0:POKE 752,1:CL$=CHR$(125)
50 A$="PRESS <SPACE BAR> TO DISPLAY ALL OF THEM, <RETU
RN> TO "
60 B$=", OR ANY OTHER KEY TO ENTER ANOTHER WORD."
70 Q$=CHR$(34):Q$(3)=Q$:Q$(2,2)="Q":PRINT CL$;
80 PRINT "   ENTER JUMBLED WORD OR ";Q$;" TO QUIT."
90 GOSUB 3000:IF T$="Q" THEN POKE 752,0:END
100 L=LEN(T$):IF L<2 OR L>20 THEN PRINT CL$;:GOTO 80
110 BOT=1:LW=0:WD$="":FOR X=1 TO L
120 V$=T$(X,X):IF V$<"A" OR V$>"Z" THEN 140
130 LW=LW+1:WD$(LW,LW)=V$:PS(LW)=1:LINK(LW)=LW
140 NEXT X:PRINT CL$;:IF LW<2 THEN 80
150 C$=WD$:H$="":LH=0:GOSUB 4000
160 P$=WD$:P$(LW+1)=" HAS ":P$(LW+6)=STR$(LW)
170 P$(LEN(P$)+1)=" LETTERS, FORMING "
180 P$(LEN(P$)+1)=STR$(FAC)
190 P$(LEN(P$)+1)=" COMBINATION(S).":GOSUB 1000
200 PRINT :P$=A$
210 P$(55)="CHOOSE THE FIRST LETTER(S)":P$(81)=B$
220 GOSUB 1000:GOSUB 5000:IF K=32 THEN 430
230 IF K<>155 THEN 80
240 P$="SELECT A LETTER OR LETTERS FROM "
250 P$(LEN(P$)+1)=WD$
260 P$(LEN(P$)+1)=", AND I WILL DISPLAY ALL COMBINATIO
NS BEGINNING WITH THAT LETTER OR GROUP OF LETTERS."
270 GOSUB 1000:GOSUB 3000:H$=T$:LH=LEN(H$):F=0
280 FOR Y=1 TO LH:V$=H$(Y)
290 FOR X=BOT TO LW:T=LINK(X):IF C$(T,T)<>V$ THEN 320
300 LINK(X)=LINK(BOT):LINK(BOT)=T
310 BOT=BOT+1:F=F+1:X=LW
320 NEXT X:NEXT Y:PRINT CL$;:IF F=LH THEN 360
330 P$="SORRY, ":P$(8)=WD$
340 P$(8+LW)=" DOES NOT CONTAIN ONE OR MORE OF THE LET
TERS YOU ENTERED."
350 GOSUB 1000:GOSUB 6000:BOT=1:LH=0:GOTO 160
360 GOSUB 4000:P$="THERE ARE ":P$(11)=STR$(FAC)
370 P$(LEN(P$)+1)=" COMBINATION(S) BEGINNING WITH "
380 P$(LEN(P$)+1)=H$:P$(LEN(P$)+1)=".":GOSUB 1000
390 PRINT :P$=A$
400 P$(55)="CHANGE INITIAL LETTERS":P$(77)=B$
410 GOSUB 1000:GOSUB 5000:IF K=155 THEN BOT=1:GOTO 240
420 IF K<>32 THEN 80
430 IF LW-BOT>0 THEN 470
440 N$=H$:IF BOT>LW THEN 460
450 N$(LW,LW)=C$(LINK(BOT),LINK(BOT))
460 GOSUB 2000:GOTO 670
470 LVL=2:WC=0:Q=0:MAX=INT(40/(LW+1))
480 FOR X=1 TO LW:T=LINK(X):PRINT C$(T,T);:NEXT X
490 WC=WC+1:IF WC<MAX THEN PRINT " ";:GOTO 550
500 PRINT :WC=0:Q=Q+1:IF Q<20 THEN 550
510 Q=0:PRINT
520 PRINT "PRESS <SPACE BAR> TO CONTINUE DISPLAYING";
530 PRINT " COMBINATIONS OR ANY OTHER KEY TO EXIT.";
540 GOSUB 5000:IF K<>32 THEN 80
550 T=LINK(LW):FOR X=LW TO LW-LVL+2 STEP -1
560 LINK(X)=LINK(X-1):NEXT X
570 LINK(LW-LVL+1)=T:PS(LVL)=PS(LVL)+1
580 IF PS(LVL)>LVL THEN 660
590 FLAG=0:FOR X=BOT TO LW-1:T=LINK(X):FOR Y=X+1 TO LW
600 IF C$(T,T)<>C$(LINK(Y),LINK(Y)) THEN 620
610 IF R(LINK(X))>R(LINK(Y)) THEN FLAG=1:Y=LW
620 NEXT Y:NEXT X
630 IF LVL>2 THEN LVL=2
640 IF FLAG THEN 550
650 GOTO 480
660 PS(LVL)=1:IF LVL<>LW-LH THEN LVL=LVL+1:GOTO 550
670 POSITION 16,21:PRINT "NO MORE!"
680 GOSUB 6000:GOTO 80
1000 IF LEN(P$)<=40 THEN N$=P$:GOSUB 2000:RETURN
1010 Y=41:Z=1:FOR X=41 TO 2 STEP -1
1020 IF P$(X,X)=" " THEN Z=0:Y=X:X=2
1030 NEXT X:N$=P$(1,Y-1):GOSUB 2000
1040 P$=P$(Y+1-Z,LEN(P$)):GOTO 1000
2000 IF LEN(N$)=40 THEN PRINT N$;:RETURN
2010 POKE 85,INT((40-LEN(N$))/2):PRINT N$:RETURN
3000 POKE 752,0
3010 INPUT T$:IF T$="" THEN 3010
3020 POKE 752,1:RETURN
4000 FAC=1:IF BOT>=LW THEN RETURN
4010 R(LINK(BOT))=1:FOR X=BOT+1 TO LW:R(LINK(X))=1
4020 FAC=FAC*(X-BOT+1):V$=C$(LINK(X),LINK(X))
4030 FOR Y=X-1 TO BOT STEP -1
4040 IF V$<>C$(LINK(Y),LINK(Y)) THEN 4060
4050 R(LINK(X))=R(LINK(Y))+1:FAC=FAC/R(LINK(X)):Y=BOT
4060 NEXT Y:NEXT X:RETURN
5000 GET #1,K:PRINT CL$;:RETURN
6000 POSITION 7,22:PRINT "PRESS ANY KEY TO CONTINUE.";
6010 GOSUB 5000:RETURN
```

TI-99/4A/*Optical Illusion*

```
10 DIM C$(20),LINK(20),PS(20),R(20)
20 A$="PRESS <SPACE BAR> TO DISPLAY ALL OF THEM, <ENTE
R> "
30 B$=", OR ANY OTHER KEY TO ENTER ANOTHER WORD."
40 CALL CLEAR
50 PRINT "ENTER JUMBLED WORD OR "&CHR$(34)&"Q"&CHR$(34
)&" TO"
60 PRINT TAB(12);"QUIT."
70 PRINT
80 INPUT T$
90 IF T$="" THEN 80
100 IF T$<>"Q" THEN 120
110 END
120 LT=LEN(T$)
130 IF (LT<2)+(LT>20)THEN 40
140 BOT=1
150 LW=0
160 WD$=""
```

```
4120 NEXT X
4130 RETURN
5000 CALL KEY(3,K,S)
5010 IF S=0 THEN 5000
5020 CALL CLEAR
5030 RETURN
```

MODIFICATIONS FOR OTHER COMPUTERS

ADAM/*Optical Illusion*

Use the base version, with the following alterations: Delete line 10. Change CLS to HOME in lines 60, 160, 220, 320, 350, 360, 420, and 520. Finally, change lines 30, 5000, and 6000 to read as follows:

```
30 sh = 19:sw = 31:tru = 1:tx = 1:e$ = " <RETURN> "
5000 m$ = " "+STR$(v)+" ":RETURN
6000 GET k$:IF k$=CHR$(3) THEN END
```

Apple/*Optical Illusion*

Use the base version, with the following alterations: Delete line 10. Change CLS to HOME in lines 60, 160, 220, 320, 350, 360, 420, and 520. Finally, change lines 30, 5000, and 6000 to read as follows:

```
30 SH = 20:SW = 40:TRU = 1:TX = 1:E$ = " <RETURN> "
5000 M$ = " "+STR$(V)+" ":RETURN
6000 GET K$:IF K$=CHR$(3) THEN END
```

Commodore 64/*Optical Illusion*

Use the base version, with the following alterations: Delete line 10. Change CLS to PRINT CLS; in lines 60, 160, 220, 320, 350, 360, 420, and 520. Finally, change lines 30, 2010, and 6000 to read as follows:

```
30 SH=21:SW=40:TRU=-1:E$=" <RETURN> ":CL$=CHR$(147)
2010 PRINT SPC((SW-LEN(N$))/2);N$:RETURN
6000 GET K$:IF K$="" THEN 6000
```

IBM PC/*Optical Illusion*

Use the base version, except change lines 10, 30, and 2010 to read as follows:

```
10 KEY OFF:LOCATE ,,0
30 SH=21:SW=80:TRU=-1:E$=" <ENTER> ":WIDTH SW
2010 PRINT SPC(INT((SW-LEN(N$))/2));N$:RETURN
```

IBM PC*jr*/*Optical Illusion*

Use the base version, except change lines 10, 30, and 2010 to read as follows:

```
10 KEY OFF:LOCATE ,,0
30 SH=20:SW=40:TRU=-1:E$=" <ENTER> ":WIDTH SW
2010 PRINT SPC(INT((SW-LEN(N$))/2));N$:RETURN
```

TRS-80 Color Computer/*Optical Illusion*

Use the base version, except change line 30 to read as follows:

```
30 SH=11:SW=32:TRU=-1:TX=0:E$=" <ENTER> "
```

TRS-80 Model 4/*Optical Illusion*

Use the base version, except change lines 10 and 30 to read as follows:

```
10 PRINT CHR$(15);
30 SH=20:SW=80:TRU=-1:TX=0:E$=" <ENTER> "
```

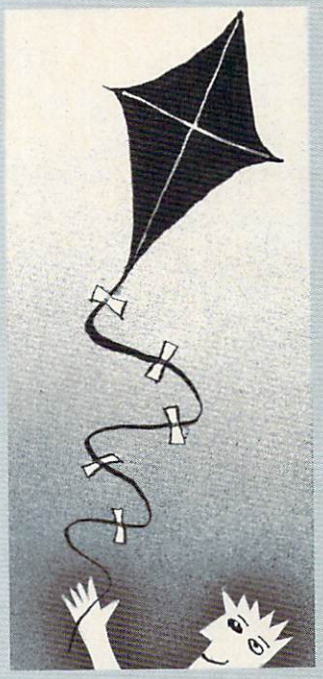
VIC-20 w/8K or 16K RAM Cartridge/*Optical Illusion*

Use the base version, with the following alterations: Delete line 10. Change CLS to PRINT CLS; in lines 60, 160, 220, 320, 350, 360, 420, and 520. Finally, change lines 30, 2010, and 6000 to read as follows:

```
30 SH=17:SW=22:TRU=-1:E$=" <RETURN> ":CL$=CHR$(147)
2010 PRINT SPC((SW-LEN(N$))/2);N$:RETURN
6000 GET K$:IF K$="" THEN 6000
```

KITE

BY JOEY LATIMER



There's a little of Charlie Brown in all of us on a spring day like today. And what does Charlie do when the wind blows warm and the air is clear? He flies a kite, of course—and so can you, regardless of the weather! Just type in our *Kite* program, grab that old ball of twine, and go soaring!

ADAM/*Kite*

```
10 DIM a(18)
20 n = 1
30 fr = 0
40 a(1) = 20
50 FOR i = 2 TO 18
60 a(i) = a(i-1)+INT(RND(1)*3)-1
70 NEXT i
80 HOME
90 GR
100 COLOR= 7
110 FOR i = 0 TO 39
120 VLIN 0,39 AT i
130 NEXT i
140 c1 = INT(RND(1)*11)+9
150 IF c1 > 15 THEN c1 = c1-15
160 c2 = INT(RND(1)*11)+9
170 IF c2 > 15 THEN c2 = c2-15
180 w = 0
190 f1 = INT(RND(1)*2)
200 f2 = INT(RND(1)*2)
210 FOR i = 3 TO 19
220 FOR j = -w TO w
230 COLOR= c1
240 IF (f2 AND i/2 = INT(i/2)) OR (NOT f2 AND fr) THEN
 COLOR= c2
250 IF f1 THEN PLOT 20+j,i
260 IF NOT f1 THEN PLOT i+9,11+j
270 IF j < w THEN fr = NOT fr
280 NEXT j
290 w = w+(i < 11)-(i >= 11)
300 NEXT i
310 FOR i = 2 TO 18
320 x = a(i-1)+INT(RND(1)*2)-n
330 IF ABS(x-a(i)) > 1 THEN x = x-SGN(x-a(i))
340 COLOR= 7
350 PLOT a(i),i+18
360 a(i) = x
370 COLOR= INT(RND(1)*8)+8
380 PLOT x,i+18
390 NEXT i
400 IF RND(1) < 0.01 THEN n = NOT n
410 IF RND(1) > 0.95 THEN 140
420 GOTO 310
```

```
170 IF (F2=0 AND I/2=INT(I/2)) OR (F2 AND FR) THEN C=C
2
180 IF F1 THEN PLACE=29+J+64*I ELSE PLACE=(5+J)*64+19+
I
190 PRINT@PLACE,CHR$(C);
200 IF J<W THEN FR=NOT FR
210 NEXT J
220 IF F1 THEN W=W-2*((I<5)-(I>=5)) ELSE W=W-((I<10)-(
I>=10))
230 NEXT I
240 FOR I=2 TO 5
250 X=A(I-1)+RND(2)+N-1
260 IF ABS(X-A(I))>1 THEN X=X-SGN(X-A(I))
270 PRINT @A(I)+64*(I+9),CHR$(128);
280 A(I)=X
290 PRINT @A(I)+64*(I+9),CHR$(153);
300 NEXT I
310 IF RND(10)<3 THEN N=NOT N
320 IF RND(100)<4 THEN 90
330 GOTO 240
```

VIC-20/*Kite*

```
10 DIM A(11)
20 SB=7680
30 CB=38400
40 N=-1
50 FR=0
60 A(1)=11
70 FOR I=2 TO 11
80 A(I)=A(I-1)+INT(RND(1)*3)-1
90 NEXT I
100 PRINT CHR$(147)
110 POKE 36879,110
120 C1=INT(RND(1)*6)
130 C2=INT(RND(1)*6)
140 W=0
150 F1=INT(RND(1)*2)-1
160 F2=INT(RND(1)*2)-1
170 FOR I=0 TO 12
180 FOR J=-W TO W
190 C=C1
200 IF (F2 AND I/2=INT(I/2)) OR (NOT F2 AND FR) THEN C
=C2
210 IF F1 THEN POKE SB+(11+J)+22*I,160:POKE CB+(11+J)+
22*I,C
220 IF NOT F1 THEN POKE SB+(I+5)+22*(6+J),160:POKE CB+
(I+5)+22*(6+J),C
230 IF J<W THEN FR=NOT FR
240 NEXT J
250 W=W-(I<6)+(I>=6)
260 NEXT I
270 FOR I=2 TO 11
280 X=A(I-1)+INT(RND(1)*2)+N
290 IF ABS(X-A(I))>1 THEN X=X-SGN(X-A(I))
300 POKE CB+A(I)+22*(I+11),6
310 A(I)=X
320 POKE SB+X+22*(I+11),160
330 POKE CB+X+22*(I+11),INT(RND(1)*5)+1
340 NEXT I
350 IF RND(1)<0.01 THEN N=NOT N
360 IF RND(1)<0.05 THEN 120
370 GOTO 270
```

SOLUTION TO OPTICAL ILLUSION

If you used your computer, and your wits, to best advantage, you were probably able to unscramble lines 1 through 5 of the eye chart. Properly arranged, the five lines read as follows: TEAM MEETS MONDAY TIMPANY BASEMENT. *The hidden clue to the time of the robbery is contained in the line numbers to the left of each line on the chart. Each number points to one letter in the correctly unscrambled word for that line (for example, the first letter to the left of that line (1) tells you to take the first letter: "T"). When the letters taken from each line of the chart are read in order, they spell out the time of the robbery:* TEN PM.

BANNER

BY JOHN JAINSCHIGG

Want to send someone an unusual greeting? Design a grand welcome for a returning student or traveler? Or simply announce something in letters TOO BIG to be ignored? You can, with our *Banner* program, your computer, and your printer. *Banner* will print any brief message lengthwise on your printer in letters up to 8 inches high (or more, depending on carriage width).

Type in the program as shown for your computer. Then, add the DATA statements, lines 1000-1290, from the ADAM version. SAVE the program to disk or cassette.

When you're ready to print your banner, first make sure your printer is hooked up and turned on, then type RUN. The program will ask you how many characters your printer can print on a line (a standard printer prints 80 characters on a line, but 40 characters is also common). Check your printer manual if you're not sure, and input the required information. Then press RETURN or ENTER.

Next, the program will prompt you to tell it how big you want the letters of your banner to be. Select from among the range of sizes the computer offers.

Then the computer will ask what character you want used in composing your banner. Input a single character (e.g., *, $, #). The computer will draw the big letters in your banner using the character you have selected.

Finally, the program will prompt you to input your message. Use uppercase letters, numbers, spaces, and normal punctuation only. Lowercase, special, and graphic characters will appear as blanks in the completed banner. Note that on some systems, putting a comma in your message will cause the part of the message following it to be ignored. To avoid wasting paper, it's best to experiment with short messages first. Have fun!

ADAM/*Banner*

```
10 DIM a%(471),bin%(6)
20 HOME
30 PRINT "GETTING READY ... PLEASE WAIT."
40 FOR i = 0 TO 464 STEP 8
50 FOR j = 0 TO 7
60 IF j = 0 OR j = 7 THEN a%(i+j) = 0:GOTO 80
70 READ a%(i+j)
80 NEXT j
90 NEXT i
100 a%(80) = 8
110 a%(87) = 8
120 a%(367) = 63
130 a%(447) = 63
140 FOR i = 0 TO 6
150 bin%(i) = 2^i
160 NEXT i
170 HOME
180 PRINT TAB(12);"*BANNER*"
```

```
570 PRINT "WHEN YOUR PRINTER IS"
580 PRINT "READY, PLEASE PRESS"
590 PRINT "ANY KEY."
600 GET K$
610 IF K$="" THEN 600
620 OPEN 4,4
630 CMD4
640 FOR I=1 TO LEN(MESSAGE$)
650 PNTR=(ASC(MID$(MESSAGE$,I,1))-32)*8
660 IF PNTR<0 OR PNTR>464 THEN PNTR=0
670 FOR J=PNTR TO PNTR+7
680 LINE$=""
690 V=A%(J)
700 FOR K=6 TO 0 STEP -1
710 IF V>=BIN%(K) THEN V=V-BIN%(K):C$=CH$:GOTO 730
720 C$=" "
730 FOR L=1 TO CC
740 LINE$=C$+LINE$
750 NEXT L
760 NEXT K
770 FOR K=1 TO (CC+1)/2
780 PRINT LINE$
790 NEXT K
800 NEXT J
810 NEXT I
820 PRINT#4
830 CLOSE 4
840 PRINT CHR$(147);
850 PRINT "YOUR BANNER IS"
860 PRINT "FINISHED."
870 PRINT
880 PRINT "PRESS <P> TO PRINT"
890 PRINT "ANOTHER BANNER OR"
900 PRINT "<E> TO END."
910 GET K$
920 IF K$="P" THEN 300
930 IF K$<>"E" THEN 910
940 END
```

Now add lines 1000–1290 from the ADAM version.

PROGRAMMING P.S.

Notes to previous months' programs

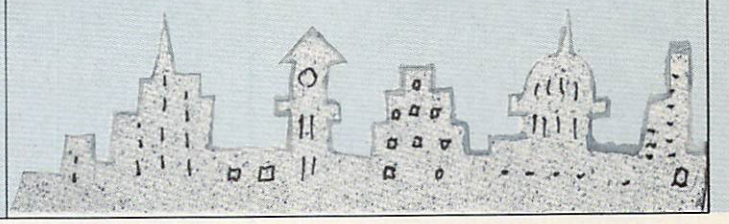
ADAM/*Perpetual Calendar* *(January 1985, page 70)* and **Apple/*Perpetual Calendar*** *(page 72)*
From mail we've received, it appears that there was some confusion regarding line 50 of *Perpetual Calendar* for ADAM and Apple. The line in question reads

```
50 bl$ = bl$ + "  "    (ADAM)
50 BL$ = BL$ + "  "    (Apple)
```

If you look closely, you'll see that there are not one, but *two* spaces between the quotation marks. ADAM and Apple owners who have trouble with *Perpetual Calendar* should check line 50 to make sure they typed it in correctly.

Apple/*Mailing List* *(November 1984, page 102)*
Mailing List runs fine under Apple's DOS 3.3—but not under ProDOS. If you wish to run *Mailing List* under ProDOS, change lines 40 and 5000 to read as follows:

```
40 D$ = CHR$(4):G$ = CHR$(7):EX$ = "PRESS <RETURN> TO
EXIT.":P$ = "   PLEASE PRESS ANY KEY TO CONTINUE."
5000 PRINT D$;"CAT":PRINT:RETURN
```



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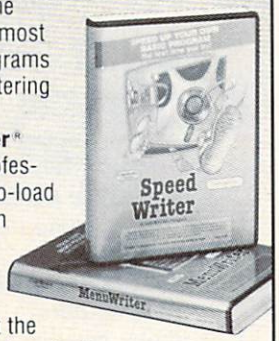

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QUICK TAKES ON SOFTWARE— NEW AND NOTEWORTHY

Welcome to FAMILY COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Programs have been evaluated and rated for their performance in each of the categories listed below. More detailed reviews follow the chart.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, given the limitations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions and literature that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users. **PS** = Play system, in the games reviews, the quality of the game design and the game's playability. **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities. **EU** = Ease of use after the initial learning period, which varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

HOME BUSINESS/HOME MANAGEMENT

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
ADAM CALC Coleco Industries 999 Quaker Lane S. West Hartford, CT 06110 (800) 842-1225 $49 ©1984	Spreadsheet program simulates electronic ledger page. Good for tracking budgets and expenses for home, small business, and club use. Includes calculator, adjustable column widths, and capabilities for creating graphs. —WILSON	Coleco ADAM (cass. and d.).	90-day warranty.	★★	★★★	★★	★★★	E	★★★
APPLEWRITER II (Version 2.0) Apple Computer, Inc. 20525 Mariani Ave. Cupertino, CA 95014 (408) 996-1010 $149 ©1984	This easy-to-learn and powerful word-processing program includes a telecommunications mode, tutorial disk, allowance for lines longer than 80 characters, multiple margin settings, and more. —WILSON	Apple IIe/IIc, 64K (d.).	90-day warranty.	★★★	★★★	★★	N/A	A	★★★
CREATIVE FILER Creative Software 960 Hamlin Court Sunnyvale, CA 94089 (408) 744-0663 $49 (C 64, Apple) $99 (IBM) ©1984	Design and print records in medium-size electronic file system for home, small business, and club use. Records may be 98 lines long and can tally numerical information.† —ODISIO	Reviewed on C 64 (d.). Also for IBM PC/PC*jr*, 64K (d.). Planned for Apple II series, 48K (d.).	90-day warranty; $11.50 fee thereafter or if user-damaged.	★★★	★★	★★★★	N/A	A	★★★★
FRIENDLY FILER Grolier Electronic Publishing Co. Dept. 333, Sherman Turnpike Danbury, CT 06816 (800) 858-8858 $39 ©1984	Tutorial module accompanies this junior data-management system, good for small-scale organizational tasks—homework notes, addresses, hobbies, etc.—recommended for data-base newcomers.† —BUMGARNER	Reviewed on Apple II series, 64K (d.). Version planned for C 64 (d.).	90-day warranty; $15 fee for backup.	★★★★	★★★★	★★	N/A	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

EDUCATION/FUN LEARNING

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
DAZZLE DRAW Broderbund Software 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 $59 ©1984	Powerful set of computerized graphic tools lets 9-year-olds on up to adult create stunning drawings and posters for storage on disk or printout.† —BUMGARNER	Apple IIe/IIc, 128K (d.). Mouse, graphics tablet, or joystick.	Unlimited warranty; $5 fee if user-damaged.	★★★★	★★★★	★★★★	★★★★	A	★★★★
EVELYN WOOD DYNAMIC READER Timeworks P.O. Box 321 Deerfield, IL 60015 (800) 323-9755 $49 (C 64); $69 (Apple); $89 (IBM) ©1984	Teaches the Evelyn Wood speed-reading technique for ages 12–adult. Keeps track of performance, diagnoses areas that need work and helps you increase speed. —WILDMAN	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.); IBM PC/PC*jr*, 128K (d.).	Unlimited warranty.	★★★★	★★★★	★★★★	N/A	A	★★★
EXPERTYPE Coleco Industries 999 Quaker Lane S. West Hartford, CT 06110 (800) 842-1225 $49 ©1984	Tutorial helps ages 10 and up improve typing speed. Move at your own pace through lessons that will help even fast typists. Lacks zesty graphics or game quality. —DAVENPORT	Coleco ADAM (d. and cass.).	90-day warranty.	★★★	★★★	★★★★	★★	E	★★
OPERATION FROG Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3000 $39 ©1984	No-muss, no-fuss dissection program teaches kids about anatomy as they take frog apart and correctly reassemble it, using "forceps" and a magnifying glass that details each organ.† —FRANK	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.). Joystick or mouse optional.	60-day warranty; $5 fee thereafter.	★★★	★★★★	★★★★	★★★	A	★★★
RAINBOW PAINTER Springboard Software 7807 Creekridge Circle Minneapolis, MN 55435 (800) 328-1223 $34 ©1984	Electronic coloring book, for younger ones (ages 5–10) not yet up to more sophisticated graphics tools. Provides 50 line drawings and a blank screen to paint on, as well. —BUMGARNER	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.). Planned for IBM PC/PC*jr*. Joystick or KoalaPad optional.	30-day warranty; $5 fee if user-damaged.	★★★	★★★	★★	★★★	E	★★★
ROCK 'N' RHYTHM Spinnaker One Kendall Square Cambridge, MA 02139 (617) 494-1200 $26 ©1984	Compose and perform your own pop tunes, record them track by track, just like they do in show biz. Good for the whole family or lone musicians, 10 and up, younger with help.† —SUMMERS	Reviewed on C 64 (d.). Also for Atari Home Computers, 48K (d.). Joystick.	30-day warranty; $5 fee thereafter.	★★★★	★★★★	★★★★	★★★★	A	★★★★
TINK'S ADVENTURE Mindscape 3444 Dundee Road Northbrook, IL 60062 (800) 221-9884 $24 (Atari, C 64) $29 (Apple, IBM) ©1984	Kids 4–10 guide Tink on a sea adventure from challenge to challenge (seven all together), intended to reinforce ABCs. Younger children may need some assistance.† —RASKIN	Reviewed on Atari Home Computers, 48K (d.). Also for Apple II series, 48K (d.); C 64 (d.); IBM PC/PC*jr*, 64K (d.).	90-day warranty.	★★★	★★★	★★	★★★	A	★★
TUK GOES TO TOWN Mindscape 3444 Dundee Road Northbrook, IL 60062 (800) 221-9884 $24 (Atari, C 64) $29 (Apple, IBM) ©1984	Kids 4–8 take Tuk to town, encountering seven games, five of which challenge shape recognition, and beginning spelling and vocabulary skills.† —RASKIN	Reviewed on Atari Home Computers, 48K (d.). Also for Apple II series, 48K (d.); Commodore 64 (d.); IBM PC/PC*jr*, 64K (d.).	90-day warranty.	★★★	★★★	★★	★★★	A	★★
WEATHER TAMERS CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2500 $39 ©1984	Players customize weather in different locales for clients' needs in simulation for ages 12 and up. May be too slow for younger players, but excellent for older, slower nonarcade players.† —WILDMAN	C 64 (d.). Joystick.	90-day warranty; $5 fee thereafter.	★★★★	★★★★	★★★★	★★★★	A	★★★
WORD ATTACK Davidson & Associates 6069 Groveoak Place, No.12 Rancho Palos Verdes, CA 90274 (213) 373-0971 $49 ©1983	Study more than 700 words in nine lists of varying levels of difficulty. Use multiple-choice quiz, fill-in-the-blank test, or an arcade game. Having mastered the words provided, you can add your own. —MORRIS	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.); IBM PC/PC*jr*, 64K (d.).	1-year warranty (includes user-damaged); $10 fee thereafter or for backup.	★★★★	★★★★	★★★★	★★	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

GAMES REVIEWS BY JAMES DELSON

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	PS	GQ	EU	V
BIG TOP Funtastic 724 Meadowlark Road Audubon, PA 19403 (215) 666-0337 $39 ©1984	Youngsters climb, jump, and gather treasure in many-leveled, ladder skill/arcade game with special speeds for kids. Fun and suitable for ages 6 and up.	IBM PC, 64K (d.). Joystick for PC*jr*.	1-year warranty (includes user-damaged); $10 fee thereafter or for backup.	★ ★ ★	★ ★	★ ★ ★	★ ★	E	★ ★
CHAMPIONSHIP LODE RUNNER Broderbund 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 $34 ©1984	Talk about tough! One of the most difficult games designed—has 50 ace levels of the popular *Lode Runner*. Run through mazes, blast through floors and walls, avoid enemies, and collect treasures, for ages 10 and up.	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.). Joystick optional.	Unlimited warranty.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★	D	★ ★ ★ ★
CONAN THE BARBARIAN Datasoft 19808 Nordhoff Place Chatsworth, CA 91311 (818) 701-5161 $39 ©1984	Guide Conan through several levels to defeat the evil Volta. Run, jump, somersault through the air, throw boomerang-like sword to vanquish monsters, and avoid traps. Imaginative, but difficult, for ages 10 and up.	Reviewed on Apple II series, 48K (d.). Also for Atari Home Computers, 48K (d.); C 64 (d.).	3-month warranty; $7.50 fee thereafter, if user-damaged, or for backup.	★ ★ ★	★ ★	★ ★ ★	★ ★ ★	D	★ ★
CRIME AND PUNISHMENT Imagic 981 University Ave. Los Gatos, CA 95030 (800) 654-7340 $34 ©1984	You're in the judge's chair and must decide the sentence of convicted criminals, based on the circumstances of each case. This game's fun, and educational to boot. For ages 10 and up.†	Reviewed on IBM PC, 64K/PC*jr*, 128K (d.). Also for Apple II series, 48K (d.); C 64 (d.).	90-day warranty.	★ ★ ★	★ ★	★ ★ ★	★ ★	E	★ ★ ★
FAHRENHEIT 451 Telarium One Kendall Square Cambridge, MA 02139 (617) 494-1200 $39 (Apple) $32 (C 64) ©1984	Text/graphic sequel to Ray Bradbury's novel, set in New York City, involves adventures in a futuristic, totalitarian society. Most playable text/graphic game to date. Ages 14 and up.†	Reviewed on Apple II series, 64K (d.). Also for C 64 (d.).	30-day warranty; $5 fee thereafter.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★
INDIANA JONES IN THE LOST KINGDOM Mindscape 3444 Dundee Road Northbrook, IL 60062 (800) 221-9884 $29 ©1984	Tough but rewarding skill/arcade game based on the movie hero's continuing adventures. Brain-teasing logic aspects of game raise it above the usual arcade level. Good for ages 10 and up.	C 64 (d.).	90-day warranty.	★ ★ ★	★ ★	★ ★ ★ ★	★ ★ ★	D	★ ★ ★
KARATEKA Broderbund 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 $34 (Apple) $29 (C 64) ©1984	Kick, chop, run, run, run in this exciting arcade game. Fight one-on-one karate encounters against computer opponents blocking your attempts to rescue the princess. For ages 10 and up.	Reviewed on Apple II series, 48K (d.). Planned for C 64 (d.).	Unlimited warranty; $5 fee if user-damaged.	★ ★ ★	★ ★	★ ★	★ ★ ★	D	@
QUEST OF THE SPACE BEAGLE Avalon Hill 4517 Harford Road Baltimore, MD 21214 (301) 254-5300 $35 ©1984	First-rate sequel to *Jupiter Mission: 1999* takes adventurers deeper into the universe to fare for themselves in a series of arcade/strategy challenges. For ages 12 and up.†	Atari Home Computers, 48K (d.). Joystick.	Unlimited warranty; $10 fee if user-damaged.	★ ★ ★ ★	★ ★	★ ★ ★ ★	★ ★ ★	D	★ ★ ★ ★
RESCUE RAIDERS Sir-tech Software 6 Main St. Ogdensburg, NY 13669 (315) 393-6633 $34 ©1983	Put together a mission of men, munitions, and material and set them against the computer to save the world. Fast-moving mix of arcade and tactical elements for ages 10 and up.†	Apple II series, 64K (d.).	30-day warranty (includes user-damaged); $5 fee thereafter.	★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★	A	★ ★ ★
TOURNAMENT TENNIS Imagic 981 University Ave. Los Gatos, CA 95030 (800) 654-7340 $24 (ADAM, C 64) $34 (IBM PC*jr*) ©1984	Best tennis game seen to date has numerous handicapping features that let novices challenge champs and put up a good match with computer. For ages 10 and up.	Reviewed on Coleco ADAM (cass.). Also for C 64 (d.). Planned for IBM PC*jr*, 128K (d.).	90-day warranty.	★ ★ ★	★ ★	★ ★ ★	★ ★ ★ ★	A	★ ★ ★

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; @ ★★ to ★★★ depending on price; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

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WHAT'S IN STORE SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 83 for information such as backup policies and addresses of software manufacturers.

HOME BUSINESS/ HOME MANAGEMENT

Creative Filer

HARDWARE REQUIREMENTS: Reviewed on Commodore 64. Also for IBM PC/ PC*jr*. Version planned for Apple II series.
MANUFACTURER: Creative Software
PRICE: $49 (C 64, Apple); $99 (IBM)

Electronic filing programs have a number of worthwhile uses—such as inventory management, maintaining club membership lists, and updating mailing lists. Creative Software's filing system is especially valuable because you can use it in conjunction with the company's spreadsheet and word processor.

Once I mastered it, *Creative Filer* served me quite well. It allows an enormous amount of leeway in setting up a filing system—accepting formats up to 98 lines long. You can print out each format before you SAVE it, to examine it and make sure it's what you need.

Once you've decided on a format and saved it, you can enter information and design different printing formats. I took my local arts organization's membership list and printed it out both in roster form, as well as in mailing-label format.

This program would also come in handy in tracking business costs or inventory. You can total up numeric information entered in specific categories—in order to tally total and unit costs, gross profit, or order quantity, for example.

Some flaws in the program, particularly having to do with the documentation, may frustrate newcomers. The instructions are not always as clear as they could be. At one point, if you press CTL-6 to SAVE formats as the manual suggests, nothing happens. The program won't actually SAVE anything until you name the format. There's no prompt for this procedure. Also, should you wish to stop the printer at mid-page, there's no instruction about which key to press. Pressing the RUN/STOP key will halt the process, although no mention is made of this in the documentation. (Creative Software assures us that a new Commodore 64 manual is on the way. On request, they'll send the new version to any owner.)

Nevertheless, after having familiarized myself with the formatting procedures, I found *Creative Filer* to be a reasonably priced data-base program. It's easy to use and useful for most home applications and some small businesses. —NORMA ODISIO

Friendly Filer

HARDWARE REQUIREMENTS: Reviewed on Apple II series. Version planned for Commodore 64.
MANUFACTURER: Grolier Electronic Publishing Co.
PRICE: $39

This is one box of 3 × 5 cards that won't get misplaced. *Friendly Filer* is an easy-to-learn, easy-to-use, junior data-base management program with a tutorial that makes the excellent resource book almost unnecessary. Sample files let you practice sorting and locating information within the data base.

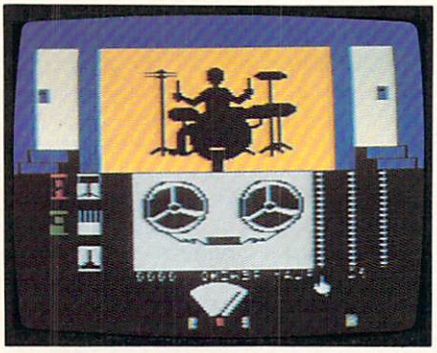
Our children found the introductory tutorial a bit tedious. An animated character named InfoImp arranges and rearranges a list of fruits and prices into categories. We couldn't find a way to escape the lesson once we were in it.

The tutorial's second part, "Learn to Use Friendly Filer," teaches data-base lingo (RECORD, FILE, FIELD, etc.) and is invaluable. We skipped it at first and went straight to the program, but found ourselves confused. Try using the program first, and then go back to this "Learn to Use" section. It makes more sense once you've wandered around the program for a while.

My 12-year-old daughter, Dona, answered all the challenge questions in the practice session with little trouble (which required sorting through sample files); my 9-year-old son, John, skipped that section entirely and still managed to create a data base including names, addresses, telephone numbers, and the favorite sports of half his classmates. We printed the list out for him, but he likes it best inside the computer. One of this program's only major flaws is that if you select the print option and don't have a printer

Rock 'N' Rhythm

HARDWARE REQUIREMENTS: Reviewed on Commodore 64. Also for Atari Home Computers. Joystick.
MANUFACTURER: Spinnaker
PRICE: $26
MANUFACTURER'S SUGGESTED AGE: 10+



Tom Snyder, author of such notable computer games as *In Search of the Most Amazing Thing*, *Run for the Money*, and *Agent U.S.A.*, is at it again. Now he's taking on the recording industry with *Rock 'N' Rhythm*, an activity that lets you fill both the technician's and the performer's shoes as you compose, play, and record your own tunes.

The studio tour begins at the jukebox—complete with nine snappy prerecorded tunes. You'll be able to add up to 18 more of your own creations in the Control and Performance Rooms. Special equipment will let you record with three separate tracks (in the Commodore 64 version; two in the Atari): a melody track, harmony track, and drum track. Go ahead, use the joystick to give the drums a few whacks. If you like what you hear, you can tape it and play it back. The flashing metronome will help you keep a steady beat.

The cardboard overlay turns your keyboard into a minisynthesizer. As you press the keys, the notes sound and their names appear on the screen. The Commodore version lets you experiment with the shape of the sound wave in true synthesizer fashion. The whole process is remarkably easy: Our 7-year-old surprised us by writing a tune his first time around.

Our family worked on several group efforts—with a different family member "playing" each part. Learning how their favorite recordings are made excited our children. And all of us felt proud and satisfied to share music we had created ourselves.

—TAN SUMMERS

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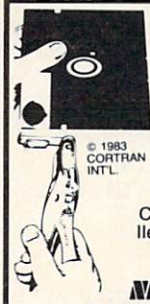

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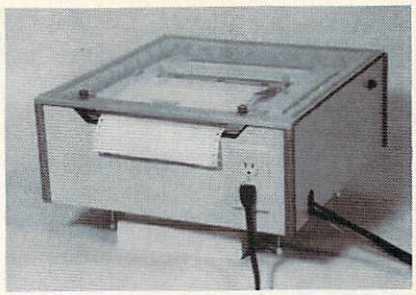

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