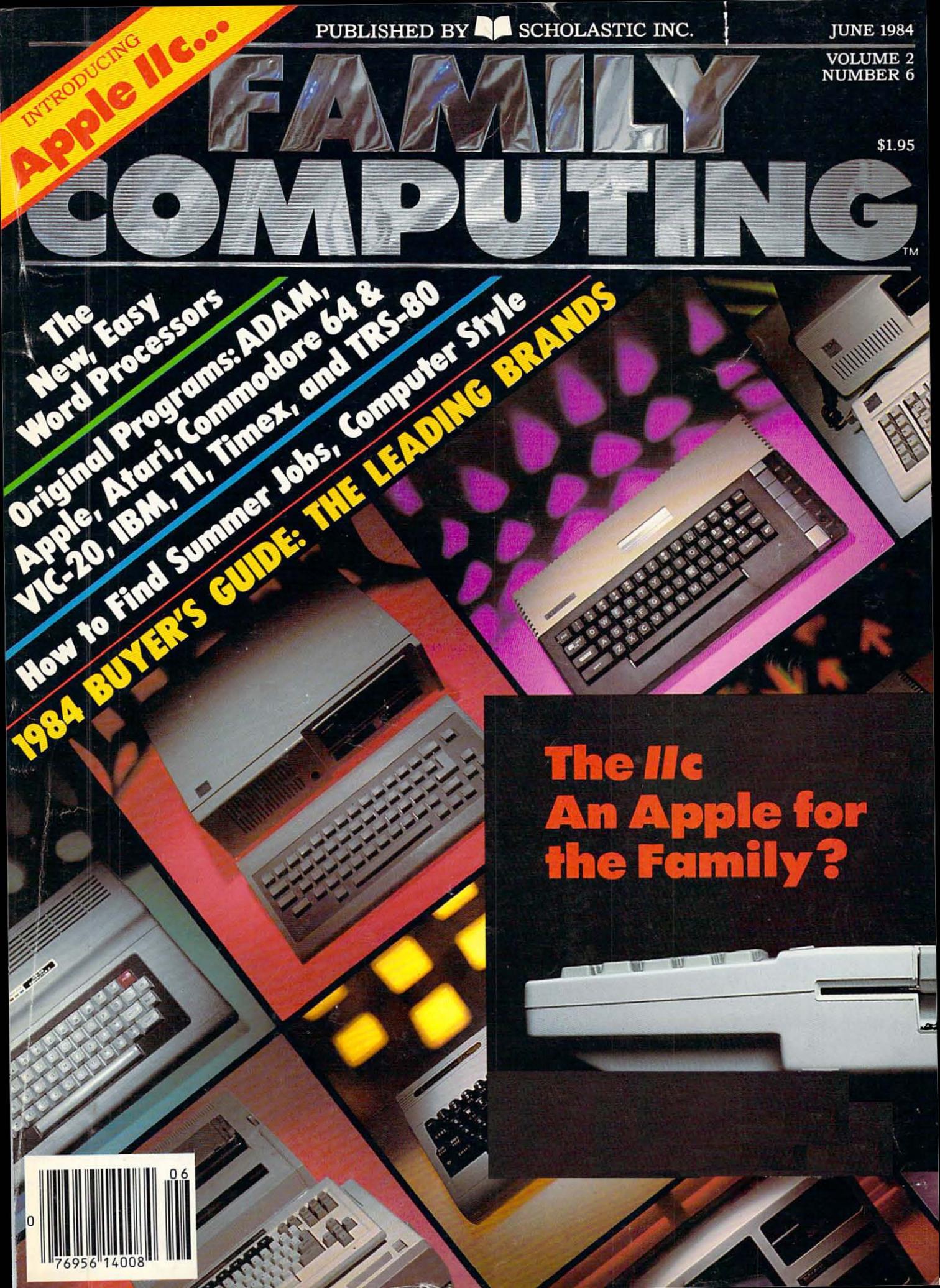


INTRODUCING  
**Apple IIc...**

# FAMILY COMPUTING

**The Easy New, Easy Word Processors**  
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**How to Find Summer Jobs, Computer Style**  
**1984 BUYER'S GUIDE: THE LEADING BRANDS**

**The IIc  
An Apple for  
the Family?**



# FAMILY COMPUTING™

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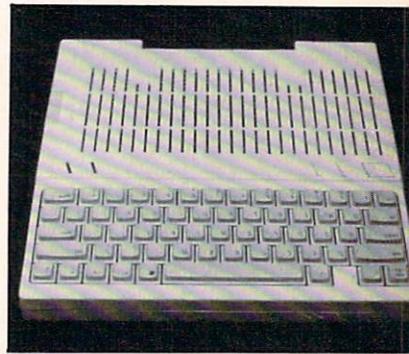
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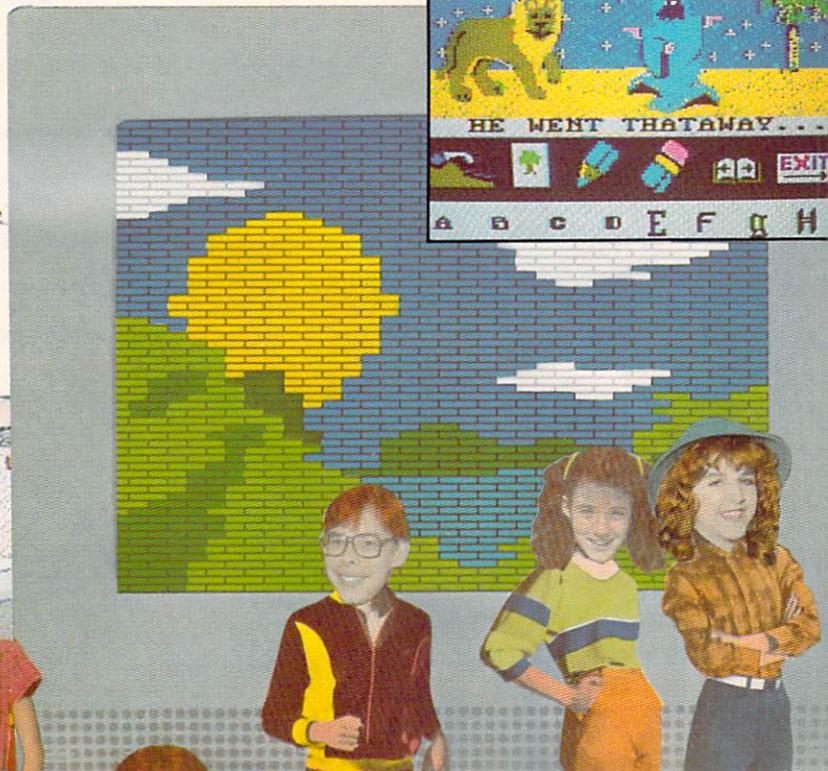
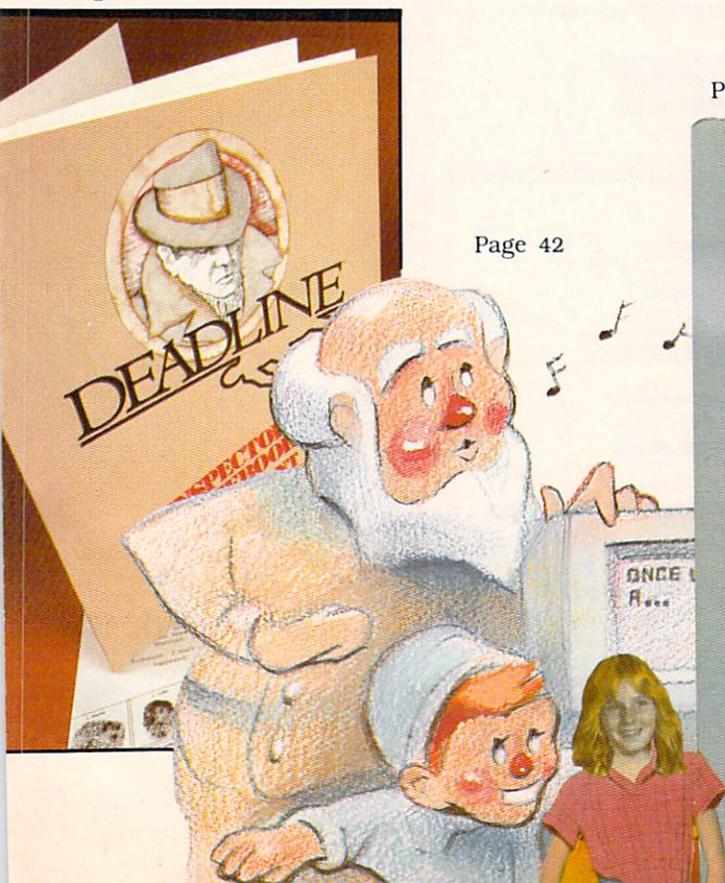
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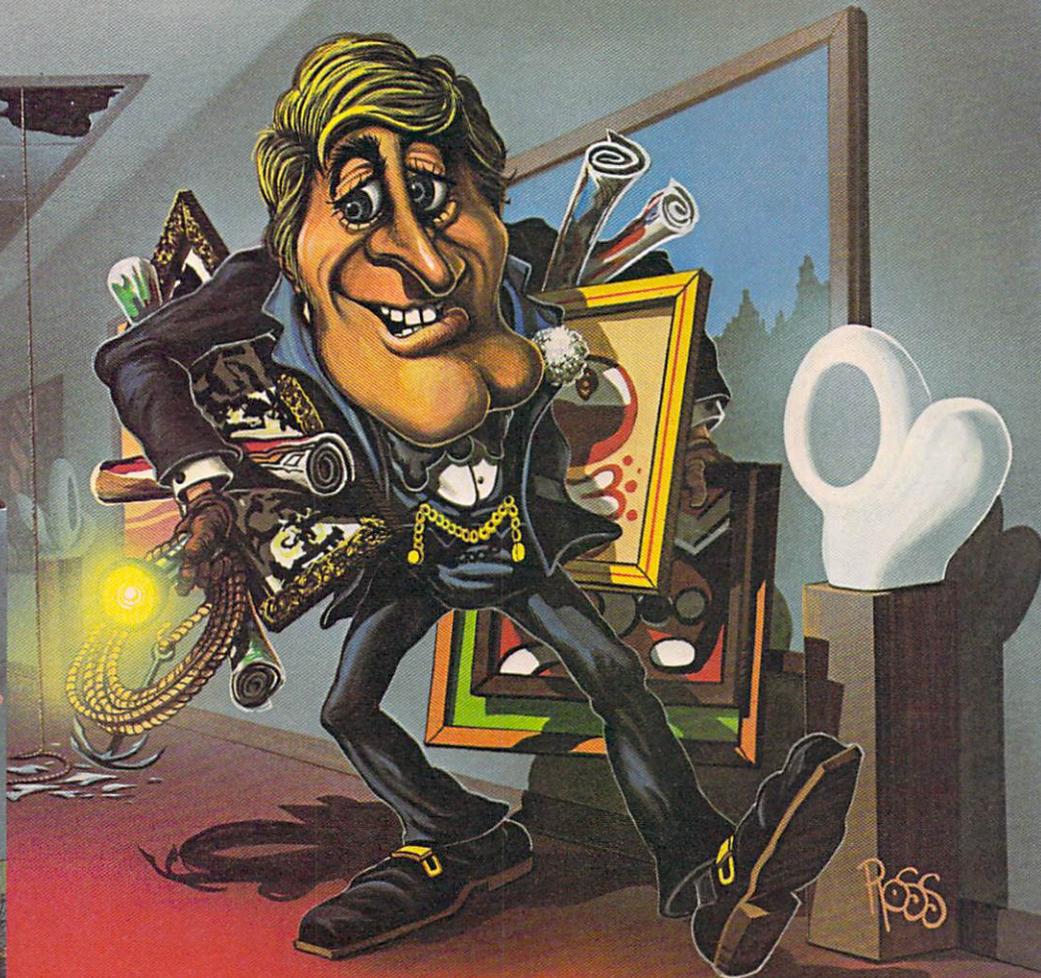
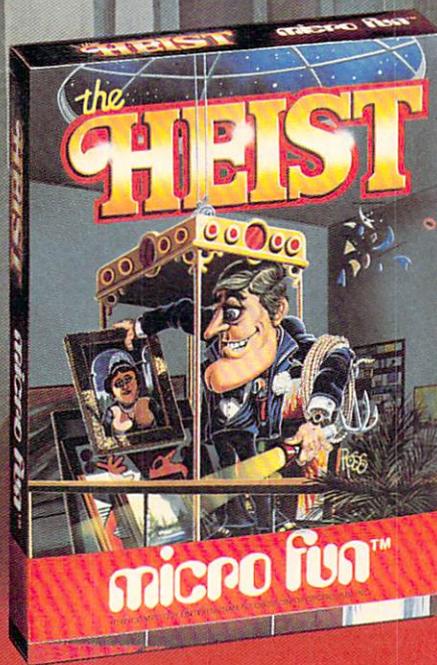
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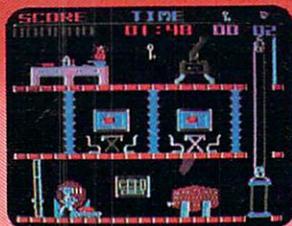
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# BUYER'S GUIDE TO COMPUTERS

## A LOOK AT THE LEADING BRANDS FOR FAMILY USE

Walk into any computer store and ask a salesperson what computer to buy. You're likely to get one of two stock answers: "How much do you want to spend?" or, "What do you want to use it for?"

If you get the first question, run—don't walk—to the nearest exit. No matter what the price, a computer is useless to you if it won't do what you want. And a salesperson is useless to you if he or she is primarily interested in selling you the most expensive system you can possibly afford.

If you get the second question, think it over . . . carefully. How your answer will go a long way toward defining your computer needs.

Briefly, here's what you can do with a computer: 1) manipulate text (word processing) and numbers (spreadsheets and other financial software); 2) communicate with other people and institutions that have computers (if you buy a modem); 3) store and manipulate information (with a data base program); 4) learn things (with educational software); 5) play games; 6) draw pictures and make music; 7) improve your well-being (with health and fitness software).

Not every computer does all those things equally well. An ideal computer for word processing may be totally inadequate to play sophisticated computer games. And no matter how well a computer is designed, it won't do what you want without software. Each home and personal computer has its own software strengths and weaknesses.

### PLANNING A BUYING DECISION

There are a number of sources for the information you will need to make an intelligent buying decision, beginning with this Buyer's Guide. Here's a list of steps to get you started.

**1.** Once you've defined your primary needs and figured out which computers can run the software you'll need, look for people who already own the computers you're considering. Your children may have friends with the same machine. Another approach is to contact a users' group—a club that exchanges information about one specific computer brand or model. Most of the computers discussed here have scores of users' groups across the country; you can reach the nearest one through your computer store, or by calling the computer's manufacturer.

**2.** Ideally, you should find a store that has the type of software you're looking for, computers to demonstrate it on, and staff that can help. This is not always easy to do, and if you're in the market for a very inexpensive machine, it may be impossible. But it's worth a try.

Check the "documentation"—the instructions—for both the software and hardware. Will you be able to understand it? Though computers and software are getting easier to understand and use, they can still be pretty confusing.

Then just play with the computer and experiment. (You can't break it!)

**3.** Do a little daydreaming. If you want educational software for your children, but also think you might like to set up a small word-processing or accounting business at home, your ideal computer would handle both well. If such a computer is more than you can afford, so be it. At least you now have a standard for comparison—and you can begin to make the choices that accompany any buying decision.

**4.** Don't compromise away anything that's essential to you. If you really need professional word processing, don't buy a computer that's barely adequate for typing letters—even if it has all those neat educational games your infant may need someday. (You may even decide that it makes sense to buy an inexpensive "starter" computer for your children, and a more sophisticated one for yourself. That can actually prove cheaper in the long run.)

**5.** Consider the stability of a computer manufacturer in making your decision. You will want long-term support and service. "Fishing for a Computer," in FAMILY COMPUTING's May 1984 issue, isolated major market trends and gave short profiles of the major manufacturers in the home market.

**6.** Finally, you don't have to approach computers with the same seriousness as a Fortune 500 company would. Home computers should be fun as well as productive. They can be the keys to your imagination. In choosing a computer, trust your instinct and intuition as much as the "nuts-and-bolts" factors. You can't have much fun with a machine that you talked yourself into—one that you think is "good for you."

### GUIDE TO THE CHART

This Buyer's Guide examines six best-selling computer brands that are commonly bought for home use: Apple, Atari, Coleco, Commodore, IBM, and Radio Shack. Strictly business-oriented and portable computers are not considered here. Portable computers will be covered in the July Buyer's Guide.

Here are explanations of the factors included in the accompanying computer comparison chart.

**Suggested Retail Price.** These are the manufacturers' official prices, but computers are quite often sold for less. Sometimes the basic computer—often a keyboard unit—is discounted, and peripherals such as disk drives, monitors, modems, and printers, are sold at or near list price. General price ranges for these devices are: disk drives, \$250–\$400; monitors, \$80–\$600; modems, \$80–\$500; printers, \$150–\$1000. More and more frequently,

retailers are selling the computer as part of a complete system—with disk drive, monitor or printer, and sometimes even software.

**RAM.** Random Access Memory (RAM) can be compared to a scratchpad: it's the space you and your program have to work with. The amount of RAM your computer has will affect the kind of software it can run. (RAM is measured in "K"s, or kilobytes, with one K equal to 1,024 characters—roughly a double-spaced, typed page.) Word-processing programs generally require at least 48K to be used effectively; business software, such as spreadsheet programs, usually require at least 64K. Memory requirements for games and educational programs vary widely, depending on their sophistication.

Note: If you're programming in BASIC, or working with a disk drive, the computer will use some of its RAM to keep these functions running smoothly, leaving less for you.

**ROM.** Read Only Memory (ROM) is built into the computer by the manufacturer, and its contents cannot be changed by the user. The BASIC programming language that is built into many microcomputers is usually contained in ROM, as is the computer's operating system—the instructions that tell it how to work. Microcomputers with larger amounts of ROM tend to have faster, more sophisticated functions built in.

**Keyboard.** A keyboard with "full-travel" keys, which look and feel like typewriter keys, is important for any application that requires extensive typing, such as word processing or programming. Less professional keyboards—those with rubber, nonsculpted, or cramped keys—are best suited for use by smaller children, or for game playing. A "numeric keypad" is a valuable feature for those who handle numbers extensively; if it is not included, it is often available as an option. Added function keys are sometimes used by software producers to simplify their programs.

**Text Display.** The ideal screen display for word processing text is 80 characters across (called 80-column) and 24 lines down. Some computers come with this; others offer 40-characters across, or less. For the casual user, this is probably enough. Sometimes, the screen display can be upgraded with an 80-column adapter, but make sure that the software you want will run properly with such an adapter. Most computers that display more than 40 characters across will look much better with a monitor; on a TV, the characters will be blurry.

**Color, Resolution, and Graphics Modes.** Most computers designed for home use, and many business machines, come with some kind of high-resolution color graphics. Consider the number of colors available, as well

as the screen resolution. This is measured in pixels (picture elements), horizontally and vertically. The more pixels, the sharper the screen image.

Some computers offer several graphics modes, letting you trade off colors in exchange for resolution. A computer might have a very high resolution mode with four colors, and a much lower resolution mode with 16 colors. Finally, "sprites," featured on some computers, allow the user to create and move objects on the screen to create animated effects.

**Sound.** Microcomputers generally offer from one to four "voices," or channels of sound. These voices may cover varying octave ranges. Some computers come with special chips that allow for more sophisticated handling of sound. Others can produce anything resembling music only through Herculean programming efforts. The extent and quality of sound output is most important for game playing, or for those who wish to experiment with musical composition.

**Interfaces.** Some computers come with standard serial and/or parallel interfaces that easily allow you to hook up peripherals. (Printers require either a serial or a parallel interface; modems use a serial interface.) Other manufacturers sell computers with unusual interfaces, which limit you to using their peripherals unless you buy an add-on interface. Some manufacturers include no interfaces at all, requiring you to buy them separately. For more on interfaces, see "Making Connections" in FAMILY COMPUTING'S April 1984 issue.

### APPLE IIe

The Apple IIe is the third model in the Apple II line, which was introduced in 1977. (The fourth model is the newly introduced Apple IIc, which is previewed in this issue.) More software is available for the Apple II series than for any other microcomputer, both because it's been around so long, and because Apple made public everything anyone needed to know to write software for it.

Though Apple has always encouraged use of the IIe as a business computer, it's a true general-purpose machine, with a wide range of every type of software. There is also a wide variety of add-on hardware for the Apple, including a circuit board that lets it run standard CP/M business software, and a dual disk-drive unit (\$1,500 from Rana Systems) that allows the Apple to run much of the IBM PC software.

The keyboard is standard typewriterstyle, with a firm, responsive touch. The IIe comes with 64K RAM, which can be expanded to 128K; many stores are already selling it

## 10 LEADING COMPUTER MODELS FOR HOME USE

Computer	Price*	Standard Maximum RAM	ROM	Keyboard/ # Keys	# Colors	# Voices/ # Octaves	Standard Text Display	Sprites	Disk Drive Storage	Maximum High Resolution	Built-in Serial Interface
ADAM	\$750	80/144 <sup>1</sup>	N/A	F/75	16	3/5 <sup>1</sup>	36×24	32 <sup>1</sup>	256K	256×192	—
Apple IIe	\$1,295	64/128	16	F/63	16	1 <sup>2</sup>	40×24	N	140K	560×192 <sup>3</sup>	—
Atari 600XL	\$249	16/64	24	F/62	256	4/3.5	40×24	8	127K	320×192	—
Atari 800XL	\$399	64/64	24	F/62	256	4/3.5	40×24	8	127K	320×192	—
VIC-20	\$99	5/32	20	F/66	16	3/5	22×23	N	170K	176×184	Y
Commodore 64	\$199	64/64	20	F/66	16	3/9	40×25	8	170K	320×200	Y
IBM PC	\$1,749	64/640	40	F/83	16	1/4	80×25	N	360K	640×200	Y
IBM PCjr	\$669	64/128	64	C/62	16	3/N/A	40×24	N	360K	640×200 <sup>3</sup>	Y
TRS-80 Color 2	\$159	16/64	8	F/52	8	1 <sup>2</sup>	32×16	N	156K	256×192	Y
TRS-80 Model 4	\$999	16/128	14	F/65	B/W	1 <sup>2</sup>	64×16	N	368K	640×240 <sup>3</sup>	Y

#### FOOTNOTES

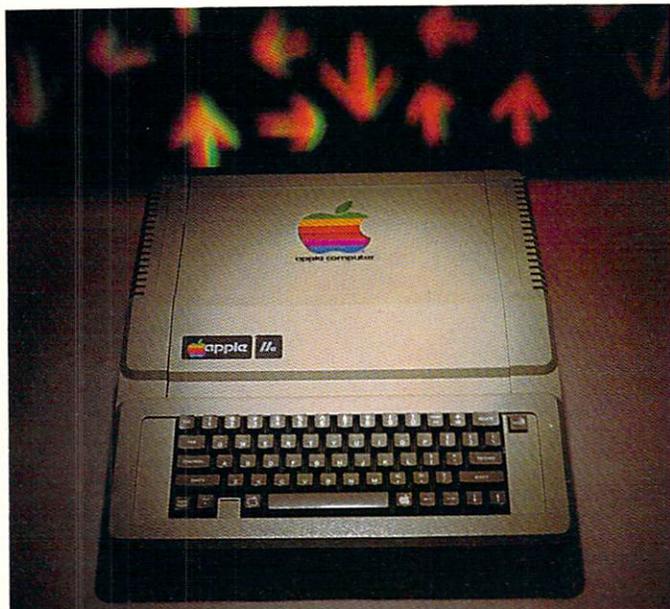
1. Not yet available
2. One-voice computers can be programmed to output varying numbers of tones.
3. This high resolution is available on the Apple IIe with an Extended 80-column card; on the PCjr, with 128K and Cartridge BASIC; on the TRS-80 Model 4 with a hi-res graphics board.

#### KEY TO CHART

- F = Full typewriterstyle keys  
 C = Rubber, "Chiclet"-style keys  
 \* = Subject to market fluctuations

with 128K. The IIe's screen display is 40 characters across, but this, too, is commonly expanded to 80 columns. The Apple's expandability is no coincidence: It comes with eight expansion slots that can be used to improve the internal workings of the machine. For this reason, Apple expects to keep selling the IIe—despite the introduction of the new IIc—to serious "hackers" who want to configure the computer to their own needs.

This "open architecture," however, is one of the main drawbacks of the IIe for many users. Parallel and serial interfaces aren't included. To add a printer or modem, therefore, you must buy one or two interface cards, which cost from \$150 to \$200. This means that an Apple IIe system costs substantially more than a comparable Atari 800XL or Commodore 64 system, though not more than a



comparable PCjr system. Another drawback is that the IIe has limited sound (one primitive sound channel) and color capability. This can somewhat lessen the impact of entertainment software.

Nonetheless, the Apple IIe is an extremely flexible computer, good for virtually any task. It's a reliable workhorse that rarely requires repairs. It's not state-of-the-art technology, but because so many third-party manufacturers support it with innovative products, the machine will grow with your needs.

### ATARI 800XL

The 800XL, an enhanced and sportier version of the Atari 800, is a fine general-purpose machine. Though its large software library (over 2,000 programs) is game-heavy, there is plenty of productivity software available—including *VisiCalc*, the well-known spreadsheet program, and *Letter Perfect*, a fine word-processing program.

This 64K machine's highlights are its superb graphics and sound capabilities, which can make game-playing and/or programming a real joy. The 800XL can display 16 colors or 128 "hues" (chosen from a palette of 256 hues) at any one time. Its eight "player missiles," which are the same as sprites, allow programmers to create good animated effects. These, of course, have been put to good use in video games. Unfortunately, Atari has provided very little instruction on BASIC programming along with its computer, suggesting instead that you go out and buy a book from someone else.

The keyboard is easy to use, with five special function keys along its right side that can simplify program operation. The keys are large and well-spaced, though not fully

sculpted. The keyboard has 29 graphics keys. For those studying foreign languages, a special international character set is available.



Atari offers a disk drive (\$415), but those sold by third-party manufacturers are probably a better value. The Atari disk drive has limited storage capacity (127K). Drives from Indus, Rana, and Trak receive kudos from Atari fans. If you want a cassette recorder rather than a disk drive, you'll have to buy Atari's. The Atari Touch Tablet (\$89), which allows the user to draw pictures, is a superb device.

The Atari 1030 modem (\$139) is also a very good deal, as is the 1027 letter-quality printer (\$349). Connecting most non-Atari printers to the 800XL requires an interface unit. Two exceptions are printers from Axiom and Star Micronics, which sell cables with their printers that will connect directly to the computer. (The Trak disk drive has a parallel printer attachment built in.)

### ATARI 600XL

For about \$100 less than the 800XL, Atari sells the 600XL. It comes with 16K and can be hooked only to a TV set, not a monitor. Atari sells a "word-processing" package that includes the 600XL, the 1027 letter-quality printer, and the reasonably powerful *AtariWriter* word-processing program (\$760). Since *AtariWriter* is a cartridge, it leaves all of the 600XL's 16K memory free for the user, and that's enough for much home word processing. However, the maximum screen display is only 40 characters across. The 600XL, which is virtually identical to the 800XL in appearance and has the same sound and graphics capability, can be turned into an 800XL with a memory expansion module.

### COLECO ADAM

ADAM comes with built-in word processing, two joysticks, a letter-quality printer, and a fast tape drive for storage, all for under \$750. That makes it a system with enormous promise. But, so far, the promise has yet to be fulfilled.

The first problem is the tape storage device, called a "digital data drive," which resembles a cassette deck but is almost as fast as a disk drive. It's a totally new storage format. Thus far, except for the ColecoVision cartridge games, which run on the ADAM, very little software is available. Second, some users have complained of minor, but annoying, problems—such as "glitches" in the screen

display, and occasional printer failures.

The keyboard is perhaps the strongest component of this 80K computer system. Key spacing and action are professional. There are 10 command keys (PRINT, STORE, etc.) that work with the built-in *SmartWRITER* word processor, and six function keys.

The screen image—when it's working properly—is good, but not exceptional. *SmartWRITER*, which displays 36 characters on a line, is adequate for most household use. Coleco promises an 80-column converter but, as with any 80-column display, it'll look better with a monitor. When attached to a monitor, the ADAM needs a special cable to output sound.



The printer is of flimsy construction, and extremely noisy. It houses the power supply, so if it breaks, you can't use the computer at all. It may be a consolation to note that Coleco now offers a 6-month warranty on ADAM, twice the industry standard.

While there is little software available, ADAM's Smart-BASIC is closely compatible with Applesoft BASIC. This means that a wealth of program listings have been published. SmartBASIC is not built in; you have to load a digital tape. Once SmartBASIC is loaded, only 26K of ADAM's 80K memory is left for you to use.

Coleco says it will market a disk drive, a 64K memory expander, a 300-baud modem, and a digital data drive, as well as develop a wide range of software. But when these products will be available and how much they will cost is unclear at this writing.

If you already own ColecoVision, you can expand it into an ADAM with a \$500 expansion module.

At present, the ADAM is best considered as a very reasonably priced word-processing system that offers many excellent video games and can be used for programming. Not until more software and hardware are released will the power of ADAM be realized.

### COMMODORE 64

The Commodore 64, a 64K computer with some powerful features, is now the undisputed leader of the "low-end" computer market. It's hard to believe that just a year ago there was almost no software for it; now, there are over 1,000 programs on the market, well distributed in every application category. Even *Multiplan*, the hot-selling and powerful spreadsheet, is available for the 64.

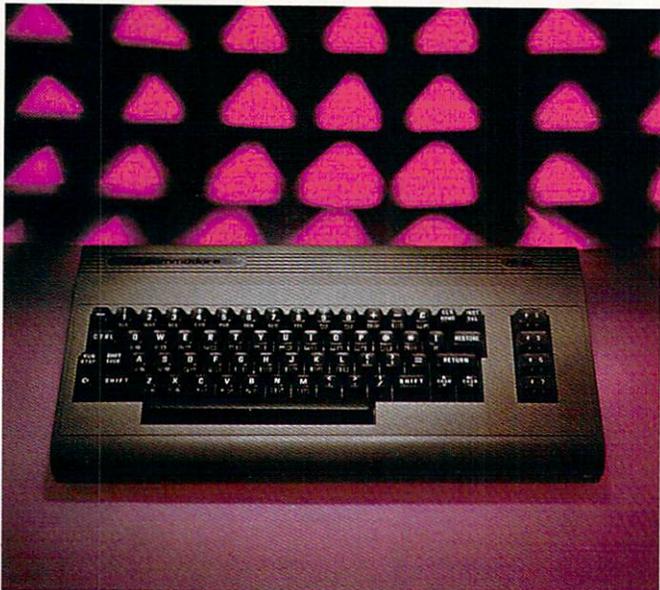
The 64's attractions include superb sound and graphics. Its 16 colors and eight sprites give programmers won-

derful graphics tools. The 64's sound is the most advanced of any home computer. The machine can be transformed into a sophisticated musical instrument, giving the user complete control over every aspect of sound. Some very powerful music software has been developed, most notably *MusiCalc*.

The 64 has a 40-character screen display. Add-on devices will expand this to 80 characters, but much software won't work with the 80-column cards on the market. The video display is good, but not great.

Now for the drawbacks. The keyboard has sculpted keys, but a "mushy" feel. The Commodore 1541 disk drive is somewhat unreliable and extremely slow. Programs can take what seems an eternity to load; although recently, third-party disk drives have been introduced. In the past, Commodore computers and peripherals reportedly were afflicted by high defect rates.

As for printers, if you want to use one not made by Commodore, you'll need a special interface, and it might not work with all Commodore software. Nor will it print out Commodore graphics. Finally, programming on the 64 is more difficult than on some other computers, and the manuals that come with the computer, while reasonably complete, are amongst the foggiest in the industry.



But the 64's strengths easily outweigh its limitations. Available for about \$200 in many locations, the 64's power and advantages still make it an excellent buy. The computer has a lot of satisfied owners.

### COMMODORE VIC-20

Now that Timex and Texas Instruments have left the home computer market, the VIC-20 stands as the only under-\$100 computer worth considering for kids or casual adult users. The VIC-20 offers good flexibility and power for the price, and it can be expanded with a full line of peripherals.

The full-size, typewriterstyle keyboard is identical to that of the Commodore 64. It features four programmable function keys. The VIC's screen display is clear, but its 22-character line is extremely short, and not very well suited for word-processing. Letters have a stretched out look that can make large blocks of text hard to read.

The VIC's 5K memory may be expanded to 32K. Commodore also sells cartridges that offer special enhancements. The Super Expander, for example, provides memory specifically for high-resolution graphics. And, with eight colors and three sound channels, a crafty programmer can

create some very nice effects.

If you don't want to buy a disk drive, you'll have to use Commodore's Datassette tape recorder (\$69.95). It operates primarily under computer control, minimizing the usual cassette recorder play-and-rewind hassles. Both the Commodore 1541 disk drive (\$399) and dot-matrix printer (\$395) work with the VIC.



Games and educational software stand out in the VIC-20 library, though some home-management software is available. However, very little new software is being developed for the VIC-20, and some software distributors no longer handle VIC-20 products. Commodore hasn't exactly phased it out; but neither is it heavily promoting the computer. Serious users will have to look elsewhere, but the VIC-20 still has great appeal for the budget-conscious buyer, novice home user, or young student.

### IBM PC

Powerful and expensive, the IBM PC runs some of the most sophisticated software around, from games to full-scale business applications. The PC was not designed for the home market, but people have been buying it for the home anyway.



The keyboard has a professional feel, much like that of an electronic typewriter, but touch-typists may find the placement of RETURN and SHIFT keys somewhat idiosyncratic. The basic PC comes with 64K RAM, and can be expanded to 640K. With the monochrome display and printer adapter (\$335) installed, the PC's text display is 80 characters by 25 lines. With the IBM Color Graphics Adapter (\$244) installed, 16 colors are available. IBM's BASIC provides a range of graphics commands, though fewer than Cartridge BASIC on the PCjr.

Largely because of the IBM name, the PC has become an industry standard. As such, third-party developers are constantly bringing out new software and add-ons for the PC. However, it is considerably more expensive than many other computers that accomplish the same tasks. It makes sense for family use only if it will be used extensively for full-scale business applications.

### IBM PCjr

The IBM PCjr is offered in two models: 1) a 64K entry model with two cartridge slots (\$669); and 2) a 128K model with a built-in disk drive (360K storage) and an 80-column, very high-resolution screen display (\$1,269).

The enhanced model, which most IBM dealers sell, is quite powerful. Much of the software developed for the spectacularly successful IBM PC computer will run on it,



as long as it requires no more than 128K memory and one disk drive. And many new educational and game programs are becoming available for it.

But there is very little software out for the entry model, aside from a few cartridge games. And some of the software that is ready—such as word processors *Bank Street Writer* and *Homeward*, requires a disk drive (\$480). In short, to make full use of the PCjr, you virtually need the enhanced model. You can upgrade from entry to enhanced model at any time.

The PCjr's keyboard (the same on both models) is both innovative and backward. Because the keyboard sends an infrared signal to the system unit, you can control the computer from a distance—much as you control a TV with a remote control channel-changer. On the other hand, the rectangular-shaped, rubber keys are not well suited for adult hands, and practically useless to touch-typists.

The screen display on the enhanced model is extremely clear and sharp. Up to 16 colors are available, though only four can be used at a time in the high-resolution mode. Cartridge BASIC (\$75), an extremely powerful version of

the built-in BASIC, is necessary for the maximum resolution. You can switch between a 40- and 80-character text display on the enhanced model; only 40 characters are available on the entry model.

The number of colors, graphics commands in BASIC, and sound are all improvements over the IBM PC.

The PCjr has an excellent manual, and when you first turn on the computer, you can participate in a cute interactive tutorial that may dispel extreme computerphobia. On the more technical side, the computer's microprocessor—which does the actual computing—is faster and more efficient than that of any other computer discussed here.

IBM sells an internal modem (\$199) that fits inside the system unit, and a thermal printer (\$175). To use a printer with a parallel interface, you need the parallel printer attachment (\$99).

Largely because of the PCjr's inadequate keyboard, the computer seems best suited for young children. (Analysts think that IBM will eventually sell an improved keyboard.) The main appeal of the enhanced PCjr—and what IBM sees as its main market—is that parents who have IBM PCs at the office can take work home. Most PC software that requires only 128K will run on PCjr.

### RADIO SHACK TRS-80 COLOR COMPUTER 2

The 16K Radio Shack Color Computer 2, priced at \$159, is a new version of the popular Color Computer. This new "CoCo" runs all the software developed for its predecessor, including many cartridge games, some home productivity software, a spreadsheet, and a modified version of Logo. It can be used only with a TV.

Two other versions of the Color Computer 2 are available. One is the Extended Color Computer 2 (\$199), which comes with a much more complete version of BASIC. A 64K version, also with Extended BASIC, costs \$259.

The biggest change in the Color Computer 2 is a new typewriter-style keyboard, replacing the "Chiclet"-style keys that were one of the older machine's biggest drawbacks. Like its predecessor, the keyboard has up, down, left, and right arrow cursor keys.

A word-processing program, *Color Scripsit*, is available for the Color Computer, but since the computer only displays uppercase characters, in a 32 × 16 (characters by lines) format, word processing on the CoCo is not ideal. *Color Scripsit* displays lowercase letters in inverse colors, and you can print in upper and lower case with a printer.

Software highlights include Walt Disney and Sesame



Street learning programs, and *Micropainter*, an electronic "coloring book." The graphics on the basic CoCo aren't the greatest, but can be upgraded with the Extended Color BASIC ROM Kit (\$39).

While there is plenty of Color Computer software, the CoCo won't run software written for the TRS-80 Models I, III, and 4.

Radio Shack sells a complete line of peripherals for the CoCo, including disk drives (\$399 for the first one, and \$279 for additional drives); a modem (\$99); and a variety of printers, including an unusual color graphics printer that uses 4½-inch-wide paper (\$199).

As with all Radio Shack computers, you can get support and service from thousands of Radio Shack outlets worldwide. This is a great advantage.

### RADIO SHACK TRS-80 MODEL 4

The stripped down TRS-80 Model 4 (\$999) comes with 16K, a full keyboard, and one thing none of the other computers here offer: a built-in black-and-white monitor.

At 16K, with no disk drive, the machine is limited—though Radio Shack does offer some cassette software, and all programs from the older Model III will run on the Model 4. You can use your own cassette recorder, which you cannot do on Atari or Commodore computers.



Also available is a 64K version of the Model 4, which comes with one disk drive (\$1,699), or two (\$1,999). These are powerful personal computers that run a wide variety of software. The Model 4 and its predecessors have developed an especially strong base of educational and financial software. Of course, due to the built-in black-and-white monitor, none of this software is displayed in color.

The Model 4 disk drives store 184K each, more than Apple or Commodore, but far less than the PCjr. You can add disk drives to a cassette-based Model 4 (\$649 for the first, only \$239 for the second), but you'll have to pay Radio Shack for installation.

The Model 4 has one of the best computer keyboards for touch-typing; the keyboard also includes four cursor-movement keys and a numeric keypad for rapid entry of numbers. On the disk-based Model 4, you can choose a screen display of 80 × 24 or 64 × 16 ("Model III mode"); the choice of 32 × 16 or 64 × 16 is available on the \$999 model.

The Model 4 is a sturdy, reliable, and well-supported computer that is especially well-suited for small- and/or home-business applications. ☐

—BILL HOWEY

# Programmer



ILLUSTRATION BY BARTON STABLER

★	J	U	N	E	★
<p><b>BEGINNER PROGRAMS</b> Page 74</p> <p>Earn pocket money selling personalized disk labels. This Father's Day, forgo that polka-dot tie—give dad something out of the ordinary.</p>		<p><b>PUZZLE</b> Page 94</p> <p>Something's cooking and it sure smells fishy! A puzzle of intrigue and aroma.</p>		<p><b>READER-WRITTEN PROGRAM</b> Page 106</p> <p>A Fishtank you'll never have to clean. For the TI-99/4A.</p>	

ILLUSTRATION BY JIM CHERRY III

Cherry

# DISK LABEL MAKER

BY JOEY LATIMER

This summer why not use your computer to earn money selling disk labels? *Disk Label Maker* prints an attractive border pattern on 1-inch by 3½-inch labels, which can be used on disks, spice jars, and file drawers, or as bookplates, etc.

When you run the program, you will be asked if you wish to include a one-line message within the border. Type "N" for a blank label, or type "Y" for a label message and then input no more than 23 characters. (Remember that spaces between words count as characters.) If you use a comma, enclose your whole message within quotation marks. When you are ready to print, press any key.

You can easily alter the border design (to substitute a programmer's name, for example) by changing the characters within quotation marks on lines 340 through 380. Be sure to keep the same number of characters as in the original, and retain the quotation marks.

This program can be used with different-size labels, simply by adjusting the position of the label paper in your printer so that the printed design will be centered.

You can also alter the border to fit the size of your labels. First, change the length of the label's top and bottom (horizontal) lines, by either adding or removing characters within the quotation marks in lines 340 and 380. Be sure to add or subtract the same number of characters in both lines.

You can only add or remove an even number of characters (for example 2, 4, or 6). Then, depending on your machine, increase or reduce the numbers 29, 31, and 33 wherever



ILLUSTRATIONS BY JOSH GOSFIELD

they appear in lines 10, 20, 350, 360, and 370 by the number of characters you've added or removed. Then increase or reduce the number 13, 16, or 17 in line 360 by half the number of characters you've added or subtracted in line 340. (For example: if an Apple owner adds four characters, he or she should change 33 to 37 in lines 350 and 370; 33 to 37 and 17 to 19 in line 360.) The number of characters allowed in the message can now be changed from 23, which appears once in line 10 (Atari only), once in line 220, and twice in line 240 (except Atari), to suit the new length.

To enlarge the label vertically, you can repeat line 350 (renumbering it 351, 352, etc.) and line 370 (renumbering it 371, 372, etc.) as often as you wish. Since line 360 prints your message, repeating line 370 more often than line 350 will create a greater number of blank lines underneath the message.

(Note: TI-99/4A owners should modify line 310 to OPEN #1:"RS232" if they are using a serial printer.)

## ADAM/Disk Label Maker

```

50 HOME
60 IS = ""
80 PRINT TAB(7); "DISK LABEL MAKER"
90 PRINT
100 PRINT "PLEASE PRESS <RETURN>"
110 PRINT "AFTER EACH REPLY."
120 PRINT
130 PRINT "DO YOU WANT SOMETHING"
140 PRINT "PRINTED ON THE LABEL";
150 INPUT RS
170 IF LEFT$(RS, 1) = "N" OR LEFT$(RS, 1) = "n" THEN 2
50
180 PRINT
189 REM --input disk label text--
190 PRINT "WHAT WILL THE LABEL SAY?"
210 PRINT
220 PRINT "(23 LETTERS OR FEWER)"
230 INPUT IS
239 REM --chop off extra characters--
240 IF LEN(IS) > 23 THEN IS = LEFT$(IS, 23)
250 HOME
260 PRINT "WHEN PRINTER IS READY,"
270 PRINT "PLEASE PRESS ANY KEY."
280 GET RS
300 HOME
309 REM --open printer channel--
310 PR #1
330 PRINT
339 REM --print top border--
340 PRINT "*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*"
350 PRINT "*";SPC(33);"*"
359 REM --center and print text--
360 PRINT "*";SPC((33-LEN(IS))/2);IS;SPC(17-LEN(IS)/2);"*"
370 PRINT "*";SPC(33);"*"
379 REM --print bottom border
380 PRINT "*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*"
399 REM --close printer channel--
400 PR #0
409 REM --do it again or end--
410 PRINT "DO YOU WANT TO"
420 PRINT "MAKE ANOTHER";
430 INPUT RS
450 IF LEFT$(RS, 1) = "Y" OR LEFT$(RS, 1) = "y" THEN 5
0
460 END
    
```

## Apple/Disk Label Maker

```

50 HOME
60 IS = ""
80 PRINT TAB(12);"DISK LABEL MAKER"
90 PRINT
100 PRINT "PLEASE PRESS <RETURN>"
110 PRINT "AFTER EACH REPLY."
120 PRINT
130 PRINT "DO YOU WANT SOMETHING"
140 PRINT "PRINTED ON THE LABEL";
150 INPUT RS
170 IF LEFT$(RS,1) = "N" THEN 250
180 PRINT
189 REM --INPUT DISK LABEL TEXT--
190 PRINT "WHAT WILL THE LABEL SAY?"
210 PRINT
220 PRINT "(23 LETTERS OR FEWER)"
230 INPUT IS
239 REM --CHOP OFF EXTRA CHARACTERS--
240 IF LEN(IS) > 23 THEN IS = LEFT$(IS,23)
250 HOME
260 PRINT "WHEN PRINTER IS READY,"
270 PRINT "PLEASE PRESS ANY KEY."
280 GET RS
300 HOME
309 REM --OPEN PRINTER CHANNEL--
310 PR#1
330 PRINT
    
```

# FATHER'S DAY CARD

**BY JOEY LATIMER**

It's Father's Day. Imagine this scene: Knock-knock. "Don't come in, Dad!" "Why not?" "Because." "Because why?" "Just because!" Your dad may be puzzled, but his puzzlement will turn to smiles when he discovers what you were doing behind that closed door on June 17: preparing a computerized *Father's Day Card*!

First close the door. RUN the program, and answer the questions. Keep in mind that 1 is lousy and 10 is fantastic. Now call your dad into the room. Ask him to sit in front of the computer and press the RETURN or ENTER key. Then watch his puzzlement turn to joy as he receives a *Father's Day Card* like never before!



## ADAM/Father's Day Card

```

10 HOME
20 PRINT "FATHER'S DAY CARD"
30 PRINT
40 PRINT "PLEASE PRESS <RETURN> AFTER"
50 PRINT "EACH REPLY."
60 PRINT
70 INPUT "WHAT IS YOUR NAME?";n$
80 PRINT
90 PRINT "TELL ME, ";n$;" ..."
99 REM -- START INPUT LOOP --
100 FOR x = 1 TO 3
110 READ t$,v$
120 IF x > 1 THEN HOME
130 PRINT "WHAT ";t$;" DOES YOUR FATHER"
140 PRINT v$;"?"
150 PRINT
160 PRINT "(7 LETTERS OR FEWER, PLEASE.)"
170 PRINT
180 PRINT "HE ";LEFT$(v$,4);"S ";RIGHT$(v$,LEN(v$)-5);
190 INPUT c$(x)
200 IF LEN(c$(x)) > 7 THEN 150
209 REM -- RATE DAD --
210 HOME
220 PRINT "ON A SCALE OF 1 TO 10,"
230 PRINT "HOW GOOD IS YOUR DAD AT"
240 PRINT RIGHT$(v$,LEN(v$)-5);" ";c$(x);
250 INPUT s(x)
260 IF s(x) < 1 OR s(x) > 10 THEN 210
270 NEXT x
279 REM -- END OF INPUT LOOP --
280 HOME
290 PRINT "PRESS <RETURN>,"
300 PRINT "THEN GET YOUR DAD."
310 GET r$
320 IF r$ <> CHR$(13) THEN 310
330 HOME
340 PRINT "HI DAD!"
    
```

```

350 PRINT "PRESS <RETURN> TO SEE"
360 PRINT "HOW GOOD YOU ARE AT ..."
370 GET r$
380 IF r$ <> CHR$(13) THEN 370
389 REM -- PRINT LABELS --
390 GR
400 HOME
410 PRINT "PLAYING";TAB(9);"DOING";TAB(16);"PLAYING";TAB(24);"BEING A"
420 PRINT c$(1);TAB(9);c$(2);TAB(16);c$(3);TAB(24);"FATHER"
429 REM -- DRAW GRAPHICS --
430 s(4) = 17
440 FOR x = 0 TO 30 STEP 10
450 q = x/10+1
460 COLOR = q+10
470 FOR ro = 35 TO 35-s(q)*2 STEP -1
480 HLIN x,x+9 AT ro
490 NEXT ro
500 NEXT x
510 PRINT TAB(7);"HAPPY FATHER'S DAY!"
520 PRINT TAB(24-LEN(n$));"LOVE, ";n$;
530 GET r$
540 TEXT
550 END
1000 DATA SPORT,LIKE PLAYING
1010 DATA CHORE,HATE DOING
1020 DATA GAME,LIKE PLAYING
    
```

## Apple/Father's Day Card

```

10 HOME
20 PRINT "FATHER'S DAY CARD"
30 PRINT
40 PRINT "PLEASE PRESS <RETURN> AFTER EACH REPLY."
50 PRINT
60 INPUT "WHAT IS YOUR FIRST NAME?";n$
70 PRINT
80 PRINT "TELL ME, ";n$;" ..."
89 REM -- START INPUT LOOP --
90 FOR x = 1 TO 3
100 READ t$,v$
110 IF x > 1 THEN HOME
120 PRINT "WHAT ";t$;" DOES YOUR FATHER"
130 PRINT v$;"?"
140 PRINT
150 PRINT "(9 LETTERS OR FEWER, PLEASE.)"
160 PRINT
170 PRINT "HE ";LEFT$(v$,4);"S ";RIGHT$(v$,LEN(v$)-5);
180 INPUT c$(x)
190 IF LEN(c$(x)) > 9 THEN 140
199 REM -- RATE DAD --
200 HOME
210 PRINT "ON A SCALE OF 1 TO 10,"
220 PRINT "HOW GOOD IS YOUR DAD"
230 PRINT "AT ";RIGHT$(v$,LEN(v$)-5);" ";c$(x);
240 INPUT s(x)
250 IF s(x) < 1 OR s(x) > 10 THEN 200
260 NEXT x
269 REM -- END OF INPUT LOOP --
270 HOME
280 PRINT "PRESS <RETURN>, THEN GET YOUR DAD."
290 GET r$
300 IF r$ <> CHR$(13) THEN 290
310 HOME
320 PRINT "HI DAD!"
330 PRINT "PRESS <RETURN> TO SEE"
340 PRINT "HOW GOOD YOU ARE AT ..."
350 GET r$
360 IF r$ <> CHR$(13) THEN 350
369 REM -- PRINT LABELS --
    
```

# RECIPE FOR DISASTER: 3 tbsp. of Trickery, 1 pt. of Paranoia, and a Dash of Danger

BY PETER FAVARO

As an expert chef, you could hardly contain your joy the day the news arrived that you had finally been accepted into La Société d'Avancement Gastronomique, which is composed of a handful of the world's greatest chefs.

Once a year the chefs meet and try to outdo each other with their most favored and enticing recipe. The stakes are high: The winner of the competition becomes known as the world's greatest cook, and customer attendance at his or her restaurant doubles overnight.

The atmosphere during the competition is tense. Although the five chefs freely exchange trade secrets throughout the rest of the year, during the competition they take a solemn vow not to discuss the proceedings at hand, so that they won't accidentally reveal their recipes before the final judging. They even take separate lodgings.

Precaution against their own carelessness is not the chefs' only concern. In recent years all have fallen victim to suspicious misfortunes, suggesting that none is above using foul play to cast a more favorable light on his or her creation. Why, just last year, a generous amount of

chili powder was discovered in Chef Etienne's chocolate éclairs. Someone also had cleverly substituted wallpaper paste in Chef Giorgio's spaghetti sauce. The American chef, Scarlet, found her Southern fried drumsticks burned to a crisp, and evidence that the stove's wiring had been tampered with. When Chef Wilhelm pulled his sausages out of the oven, he discovered, to his horror, that each link had been stuffed with sawdust. And Chef Mayling's sweet-and-sour sea bass tasted suspiciously like ordinary tuna fish, which it never did when she served it to her customers in China.

This year, La Société d'Avancement Gastronomique will meet at a cooking school in the south of France. On a beautiful June day, you arrive at the designated coastal town feeling excited and honored. As a newcomer to the society, you are impervious to the mood of espionage and foul play that already permeates the air, and naively leave your recipe box in plain view of all the assembled chefs. Your innocence is quickly shattered when, two hours later, you discover that its contents have been pilfered.

You haven't the faintest idea whom to suspect. Direct assistance from any one of the chefs is out of the question. No one will risk expulsion from the society by breaking the vow of silence and discussing the competition. But nothing can stop some of the chefs from indirectly identifying the thief: their suggestions may contain hidden clues.

## HOW TO PLAY

Set your computer to all uppercase letters and turn the volume up before running the program. You must first register your name at the hotel where you will be staying. Then select the chef you wish to speak to, and use your computer as a telephone. Dial "0" for operator assistance. It's a small town, so the operator knows where every chef is staying and will immediately connect you. If you get a busy signal, be patient. The chefs may be talking to friends and family back home, since the restriction on conversation during the competition makes it a lonely stay. Wait a few seconds, then redial.

Speak to all five chefs before attempting to guess. It is best to jot down each chef's telephone number on a piece of paper, along

with the name of the chef who gave it to you. Wrong numbers can easily be remedied by asking the operator to connect you to the party in question.

When you think you know who stole your recipe, type "G" for guess. You will then be asked to supply the suspected chef's name. Random guessing is almost useless. Wrong guesses "disconnect" you from the puzzle, at which point you'll have to begin again. Since no chef is above suspicion, each time you begin, the culprit will change. If you're clever, and guess correctly the first time, you can retrieve your recipe in time for the final judging. If you guess incorrectly, you can get an additional clue by typing "H" for help. If all else fails, turn the computer off and go out to dinner. The solution will appear in next month's issue.

## Base Version (TRS-80 Model III)/Recipe for Disaster

```
10 CLEAR 1000:DIM CH$(5),GL$(5),CN$(5),HL$(5),RC$(21),
PNT(5),CK(2,41)
20 WL=64:LT=0:T=1:W=0:DC=0:GUESS=0
30 FOR I=1 TO 41:READ CK(1,I),CK(2,I):NEXT I
50 CLS:R$="RECIPE FOR DISASTER":GOSUB 1000
60 PRINT:R$="MIXING INGREDIENTS":GOSUB 1000
70 FOR X=1 TO 5:GOSUB 2000:CH$(X)=T$:T=0:GOSUB 2000:GL
$(X)=T$
80 GOSUB 2000:CN$(X)=T$:T=1:GOSUB 2000:HL$(X)=T$:NEXT
X:GOSUB 2000:HP$=T$
90 FOR X=1 TO 20:GOSUB 2000:RC$(X)=T$:NEXT X
100 CLS:R$="PLEASE REGISTER AT HOTEL DESK.":GOSUB 1000
:PRINT
110 INPUT "YOUR NAME, PLEASE";N$:IF N$="" THEN 110
120 N$="CHEF "+N$
130 FOR X=1 TO 5:PNT(X)=0:NEXT X
140 FOR X=1 TO 5
150 T=X+RND(4):T=T+5*(T>5):IF PNT(T)>0 THEN 150
160 IF X=4 AND PNT(5)=0 THEN PNT(5)=X ELSE PNT(T)=X
170 NEXT X
180 TH=RND(5):IF TH=LT THEN 180
190 BD=RND(5):IF BD=TH THEN 190
200 LT=TH
210 R$="DIAL A NUMBER, OR '0' FOR OPERATOR, OR ENTER '
G' TO GUESS"
220 IF GUESS=1 THEN R$=R$+", OR 'H' FOR HELP" →
```

PETER FAVARO, PH.D., is an education and recreation video-game design consultant, and a fourth-generation chef of the puzzle's stolen recipe, which originated in Palermo, Italy, on his great-great grandmother's table. He is currently writing a book on educational computing for Prentice-Hall, and is the author of last month's puzzle.



# PUZZLE

```

230 R$=R$+"":GOSUB 3000:PRINT
240 INPUT D$:IF D$="" THEN 240
250 IF D$="0" OR D$="00" THEN 500
260 IF D$="H" AND GUESS=1 THEN R$=HP$:GOSUB 3000:GOSUB
4000:GOTO 210
270 IF D$="G" THEN 560
280 P$="":FOR X=1 TO LEN(D$):A=ASC(MID$(D$,X,1))
290 IF A>47 AND A<58 THEN P$=P$+CHR$(A)
300 NEXT X
310 FL=0:FOR X=1 TO 5:IF P$=CN$(X) THEN FL=X
320 IF P$=GL$(TH) THEN FL=99
330 NEXT X
340 IF FL>0 THEN 370
350 R$="THE NUMBER YOU HAVE REACHED IS NOT IN SERVICE.
":GOSUB 3000
360 GOSUB 4000:GOTO 210
370 IF RND(0)>.15 THEN 400
380 FOR I=1 TO 5:CLS:FOR D=1 TO 200:NEXT D:R$="BUSY!":
GOSUB 1000
390 FOR D=1 TO 200:NEXT D:NEXT I:GOTO 210
400 CLS:FOR I=1 TO 5:PRINT@WL/2-7,"R-R-R-I-N-N-G!"
410 FOR D=1 TO 100:NEXT D:CLS:FOR D=1 TO 100:NEXT D:NE
XT I
420 IF FL<>99 THEN 460
430 R$="BONJOUR, "+N$+". I'M SORRY, YOU MUST "
440 R$=R$+"HAVE THE WRONG NUMBER. CALL THE OPERATOR FO
R ASSISTANCE.":GOSUB 3000
450 GOSUB 4000:GOTO 210
460 R$=HL$(FL)+"", "+N$+", THIS IS CHEF "+CH$(FL)+"":G
OSUB 3000
470 PRINT:R$="I CAN'T DISCUSS YOUR STOLEN RECIPE, BUT
TRY CHEF "+CH$(PNT(FL))
480 R$=R$+" AT ":Z$=CN$(PNT(FL)):IF FL<>BD AND FL<>TH
THEN Z$=GL$(TH)
490 R$=R$+LEFT$(Z$,3)+"-"+RIGHT$(Z$,4)+"":GOSUB 3010:
GOSUB 4000:GOTO 210
500 R$="BONJOUR, THIS IS THE OPERATOR."
510 R$=R$+" TO WHOM DO YOU WISH TO SPEAK?":GOSUB 3000:
PRINT
520 INPUT "CHEF";Z$:IF Z$="" THEN 520
530 FL=0:FOR X=1 TO 5:IF CH$(X)=Z$ THEN FL=X
540 NEXT X:PRINT:IF FL=0 THEN T$=Z$:GOTO 610
550 GOTO 370
560 R$="WHAT IS THE NAME OF THE CHEF WHO STOLE YOUR RE
CIPE?"
570 GOSUB 3000:PRINT:INPUT T$:IF T$="" THEN 560
580 IF T$=CH$(TH) THEN 660
590 FL=0:FOR X=1 TO 5:IF T$=CH$(X) THEN FL=1:GUESS=1
600 NEXT X:IF FL=1 THEN 630
610 R$="SORRY, "+N$+", THERE IS NO CHEF BY THE NAME OF
"+T$
620 R$=R$+" AT THE COMPETITION.":GOSUB 3000:GOSUB 4000
:GOTO 210
630 R$="SORRY, CHEF "+T$+" WAS TOO BUSY IN THE KITCHEN
TO STEAL YOUR "
640 R$=R$+"RECIPE. YOU MUST BEGIN A NEW GAME.":GOSUB 3
000
650 PRINT:R$="(REMEMBER: THE THIEF WILL CHANGE.)":GOSU
B 1000:GOSUB 4000:GOTO 130
660 R$="CONGRATULATIONS! YOU'VE FOUND THE THIEF, WHO U
NHAPPILY RETURNS YOUR "
670 R$=R$+"RECIPE.":GOSUB 3000:GOSUB 4000:R$="HERE IS
YOUR STOLEN RECIPE!"
680 GOSUB 3000:FOR X=1 TO 10:R$=RC$(X):GOSUB 3010:NEXT
X
690 GOSUB 4000:GOSUB 3000:CLS:FOR X=11 TO 20:R$=RC$(X)
:GOSUB 3010:NEXT X
700 GOTO 700
1000 PRINT TAB((WL-LEN(R$))/2);R$:RETURN
2000 T$="":READ R$:CS=0:DC=DC+1:FOR Y=1 TO LEN(R$):C=A
SC(MID$(R$,Y,1))
2010 Z=C+1+(W*T*2):CS=CS+C:IF C=63 THEN Z=32
2020 IF C=35 THEN Z=90
2030 IF C=36 THEN Z=44
2040 T$=T$+CHR$(Z):W=NOT W:NEXT Y
2050 IF CK(2,DC)=CS THEN RETURN
2060 PRINT "DATA ERROR IN LINE #";INT(DC/6)*10+5000

```

```

2070 PRINT "OR IN LINE #";CK(1,DC)*10+6000:END
3000 CLS
3010 IF LEN(R$)<=WL THEN PRINT R$:RETURN
3020 FOR I=1 TO WL-1:IF MID$(R$,I,1)=" " THEN L=I-1
3030 NEXT I:PRINT LEFT$(R$,L):R$=RIGHT$(R$,LEN(R$)-L-1
):GOTO 3010
4000 PRINT:PRINT:PRINT:R$="PRESS ANY KEY TO CONTINUE."
:GOSUB 1000
4010 T$=INKEY$:IF T$="" THEN 4010 ELSE RETURN
5000 DATA 0,529,0,365,0,356,0,672,1,527,1,364
5010 DATA 1,365,1,833,2,528,2,365,2,373,2,230
5020 DATA 3,525,3,363,3,357,3,609,4,519,4,362
5030 DATA 4,369,4,544,5,4608,6,766,6,63,6,886
5040 DATA 6,63,6,1219,6,408,6,874,7,1603,7,1612
5050 DATA 7,1106,7,63,8,756,8,420,8,63,9,4237
5060 DATA 10,1824,10,2750,11,3644,11,1937,13,4591
6000 DATA VJKIDML,8343245,1124714,HTUDO?UQH
6010 DATA FJNSFJN,3356335,1455626,CTPM?FJNSMP
6020 DATA LBXMHOF,5184353,7135768,XDJ
6030 DATA RDASKFS,6116427,7551120,IH?SIDBG(
6040 DATA DUHFMOD,2732552,4152768,CNOIPTS
6050 DATA VSNOF?MVLCDSR?LBX?MPS?AF?TN?VSNOF/?TSVCZ?B?S
DBK?SFKFOINOD?CJAM-
6060 DATA SHDD?ABKMR/,?,JMHQFCJDOST9,?,001!KC-?BPNLDE?
SHDD,3?FFHR,CQFQE?DQVLCR
6070 DATA 2.9?DTQ?QASLFRBM?BIDFRF,001!KC-!LP##@SDMKB?D
GFDTD?,RBKU?BME?QDQOQFQ,?
6080 DATA CJQFBUHPMT,)+)+)+)+)+,?
6090 DATA XGJKF?SHDD?HT?INUS?QEC?LP##@SDMKB?S?FFHR?BM
E?QASLFRBM?BIDFRF-
6100 DATA TAMS?QOC?OFOQDS?UN?SBRUD/,KFS?BPNM?JM?QFESHH
DSQUNS?2.3?UN?D?GPTS-
6110 DATA XGFM?RUHDJZ$?RI@QD?HOSP?CAMKT?3?JMDGFR?HO?EH
BLFSFQ/
6120 DATA QPKM?CAMKT?JM?ASDBC?BSTNAT-
6130 DATA EDFO?ESX?EPQ?SIQFD?LJMVSFR?TOSJK?NVSTHED?HT?
CQPVO?BME?DQVMDGZ-

```

## Atari/Recipe For Disaster

```

10 DIM CH$(35),GL$(35),CN$(35),HL$(45),HLP(6),RC$(420)
,RCP(21),R$(200),N$(40),PNT(5),HP$(70),CL$(1),T$(80)
20 DIM D$(20),Z$(20),P$(20),CK(2,41):CL$=CHR$(125):WL=
40:LT=0:T=1:W=0:DC=0
30 POKE 752,1:POKE 82,0:FOR X=1 TO 41:READ Y,Z:CK(1,X)
=Y:CK(2,X)=Z:NEXT X
40 PRINT CL$;:R$="RECIPE FOR DISASTER":GOSUB 1000
50 PRINT :R$="MIXING INGREDIENTS":GOSUB 1000
60 FOR X=1 TO 5:A=X*7-6:GOSUB 2000:CH$(A)=T$:T=0:GOSUB
2000:GL$(A)=T$:GOSUB 2000:CN$(A)=T$:T=1:GOSUB 2000
70 A=LEN(HL$)+1:HL$(A)=T$:HLP(X)=A:NEXT X:HLP(6)=LEN(H
L$)+1:GOSUB 2000:HP$=T$
80 FOR X=1 TO 20:GOSUB 2000:A=LEN(RC$)+1:RC$(A)=T$:RCP
(X)=A:NEXT X:RCP(21)=LEN(RC$)+1
90 PRINT CL$;:R$="PLEASE REGISTER AT HOTEL DESK.":GOSU
B 1000:PRINT
100 PRINT "YOUR NAME, PLEASE";:INPUT R$:IF R$="" THEN
100
110 N$="CHEF ":N$(6)=R$
120 FOR X=1 TO 5:PNT(X)=0:NEXT X
130 FOR X=1 TO 5
140 T=X+INT(RND(0)*4)+1:T=T-5*(T>5):IF PNT(T)>0 THEN 1
40
150 IF X=4 AND PNT(5)=0 THEN PNT(5)=X:NEXT X
160 PNT(T)=X:NEXT X
170 TH=INT(RND(0)*5)+1:IF TH=LT THEN 170
180 BD=INT(RND(0)*5)+1:IF BD=TH THEN 180
190 LT=TH
200 R$="DIAL A NUMBER, OR '0' FOR OPERATOR, OR ENTER '
G' TO GUESS"
210 IF GUESS=1 THEN R$(LEN(R$)+1)=", OR 'H' FOR HELP"
220 R$(LEN(R$)+1)="":GOSUB 3000:PRINT
230 INPUT D$:IF D$="" THEN 230
240 IF D$="0" OR D$="00" THEN 490
250 IF D$="H" AND GUESS=1 THEN R$=HP$:GOSUB 3000:GOSUB
4000:GOTO 200
260 IF D$="G" THEN 550

```

## PUZZLE

```

270 P$="":FOR X=1 TO LEN(D$):A=ASC(D$(X))
280 IF A>47 AND A<58 THEN P$(LEN(P$)+1)=CHR$(A)
290 NEXT X
300 FL=0:FOR X=1 TO 5:IF P$=CN$(X*7-6,X*7) THEN FL=X
310 IF P$=GL$(X*7-6,X*7) THEN FL=99
320 NEXT X
330 IF FL>0 THEN 360
340 R$="THE NUMBER YOU HAVE REACHED IS NOT IN SERVICE.
":GOSUB 3000
350 GOSUB 4000:GOTO 200
360 IF RND(0)>.15 THEN 390
370 FOR X=1 TO 5:FOR Y=1 TO 2:SOUND 0,60,12,12:SOUND 1
,61,10,15:FOR D=1 TO 17:NEXT D
380 SOUND 0,0,0,0:SOUND 1,0,0,0:FOR D=1 TO 45:NEXT D:N
EXT Y:NEXT X:GOTO 200
390 FOR X=1 TO 3:FOR Y=1 TO 30:SOUND 1,200,10,5:SOUND
1,40,10,15:SOUND 0,20,10,15:SOUND 2,23,10,15
400 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND 2,0,0,0:NEXT Y:F
OR D=1 TO 200:NEXT D:NEXT X:SOUND 0,90,8,15:FOR D=1 TO
10:NEXT D:SOUND 0,0,0,0
410 IF FL<>99 THEN 440
420 R$="BONJOUR, ":R$(10)=N$:R$(LEN(R$)+1)=" . I'M SORR
Y. YOU MUST HAVE THE WRONG NUMBER. CALL THE "
430 R$(LEN(R$)+1)="OPERATOR FOR ASSISTANCE.":GOSUB 300
0:GOSUB 4000:GOTO 200
440 R$=HL$(HLP(FL),HLP(FL+1)-1):R$(LEN(R$)+1)=" , ":R$(
LEN(R$)+1)=N$:R$(LEN(R$)+1)=" , "
450 R$(LEN(R$)+1)="THIS IS CHEF ":R$(LEN(R$)+1)=CH$(FL
*7-6,FL*7):R$(LEN(R$)+1)=" .":GOSUB 3000
460 PRINT :R$="I CAN'T DISCUSS YOUR STOLEN RECIPE, BUT
TRY CHEF ":R$(LEN(R$)+1)=CH$(PNT(FL)*7-6,PNT(FL)*7)
470 R$(LEN(R$)+1)=" AT ":Z$=CN$(PNT(FL)*7-6,PNT(FL)*7)
:IF FL<>BD AND FL<>TH THEN Z$=GL$(TH*7-6,TH*7)
480 R$(LEN(R$)+1)=Z$(1,3):R$(LEN(R$)+1)="-":R$(LEN(R$)
+1)=Z$(4,7):R$(LEN(R$)+1)=" .":GOSUB 3010:GOSUB 4000:GO
TO 200
490 R$="BONJOUR, THIS IS THE OPERATOR. TO WHOM DO YOU
WISH TO SPEAK?"
500 GOSUB 3000:PRINT
510 PRINT "CHEF ":;INPUT Z$:IF Z$="" THEN 510
520 FL=0:FOR X=1 TO 5:IF CH$(X*7-6,X*7)=Z$ THEN FL=X
530 NEXT X:PRINT :IF FL=0 THEN T$=Z$:GOTO 600
540 GOTO 360
550 R$="WHAT IS THE NAME OF THE CHEF WHO STOLE YOUR RE
CIPE?"
560 GOSUB 3000:PRINT :INPUT T$:IF T$="" THEN 550
570 IF T$=CH$(TH*7-6,TH*7) THEN 650
580 FL=0:FOR X=1 TO 5:IF T$=CH$(X*7-6,X*7) THEN FL=1:G
UESS=1
590 NEXT X:IF FL=1 THEN 620
600 R$="SORRY, ":R$(LEN(R$)+1)=N$:R$(LEN(R$)+1)=" , THE
RE IS NO CHEF BY THE NAME OF ":R$(LEN(R$)+1)=T$
610 R$(LEN(R$)+1)=" AT THE COMPETITION.":GOSUB 3000:GO
SUB 4000:GOTO 200
620 R$="SORRY, CHEF ":R$(LEN(R$)+1)=T$:R$(LEN(R$)+1)="
WAS TOO BUSY IN THE KITCHEN TO STEAL YOUR"
630 R$(LEN(R$)+1)=" RECIPE. YOU MUST BEGIN A NEW GAME.
":GOSUB 3000
640 PRINT :R$="(REMEMBER: THE THIEF WILL CHANGE.)":GOS
UB 1000:GOSUB 4000:GOTO 120
650 R$="CONGRATULATIONS! YOU'VE FOUND THE THIEF, WHO U
NHAPPILY RETURNS YOUR "
660 R$(LEN(R$)+1)="RECIPE.":GOSUB 3000:GOSUB 4000:R$="
HERE IS YOUR STOLEN RECIPE!"
670 GOSUB 3000:FOR X=1 TO 20:R$=RC$(RCP(X),RCP(X+1)-1)
:GOSUB 3010:NEXT X
680 GOTO 680
1000 T$="":FOR X=1 TO (WL-LEN(R$))/2:PRINT " ";:NEXT X
:PRINT R$:RETURN
2000 T$="":CS=0:DC=DC+1:READ R$:FOR Y=1 TO LEN(R$):C=A
SC(R$(Y)):Z=C+1-(W*T*2)
2010 CS=CS+C:IF C=63 THEN Z=32
2020 IF C=35 THEN Z=90
2030 IF C=36 THEN Z=44
2040 T$(Y,Y)=CHR$(Z):W= NOT W:NEXT Y
2050 IF CK(2,DC)<>CS THEN PRINT "DATA ERROR IN LINE #":
INT(DC/6)*10+5000;" OR LINE #":CK(1,DC)*10+6000:END

```

```

2060 RETURN
3000 PRINT CL$;
3010 IF LEN(R$)<=WL THEN PRINT R$:RETURN
3020 FOR I=1 TO WL:IF R$(I,I)="" THEN L=I-1
3030 NEXT I:PRINT R$(1,L):R$=R$(L+2):GOTO 3010
4000 POSITION 7,15:PRINT "PRESS ANY KEY TO CONTINUE."
4010 IF PEEK(764)=255 THEN 4010
4020 POKE 764,255:RETURN
5000 DATA 0,529,0,365,0,356,0,672,1,527,1,364
5010 DATA 1,365,1,833,2,528,2,365,2,373,2,230
5020 DATA 3,525,3,363,3,357,3,609,4,519,4,362
5030 DATA 4,369,4,544,5,4608,6,766,6,63,6,886
5040 DATA 6,63,6,1219,6,408,6,874,7,1603,7,1612
5050 DATA 7,1106,7,63,8,756,8,420,8,63,9,4237
5060 DATA 10,1824,10,2750,11,3644,12,1937,13,4591
6000 DATA VJKIDML,8343245,1124714,HTUDO?UAH
6010 DATA FJNSFJN,3356335,1455626,CTPM?FJNSMP
6020 DATA LBXMHOF,5184353,7135768,XDJ
6030 DATA RD@SKFS,6116427,7551120,IH?SIDBG(
6040 DATA DUHFMOD,2732552,4152768,CNOIPTS
6050 DATA VSNOF?MVLCD$R?LBX?MPS?AF?TN?VSNOF/?TSVCZ?B?S
DBK?SFKFOINOD?CJAM-
6060 DATA SHDD?ABKMR/,?JMHQFCJDOST9,?,001!KC-?BPNLDE?
SHDD,3?FFHR,CQFAE?DQVLCR
6070 DATA 2.9?DTQ?Q@SLFRBM?BIDFRF,001!KC-!LP##@SDMKB?D
GFDTD?,RBKU?BME?DQDQFQ,?
6080 DATA CJQFBUHPMT,+)+)+)+)+,?
6090 DATA XGJKF?SHDD?HT?INUS?@EC?LP##@SDMKBS?FFHRS?BM
E?Q@SLFRBM?BIDFRF-
6100 DATA T@MS?@OC?OFOQDS?UN?SBRUD/,KFS?BPNM?JM?QFESH
DS@UNS?2.3?UN?O?GPTS-
6110 DATA XGFM?RUHDJZ$?RI@QD?HOSP?C@MKT?3?JMDGFR?HO?EH
BLFSFQ/
6120 DATA QPKM?C@MKT?JM?ASDBC?BSTNAT-
6130 DATA EDFO?ESX?EPQ?SIQFD?LJMVSFR?TOSJK?NVSTHED?HT?
C@PVO?BME?DQVMDGZ-

```

## MODIFICATIONS FOR OTHER COMPUTERS

### ADAM/Recipe for Disaster

Use the base version with the following alterations: Omit CLEAR 1000: from the beginning of line 10. In line 20, change WL=64 to WL=31. In lines 50, 690, and 3000, change CLS to HOME. In lines 180 and 190 change RND(5) to INT(RND(1)\*5)+1. Finally, change lines 100, 110, 150-170, 370-410, 520, 530, 580, 650, 2010, 4010, and 7000 to read as follows:

```

100 r$="PLEASE REGISTER AT DESK.":GOSUB 3000:PRINT
110 INPUT "YOUR NAME, PLEASE? ";n$:IF n$="" THEN 110
150 t=x+INT(RND(1)*4)+1:t=t-5*(t>5):IF pnt(t)>0 THEN 1
50
160 IF x=4 AND pnt(5)=0 THEN pnt(5)=x:NEXT x
170 pnt(t)=x:NEXT x
370 IF RND(1)>.15 THEN 400
380 FOR i=1 TO 5:HOME:FOR d=1 TO 100:NEXT d:NEXT i
390 FOR d=1 TO 200:NEXT d:NEXT i:GOTO 210
400 HOME:FOR i=1 TO 5:HTAB 10:VTAB 1:PRINT "R-r-r-i-n-
n-g!"
410 FOR d=1 TO 100:NEXT d:HOME:FOR d=1 TO 100:NEXT d:N
EXT i
520 INPUT "CHEF ";z$:IF z$="" THEN 520
530 GOSUB 7000:fl=0:FOR x=1 TO 5:IF ch$(x)=z$ THEN fl=
x
580 z$=t$:GOSUB 7000:t$=z$:IF t$=ch$(th) THEN 660
650 PRINT:r$="(REMEMBER: THE THIEF WILL CHANGE.)":GOSU
B 3010:GOSUB 4000:GOTO 130
2010 z=c+1-w*t*2:cs=cs+c:IF c=63 THEN z=32
4010 GET t$:RETURN
7000 g$="":FOR x=1 TO LEN(z$):g$=g$+CHR$(ASC(MID$(z$,x
,1))-32*(MID$(z$,x,1)>"Z")):NEXT x:z$=g$:RETURN

```

### Apple/Recipe for Disaster

Use the base version with the following alterations: Omit CLEAR 1000: from the beginning of line 10. In line 20, change WL=64 to WL=40. In lines 50, 100, 690, and 3000, change CLS to HOME. In lines 180 and 190, change RND(5) to INT(RND(1)\*5)+1. Change lines 110, 150-170, 370, 520,

## PUZZLE

```
170 PNT(T)=X:NEXT X
240 D$="":INPUT D$:IF D$="" THEN 240
380 FOR I=1 TO 5:POKE 36878,15:POKE 36875,180:FOR D=1
TO 500:NEXT D
390 POKE 36878,0:FOR D=1 TO 500:NEXT D:NEXT I:GOTO 210
400 FOR I=1 TO 5:FOR Y=1 TO 30:POKE 36878,15:POKE 3687
5,240:FOR D=1 TO 10:NEXT D
410 POKE 36878,0:NEXT Y:FOR D=1 TO 800:NEXT D:NEXT I
520 Z$="":INPUT "CHEF";Z$:IF Z$="" THEN 520
570 GOSUB 3000:PRINT:T$="":INPUT T$:IF T$="" THEN 560
650 PRINT:R$="(REMEMBER: THE THIEF WILL CHANGE.):":GOSU
B 3010:GOSUB 4000:GOTO 130
4000 PRINT:PRINT:PRINT:R$="PLEASE PRESS ANY KEY.":GOSU
B 1000
4010 GET T$:IF T$="" THEN 4010
```

## SOLUTION TO LAST MONTH'S PUZZLE

To figure out which six props make up the invention, and in which order they should be assembled, look at the first letter in the words of the instructions. For example, the instructions for the tank (prop #12) read: "OVERTURN NEARBY EMPTY TANK." The first letters of the first three words spell "one," thus the tank is the first prop in the invention. The instructions for prop #15 spell out "two"; prop #4 "three"; prop #9 "four"; prop #7 "five"; and prop #2 "six." Therefore, you should type 12.15.4.9.7.2 into your computer to see a working version of the invention (which, by the way, is a popcorn popper!).

# PROGRAMMING P.S.

## Corrections to Previous Months' Programs—and Enhancements Suggested by our Readers

### CORRECTIONS . . .

Experienced programmers know how difficult it is to produce a program that is 100 percent free of "bugs"—and how many published programs contain errors. Our goal each month is to give you only perfect programs. However, programs we publish must go through many phases of development in a very short time, so errors could creep in at any stage, despite our constant testing. We are upset when this happens, because our hard work has gone to waste and because of all the trouble this causes you. We apologize.

We're constantly improving the process of developing programs. Meanwhile, we also retest programs after they have appeared in print. Here are errors we've found.

#### **ADAM/Top Secret** (April, pages 83, 88)

Some extra commas crept into lines 820, 840, and 860. Here's how those lines should appear:

```
820 HLIN a, b AT c
840 READ a,b,c
860 VLIN a,b AT c
```

#### **Apple/Proto and the Dormirians** (April, page 106)

The modification instructions for the Apple did not specify that the base version was the IBM PCjr program (given first in the section).

#### **Apple/Mystery Manor** (March, page 109)

The list of modifications should have stated that you must change DELAY to DLAY in line 380:

```
380 FOR DLAY=1 TO 3000:NEXT DLAY:GOTO 130
```

#### **Atari/Crossing Paths** (January, pages 124, 125)

Line 230 is correct as it appears on page 124; you should not use line 230 from the base version.

#### **Atari/Turkey Panic** (November, pages 116, 117, 120)

We regret that the Apple version of this program was printed under the Atari head as well as under the Apple head. If you would like a copy of the Atari translation of *Turkey Panic*, send a self-addressed, stamped envelope to Karen Cohen, "Atari Turkey Panic," FAMILY COMPUTING, 730 Broadway, New York, NY 10003.

#### **IBM PC with advanced BASIC and PCjr with cassette BASIC/Top Secret** (April, page 92)

When this program is run on the PCjr, Cartridge BASIC, not Cassette BASIC, is required.

#### **IBM PC/Proto and the Dormirians** (April, page 106)

The modification instructions for the IBM PC version did not specify that the base version was the PCjr program (given first in the section).

#### **IBM PCjr w/Cartridge BASIC/Proto and the Dormirians** (April, pages 98, 100)

Since the PCjr has an ENTER key rather than a RETURN key, you may want to change <RETURN> to <ENTER> in line 370.

#### **TI-99/4A/Decision Maker** (January, page 120)

The modification instructions tell you to change line 790 of the base version and add a new line 800. But the program also requires line 800 of the base version. To solve this problem, follow the modification instructions as published and then add a new line 820:

```
820 NEXT IC
```

#### **TI-99/4A/Cheerleader** (November, page 112)

This program requires TI Extended BASIC.

#### **Timex Sinclair 1000 & 1500/Egg Hunt** (April, page 82)

Since there is no exclamation mark on the 1000 and 1500 keyboards, you will have to substitute periods for the exclamation marks in lines 240, 420, 570, and 580.

#### **Timex Sinclair 1000 w/16K RAM Pack/Decision Maker** (January, pages 118, 120)

Lines 470 and 590 are incorrect as published. They should read as follows:

```
470 LET TF=C-1
590 IF R(C)<1 OR R(C)>10 THEN GOTO 580
```

#### **Timex Sinclair 2068/Mystery Manor** (March, pages 108, 109)

Line 150 is missing a quotation mark. It should read as follows:

```
150 LET N$="YOU'RE IN LOCATION #"+STR$(R):GOSUB 1000:LE
T N$="DATE: "+D$(VAL(R$(R,1 TO 2))):GOSUB 1000
```

Also, the second 10 in line 330 should be changed to 9:

```
330 FOR I=1 TO 10:PRINT S(I);:LET FLAG=FLAG+(S(I)<>INT
(SQR(G(I)-9))):NEXT I:PRINT
```

#### **TRS-80 Color Computer & Models III & 4/Proto and the Dormirians** (April, pages 106, 108)

The modification instructions for the TRS-80 versions did not specify that the base version was the IBM PCjr program (given first in the section).

## PROGRAMMING P.S.

### **TRS-80 Model III/Type Test** (January, page 127)

Due to an editing error, this program does not give you accurate results if you use it more than once, unless you restart the program each time. To solve this problem, simply add **CLEAR:** to the beginning of line 130.

We apologize to the author and to our readers for this mistake.

### **VIC-20/Mystery Manor** (March, page 108)

Stewart Buchanan of Wichita, KS, noticed that the modification instructions for the VIC-20 version were confusing. They should have read "Use the Commodore 64 version, but replace the number 40 with 22 in lines 2000 and 2010."

## **... AND ENHANCEMENTS**

Once you've typed in and enjoyed one or more of our programs, we hope you'll try experimenting with them (remember, nothing you type in can harm your computer!). It's a great way to learn more about programming, and in the process, you might produce a version that you like even more.

Many of our readers have sent us success stories. One reader added sound to make a game more enjoyable. Another suggested slowing down a game so her 83-year-old mother could play it. We'll publish the best of these changes in this column.

We also encourage you to try translating our programs for other computers—especially the reader-written programs, which appear each month for only one computer. If you're willing, we'll publish your name and address here so that other owners of your brand of computer can write you (with a stamped, self-addressed envelope, of course) for copies of your translation.

### **ADAM/Top Secret** (April, pages 83, 88)

You can display the elapsed time in a more logical place by changing line 720 to read  
720 VTAB 5

### **Commodore 64/New Year's Eve** (January, pages 98, 104)

Commodore owners Jim and Skip McCutcheon of Dayton, OH, write: "New Year's Eve is a great program. Thanks! Musically, however, the Auld Lang Syne tune drags in two places." They've changed the number 85 to 63 wherever it appears in the DATA statements (twice in line 5100 and twice in line 5130). Alternatively, they suggest changing the rhythm to triplets by replacing the last 126 in line 5090 and the first 126 in line 5130 with 85. "Either way will keep the beat going smoothly."

Thanks, Jim and Skip! We have also received numerous requests for a 1985 version of the program. We welcome submissions from readers for all computers we cover to help us get a head start on next year.

### **IBM PC/Proto and the Dormirians** (April, page 106)

When running the program, if you hold down a key too long the program may think you pressed the same key several times. To avoid this problem, you can add the following to the beginning of line 200:

```
200 DEF SEG=0:POKE 1050,PEEK(1052):
```

### **IBM PCjr w/Cartridge BASIC/Proto and the Dormirians** (April, pages 98, 100)

When running the program, if you hold down a key too long the program may think you pressed the same key several times. To avoid this problem, you can add the following to the beginning of line 200:

```
200 DEF SEG=0:POKE 1050,PEEK(1052):
```

### **TI-99/4A w/TI Extended BASIC/Mystery Manor** (March, pages 106, 108)

In line 80, the 0 (letter "O") in READ ROOM\$(I,0) should have been a zero. However, since the value of the variable 0 is zero, the program works properly as printed.

### **TI-99/4A w/TI Extended BASIC/Ski Trek** (February, pages 100, 102)

This program can easily be modified so that it doesn't require TI Extended BASIC. Just replace lines 1010, 1020, and 2100 with

```
1010 IF M<>66 THEN 1020  
1020 IF M<>78 THEN 1030  
2100 IF S<=H THEN 2120
```

and add the following lines:

```
1015 L=L-1  
1025 L=L+1  
2105 H=S
```

Our thanks go to Travis Zapp of Hanover, PA; George Kuc of Arcadia, CA; Manuel Ferreira of Methuen, MA; Richard L. Krieger of Eielson AFB, AK; and Kevin Dowell of Oregon City, OR, for pointing this out.

Kevin Dowell also found that you can transform the trees lining the downhill route into flags by changing line 90 to read

```
90 CALL CHAR(96,"007E7E7E424242")
```

William L. Plank of Rockville, CT, had an additional twist. He found *Ski Trek* to be "an excellent program for concentration. I find, however, that adding a little sound will greatly increase the interest in this program." He produces sound effects by adding just three lines:

```
2035 FOR J=0 TO 16  
2051 CALL SOUND(-99,-7,J,120,J,131,J)  
2052 NEXT J
```

### **Timex Sinclair 1000 & 1500/Egg Hunt** (April, page 82)

For a better screen display, try changing lines 400 and 460 to read as follows:

```
400 IF A$ = C$(R, TO LEN A$) THEN GOTO 450  
460 FOR T = 1 TO 46
```

### **TRS-80 Models I & III/Personal Valentine** (February, pages 92, 94)

You can make the name of your beloved stay on the screen longer if you delete line 640, add a new line 690:

```
690 PRINT @ 351+Q/2,FS;
```

and change line 780 to read

```
780 GOTO 690
```

### **VIC-20/Jack-o'-Lantern** (October, pages 66, 67)

Dale Waymire of Greenville, OH, modified this program to slow down the drawing of the pumpkin and to make the program run over and over. He did it by adding three lines:

```
35 FOR F=1 TO 500:NEXT F  
105 FOR F=1 TO 500:NEXT F  
260 GOTO 10
```

and changing lines 10 and 170 to read as follows:

```
10 PRINT CHR$(147):RESTORE  
170 FOR F=1 TO 2000:NEXT F
```

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