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JANUARY 1985

VOLUME 3
NUMBER 1

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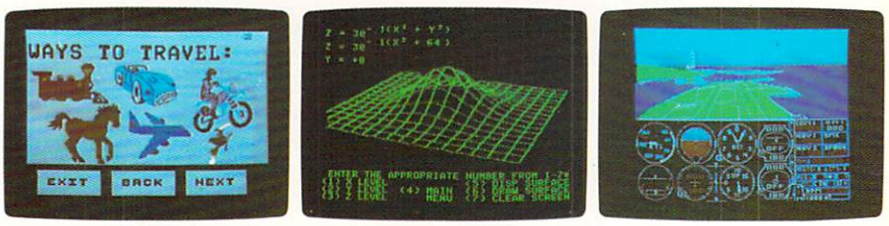


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JANUARY
1985

VOLUME 3
NUMBER 1

# FAMILY COMPUTING™

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See details on page 87.

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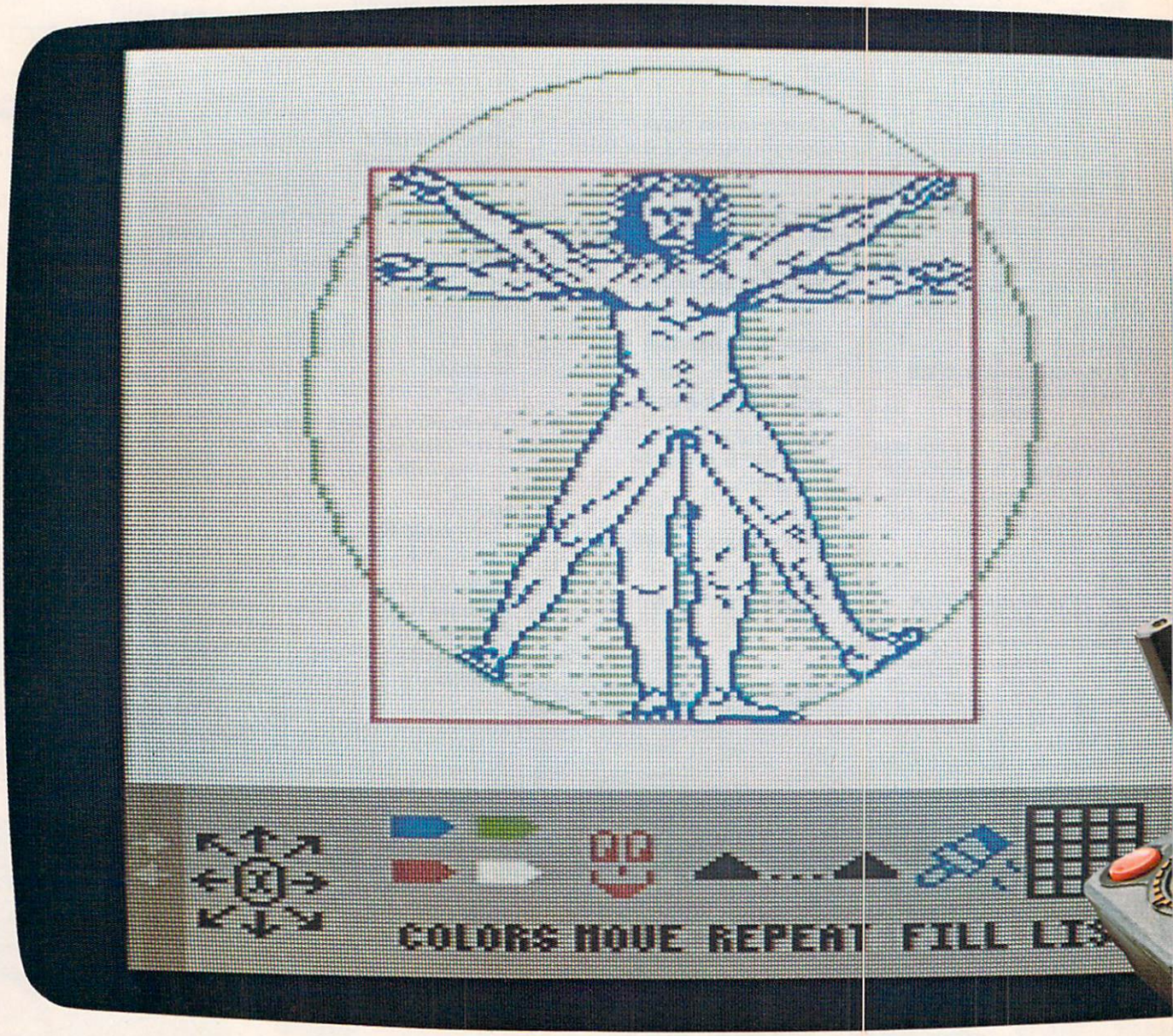
Dear Chris, Greg, and Scott:
Thank you for giving me finger paints. I like this present because I can make pictures. I opened it on Christmas Eve at Grandma and Grandpa Hanley's house. I was happy. I said, "Look, Finger Paints! I love them!" I'm going to paint a big picture and send it to you. Thank you again for the finger paints.

Love always, Betsy

# Computer prog
# da Vinci, Shakesp
# Al Capp would ha



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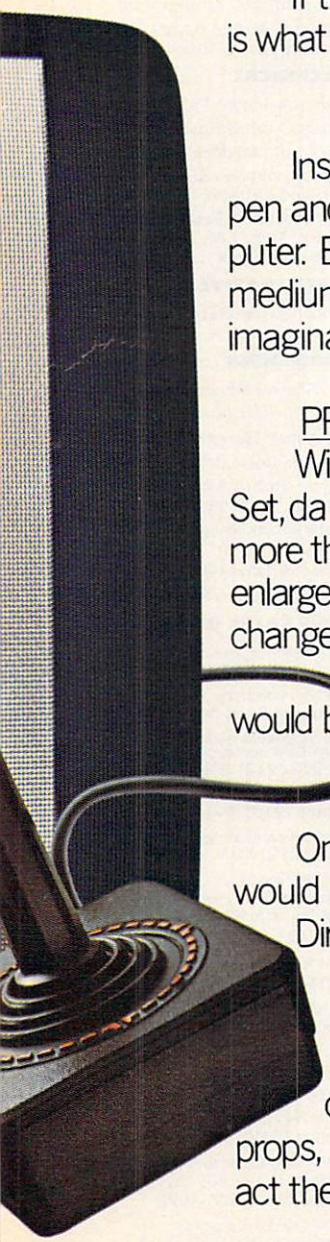

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# EDITOR'S NOTE

## ARE COMPUTERS GOING AWAY? Taking Stock and Pontificating for the New Year

Here it is the beginning of a new year and I'm already tired of something. What now? The newly fashionable doomsday articles about the use of computers in the home. "STOP!" I want to scream. "Let's take a look at the state of things."

We've all heard about the "shakeout," the demise of some computer manufacturers, software firms, and magazines. And we know that early predictions that computers would be installed in 30 million households by the end of this decade were overly optimistic. But we also know that such projections were and are pure speculation.

Much of the romance of the computer industry was that anyone could be, and was, successful. Multimillion dollar corporations were begun in basements and backyards. Based on dreams of cashing in on the numbers, part of the computer industry revved its motors and pulled out of the garage too quickly.

Despite the shortfall of the predictions, we know there were more computers in homes last year than the year before, that there will be more this year than last, and more next year than this. They're not going to go away!

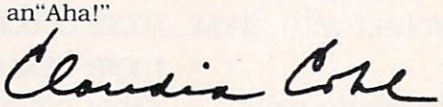
Knowing this doesn't take much insight. But that's not all we know. We know that what we've been telling people in the pages of FAMILY COMPUTING remains true: There's no use buying a computer if you don't know what you want to do with it. And we know, too, that most of our readers bought their computers to use for learning.

Families with school-age children are going to continue buying and using computers, some for the first time, some upgrading their original purchase, and some adding a second, or third, or even fourth computer to the household. School-related purchases and use will increase as the use of computers in school increases and improves beyond current levels.

We're pioneers in a field still in its infancy. It's important not to lose sight of that. There was a day when few people thought they'd be the owners of even one electric lamp, one telephone, or one television set.

Computers are going to be more and more a natural part of our lives. We will continue to encounter them with greater frequency at work, at school, in shops, airports, restaurants, and other people's homes. They will be built into our automobiles, be commonplace in most hotels for use by traveling business executives, and become a convenience we can't live without.

Meanwhile, as we toddle along into this new age, we'll continue to find the number of computer owners growing. Here, at FAMILY COMPUTING, we resolve to keep fine-tuning the magazine to better meet your needs. We'll continue to help you put your computer to work on your finances, to sort through the forest of software and find the best programs for you to buy, to introduce you to the latest hardware, and to help you increase your knowledge, skills, and satisfaction in putting your computer to good use. Our goal remains the same. We try always to elicit one important response from our readers. We all know about the cook who wants guests to end each meal with a burp. Our hope is that you finish each issue of FAMILY COMPUTING with an "Aha!"



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730 Broadway, New York, NY 10003
(212) 505-3580

EDITOR-IN-CHIEF: Claudia Cohl
DESIGN DIRECTOR: Vincent Ceci

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REVIEWS EDITOR: John D. Wallace Jr.
COPY AND RESEARCH CHIEF: Roxane Farmanfarmaian
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# LETTERS

### A 1985 CELEBRATION

In the January 1984 issue of your fine magazine, I typed out the *New Year's Eve* program on my VIC-20. The program gives the year 1984 and is set to start at midnight. I was wondering if anyone could show me how to change the 4 in that program to a 5 so I could use it again this coming New Year's Eve.

A.F. SKATTEBOL
*Prince Rupert, British Columbia*

EDITOR'S NOTE: *We've done it for you. Check out the 1985 version of* New Year's Eve *in our December 1984 issue.*

### QUEST FOR CAREER

I love your magazine; you have lots of great articles and programs. The first thing I do when I buy your magazine is type in the programs. I have a Commodore SX-64. But one thing I want to know is what kind of careers there are in the computer field. I learned to program on a Franklin but adapted to the Commodore.

MICHAEL CALLAHAN, *age 14*
*Holmdel, New Jersey*

EDITOR'S NOTE: *Check out "Computers and Careers" in the April 1984 issue of* FAMILY COMPUTING. *The article will tell you what jobs are available, how much they pay, and what education or training is required. It sounds like you have a head start. Good luck.*

### A NEAR-PERFECT BLEND

I feel that I must preface the following remarks by saying how much my 12-year-old son and I enjoy reading your magazine each month. It seems to me that you have achieved a near-perfect blend of technical data with easy-to-read product reviews, etc., so that both of us are stimulated by each new issue.

The beginner programs that you publish each month look as though they would be a lot of fun to try, but unfortunately, we own a Kaypro computer and for some reason you have chosen not to include programs for us. Since Kaypro systems are selling at a rather phenomenal rate, I am very curious as to why you seem to be ignoring us.

JOHN MACFALL
*Cardiff, California*

EDITOR'S NOTE: *Unfortunately, less than 1 percent of our readers own CP/M machines. But, that doesn't mean we have abandoned the computer. Although the Kaypro is not a regular part of The Programmer, we will occasionally publish programs for it. In addition, check out the chart in the "Buyer's Guide to Computer Systems" (pages 64–65) December 1984 issue, for more information on the Kaypro 2X.*

### FINDING COMFORT IN COMPUTING

I was very uncomfortable with the idea of using a home computer at first. I bought a Timex Sinclair 1000 to start, and it is beginning to get easier to operate. The magazine is very enjoyable to read, and the articles are very informative for a beginner like me. Is it possible to get more programs in Timex BASIC?

DANA LEONARD
*Cedar Rapids, Iowa*

EDITOR'S NOTE: *We will continue to translate as many programs as possible for the TS 1000.*

### A DISCONTENTED READER

I have purchased your magazine many times from the bookstore and have found that you have made no attempt to improve your articles and programs. I am aware that I get your magazine for 32 percent off the newsstand price, but why should I buy it if your reviews are contradictory? In your June review of the ADAM computer (which I own), you said that "the printer is of flimsy construction," and then you said that "the ADAM is best considered as a very reasonably priced word-processing system." Which statement is correct?

I also have noted that your programs contain numerous mistakes and are very boring . . . I mean, who wants to know about a *Father's Day Card* program? I suggest that you get your facts straight and publish more interesting programs so your readers can get their money's worth.

IQWAL MANGAT
*Hamilton, Ontario*

EDITOR'S NOTE: *We don't believe the two ADAM statements are contradictory. You would be hard-pressed to put together a total word-processing system at a more reasonable price. But, if you were willing to spend more money, you certainly could find a sturdier printer. As for the programs we offer, we are sorry you do not enjoy them. Responses from other readers indicate that you are in the minority, but you might watch for some of our upcoming financial and data-base programs.*

### PROGRAMMING MADE EASIER

I have enjoyed your magazine. However, being a novice at programming, I am often confused when typing in the beginner programs in the magazine. I find it very difficult in some cases to distinguish between zero (0) and the alphabet letter (O) in some programs. Is this a problem because I am a novice? Can you give me some advice?

GERALD L. THOMAS
*Youngstown, Ohio*

EDITOR'S NOTE: *We'll do better than give you advice. Take a look at our programming section; we've given you slashed zeros. This should make typing in programs a lot easier. We apologize for the delay in bringing you this helpful feature, but a special part had to be ordered to allow our printers to produce the slashed zero character.*

### WHICH ATARI?

Could you please answer a question for me about the magazine? Every time I find a good program that I like to do, it doesn't work. What Atari programs does the word Atari stand for in The Programmer? I have an Atari 400.

PAMELA HAGIHARA
*North Hollywood, California*

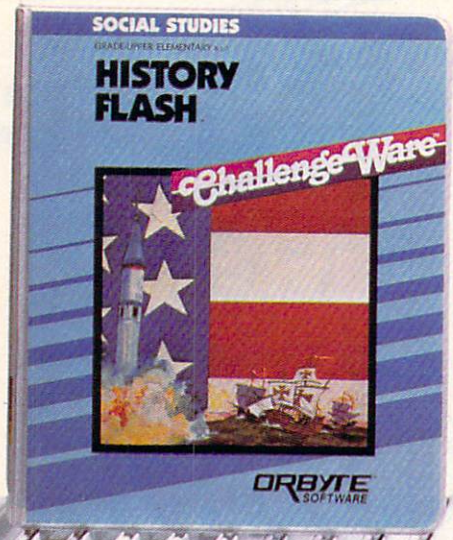
EDITOR'S NOTE: *The programs that fall under the Atari heading in The Programmer should work for all Atari computers, except when otherwise specified. Most of the programs should run on your Atari 400.*

### STAY TUNED

*Watch for the* FAMILY COMPUTING *TV show on the Lifetime Television Network. The show presents 30 minutes of product demonstrations, on-location computer applications, and helpful tips to make computing a bit easier for everyone in the family. There are two new shows presented each week. Check your local listings for the time and channel.*

# Who Invented the Submarine?

**Who was the only president to serve more than 3 terms?**
**The purchase of what state was known as Seward's Folly?**

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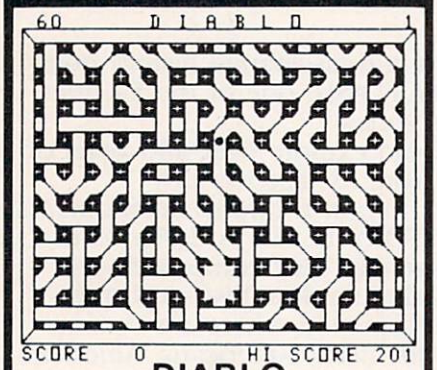


**DIABLO**

With 116 movable panels, this game demands strategy, planning & decisive joystick control of the ever advancing ball to keep it from rolling off the board. Every board is different. **DIABLO** uses the full color and sprite capabilities of the **ADAM.**

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# BEHIND THE SCREENS

## PEOPLE, NEWS, AND TRENDS

### A Novel Event

Recently, the people of Seattle wrote a detective novel. How they did it was no mystery: They used two Eagle PCs hooked to terminals in an exhibit at a major arts festival.

The party responsible was Invisible Seattle, a group of actors, dancers, artists, and writers. Members of the group dressed as "literary workers" in hardhats and overalls, and, carrying tape recorders, roamed the town, "questioning" citizens about a mysterious (fictional) disappearance. A photo had been found, even a diary. Who was it? Whodunnit? Why?

People were invited to give their answers by writing in notebooks that had been placed in fast food shops all around town or by speaking into the tape recorders the "literary workers" carried. Invisible Seattle staffers typed the notes into the computer which printed out a new chapter every two hours. These were tacked to a wall at the festival, and the public was encouraged to make changes and suggestions.

Afterwards, responses were chosen randomly by the computer, and Invisible Seattle edited them into a coherent, 15-chapter book called *The Visible Invisible*. You can get an abridged version, also called *The Visible Invisible*, for $3 from Function Industries, 2140 9th Ave. W, Apt. #1, Seattle, WA 98119.

Next year, the group plans a nationwide on-line encore, "Invisible America." Meanwhile, its literary bulletin board, In.S.Omnia [(206) 329-3099] runs several literary works-in-progress to which anyone with a computer and modem can contribute.—ROXANE FARMANFARMAIAN

### Real Estate in Real Time

Real estate agents are old hats at networking—the art of making contacts. They've been swapping problems and prospects for years. Now they can do it in "real time," electronically through Charles Huggins' Exchange Network, a new electronic information and telecommunications service specializing in real estate marketing.

With a computer and modem, the network lets members buy, sell, exchange, finance, and transfer real estate across the country. Members can arrange mortgages, set up escrows, and transfer titles via the network. It also features electronic mail, brainstorming, and consulting sessions, as well as access to legal, accounting, and tax advice.

Huggins, a long-time champion of networking as a way of marketing real estate, wants the new network eventually to include real estate traders, investors, builders, developers, and mortgage brokers. Membership in the Exchange currently costs $4,000 for those who already have computers. It operates through GE Information Services.

"As business people, our time is valuable," says Huggins. "The network lets us concentrate more on "problem solving" and less on selling because we can access and provide information to our customers."

Martin Reder, of Reder Investments in Santa Barbara, California, described a network transaction that involved sending drafts of an agreement to a broker from Boise, Idaho, who was temporarily located in Billings, Montana, about a parcel of land in Los Angeles. Now, that's covering ground. —ROBIN RASKIN

ILLUSTRATIONS BY HOLLY KOWITT

# Compose music, even if you can't read a note.

With the Bank Street MusicWriter by Glen Clancy, you compose by computer.

It's so simple, people who don't know a pianissimo from a pizza can start composing in less than an hour.

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In fact, MusicWriter has everything you need to compose a serious symphony. It has repeats, endings and triplets. It has articulation and transposition. It can shape tones, store 75 staffs, and play up to 4 voices.

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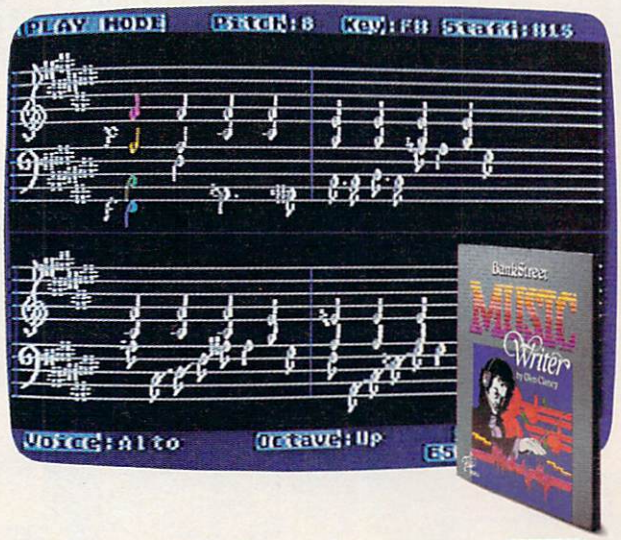


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# HOME-SCHOOL CONNECTION

## HIGH-TECH FUND-RAISING
## Ask Your Computer to Join the Committee

**BY ROBIN RASKIN**

Amidst the clamor of the Marble Hill Nursery School's Winter Fair, 11-year-old Patricia O'Donnell plunked down a dollar and seated herself at the computer. DEAR SANTA, she mouthed the words as she hunted and pecked on the keyboard, I WANT A CABBAGE PATCH DOLL AND A NEW DRESS. Triumphantly she pressed ENTER. As the strains of "Jingle Bells" emanated from the machine, Patricia saw her Christmas wish list take the shape of a computer printout.

Children and parents clustered around our Computer-Ade stand—a computer booth selling hands-on fun—some hardly able to contain their impatience, others with a distinctly quizzical look in their eyes. Many who paid $1 that day to sit at the keyboard—tots and adults alike—had never used a computer before, and approached it warily. But by the time their letters rolled off the printer, they felt like pros. As the day drew to a close, not only had the booth succeeded in somewhat demystifying the computer, but it had earned its keep: a hefty pile of dollars for the Marble Hill Nursery in the Bronx, New York.

Fund-raising events often evoke stereotyped associations—visions of chocolate-chip cookie overdoses, tables of flea-market goods, and kids with face paint smeared on their clothes. Whether for the school, church, Scout group, or the town library, fund-raisers often are predictably tedious.

"Fund-raising is the job nobody wants!" groans Renee Bruen, co-chairman of the fund-raising committee for Marble Hill. "Thankfully, we have some parents who donate their time and talents to making fund-raising successful."

We discovered that bringing our computer to our daughter's school fund-raisers helped remedy some of the doldrums. Selling homemade computer activities: 1. Adds a splash of hi-tech to the traditional affair; 2. Introduces preschoolers to the computer in a festive setting; 3. Sparks some lively "computers in education" discussions; and, last but certainly not least, 4. Raises funds.

The Computer-Ade stand at the Marble Hill Nursery School fund-raiser.

"Having a computerized booth was a new and very exciting thing for us," says Karen Worchel, the school's administrative director. "It made our fair a little different from all the others."

### PARENTS TO THE RESCUE

Marble Hill Nursery School is a parent cooperative. It has a "we-made-it-ourselves" look and a creative/salvage feel. Primarily as a result of parental support, it has succeeded in weathering all sorts of financial and organizational crises. Parents have repaired the furniture, sewn the smocks, served as classroom attendants, and raised the funds. "Without the parents' ingenious fund-raising, we couldn't exist," says Mickey Axelbank, the nursery's energetic director.

"We have at least three major [fund-raising] events a year," reports Karen Worchel. "Parents donate their talents and energies in lots of ways. One mother got hold of a button-making machine and made personalized buttons. One father rented movies. Another parent took photos of the kids in Halloween costume."

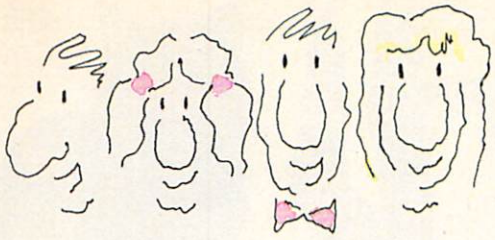
### HOW ONE COMPUTER PARENT CAN HELP

With my oldest child beginning nursery school, I wanted our first school experience to be participatory. I serve on the publicity committee by writing an occasional story for the local paper. I entertain the students by twanging out nursery songs on my guitar. But what about my fund-raising capabilities? I hate cooking, can't deal with a hammer and nail, and refuse to pester my friends with candy-bar sales and raffles. I do have a computer, though, and it's easily transportable.

If you're fortunate enough to have a computer, you may feel an obligation to offer some "computing time" to those who don't. You can (as I have) donate the computer's more mundane services, like word processing or printing mailing lists, but I think it's fun to do something a bit more exotic. A Computer-Ade stand is a terrific way to make money for your organization and have participants enjoy computer-age fun. →

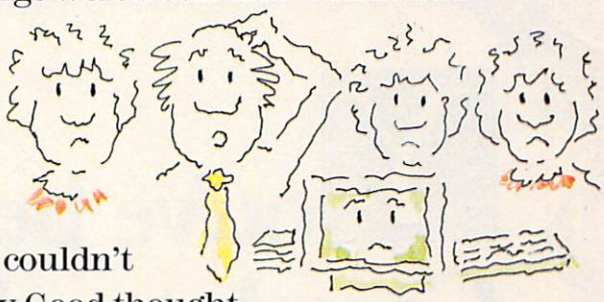
PHOTOGRAPH BY IDA WYMAN

ROBIN RASKIN *is a contributing editor for* FAMILY COMPUTING.

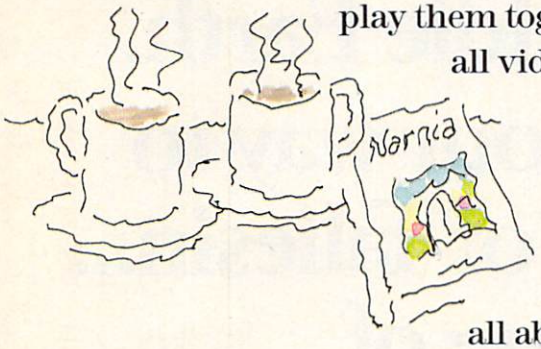


## How the Nice Family Helped Their Good Neighbors

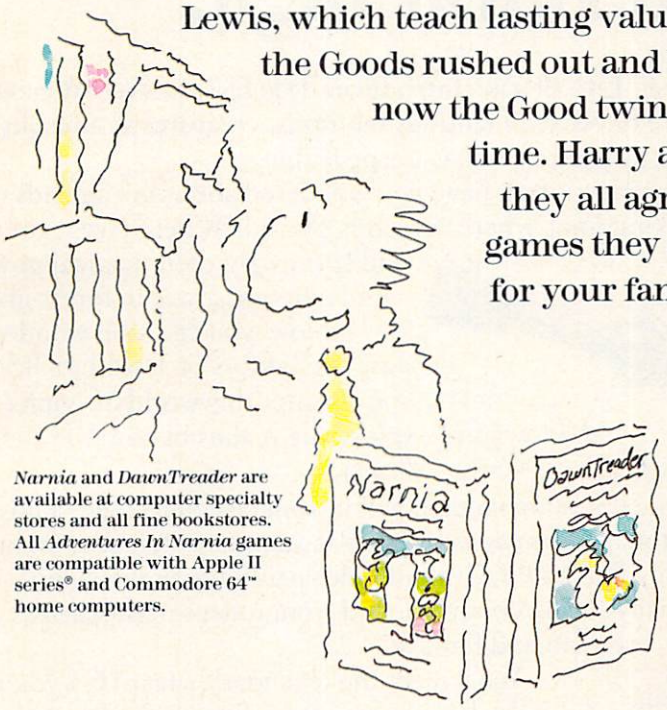
It was after Christmas. The Nice family was still enjoying all the wonderful presents they received from one another. But next door, at the home of their Good neighbors, things weren't all that wonderful.



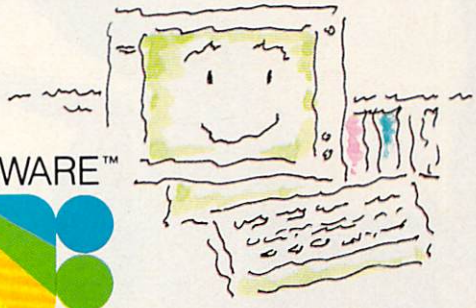
● You see, Mr. and Mrs. Good (Harry and Betty) had given a new home computer to their twins (Kim and Kerry). It was a very good gift, but they didn't know what to do with it. Harry Good thought video games were bad because the twins couldn't play them together. Betty Good thought all video games were too violent. And the Good twins thought anything *but* games were boring! ●




Then, one day, Betty Good was talking to Janet Nice over morning coffee. "We have this wonderful computer, and nothing to do with it!" moaned Betty. Janet just smiled, and told Betty all about *Adventures In Narnia*, a new series of LifeWare™ computer games from Word Publishing. These games are the first ones the whole family can share. And they're based on the famous stories of Narnia by C.S. Lewis, which teach lasting values good for *everyone* to learn. ● Well, the Goods rushed out and bought *Narnia* and *DawnTreader*. And now the Good twins play with their new computer all the time. Harry and Betty Good play with them, too. And they all agree *Adventures In Narnia* are the best games they could have. ● Maybe they'd be good for your family, too!




*Narnia* and *DawnTreader* are available at computer specialty stores and all fine bookstores. All *Adventures In Narnia* games are compatible with Apple II series® and Commodore 64™ home computers.



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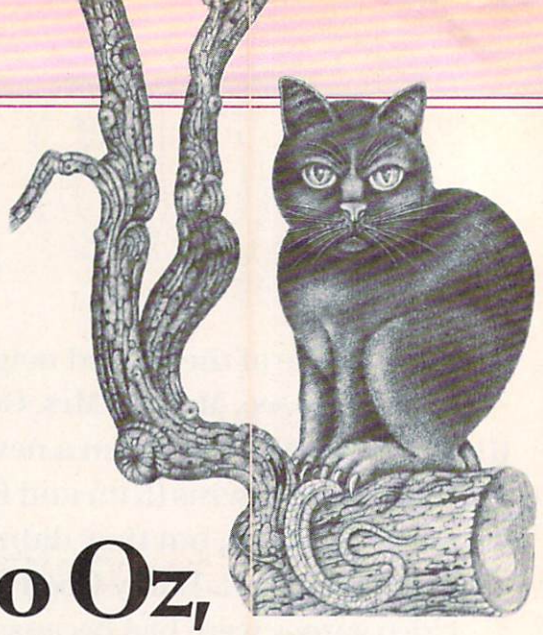

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# HOME-SCHOOL CONNECTION

I approached the school administration to volunteer my computer for a moneymaking booth at the Winter Fair. "Do you think the kids would harm the equipment?" asked one teacher. "How will the kids know what to do? Is it appropriate for preschool children?" questioned another. I was a bit surprised computers didn't receive a de facto welcome. Not quite as confident as I'd been when I started out, I said I thought I could create a program that any child, any age, could use (with varying degrees of assistance), and that I was sure the equipment could survive the onslaught.

Since the Winter Fair occurred just before the Christmas/Chanukah holidays, I went home and outlined a program called *Letter to Santa Claus*. My husband, who is the programmer in the family, brushed up on his BASIC and began to create our fund-raising software.

In a nutshell, the program asked the children to list the presents they wanted from Santa. It then incorporated each list into a computer letter addressed to Santa and signed by the child. The computer also asked the child to join in a chorus of "Jingle Bells." The printout used large block letters for the child's name and age and had little Christmas trees arranged in a border. We pasted each letter onto heavy construction paper both for effect and to enhance longevity.

## SEEING IS BELIEVING

Observing the children verified all I'd been reading. Kids take to computers with a gusto that's delightful. For the most part, they didn't ask "What does the computer do?" or "How does it do it?" With children too young to type, I held their pointer finger and we pressed the keys together. If they were extremely "people shy," I encouraged their extremely "computer shy" parents to help them out. Even the youngest recognized their own names on the printout, and most parents intuitively responded by reading the letter aloud to their children.

The program gave the children a chance to express their creativity. They could pit themselves against a complex machine and demonstrate mastery. They could make mistakes and things still turned out fine (thanks to DELETE and RESET keys).

The bottom line: If you have a computer, get it into your school, club, or group. Too many adults and children think of a computer as either a financial manager or a snazzy game machine. It's good press for the computer to get out and do some charitable work.

The computer is versatile; it can turn out cards, wrapping paper, decorative labels, and letters (*see accompanying list of* FAMILY COMPUTING *programs that can be easily adapted to your fund-raiser's particulars*). Depending on the time of year, a Computer-Ade stand could be tailored to print out personalized Mother's Day or Father's Day cards, Valentines, Easter cards, etc.

Another fund-raising activity at Marble Hill School is a service auction. Parents donate a skill or service and other parents bid on purchasing it. Amidst the auction of gourmet dinners, calligraphy, and pressed flowers was an unusual service. Peter Wayne, a doctor by vocation and computerphile by avocation, volunteered to give three hours of computer instruction on any machine for any level student. Two individuals purchased his services for $30 apiece. Maybe there's room in your fund-raising schedule for a similar service auction.

"The school raises about $1,300 at each [of the year's three] fund-rais-

## TIPS FOR SUCCESSFUL FUND-RAISING

**1. Write your own program**

You cannot take *Pac-Man* and charge 25 cents a play, since that is a breach of copyright, even if the proceeds go to your favorite charity. The software must be written by you. Or, obtain permission to use a friend's programs or ones from magazines or books.

**2. Make it non-age-specific**

We had kids ages 2–82 using the program. The little ones need help typing, but everyone else should be able to answer the computer's queries. Make the program general enough so no one feels excluded (e.g. program the computer to ask WHAT IS YOUR FAVORITE MUSIC? rather than WHAT IS YOUR FAVORITE ROCK BAND?).

**3. Assess customers' abilities**

Can they type? Can they understand a question? Will they feel awkward and shy about your taking their finger and guiding it? Do they seem uneasy? The successful Computer-Ade stand needs an operator who is both a showperson and a computerperson.

**4. Cover disk drives, tape all wires out of sight and reach**

There are few more inviting sites for pudgy little hands than a blinking light and the drive mechanism. We taped a cute little face over each drive's door to divert attention from the mechanism itself.

**5. Make things colorful**

We painted large, bright banners and displayed them around our booth. Magic shows, hat-decorating tables, and necklace-lacing events force you to think about competitive marketing. Computers are fairly drab without some sprucing up.

**6. Printouts as souvenirs**

Kids like taking home booty. My computerized fund-raising activities always have the take-home aspect as opposed to a game where "the play is the thing." Parents also like to see their dollars hanging on the wall.

**7. Mount the printouts**

Printouts are flimsy. They will never make it home as souvenirs unless they are mounted onto cards or construction paper.

**8. Go for music and graphics**

The wow effect of a simple picture or bar of music is an amazing phenomenon.

**9. Use good judgment**

Some kids will come up with doozies: The famed honesty of children often makes for rather strange responses to what seem very straightforward questions. Keep an eye on what's being typed into the computer to avoid any embarrassment or hard feelings.

**10. Have a RESET button**

Kids have notoriously heavy hands. Ask them to press a key and they often hold it down for 10 key spaces. I'm sure my daughter has come to believe her name is KKKKAAAARRRRIIII, rather than KARI. Instead of hitting ENTER to get to the next line, their deadly touch sends the program forward for eight lines. A RESET button and DELETE key are the Correct-o-Type of the computer program (but watch to ensure they're not hit accidentally).

ers," says Mickey Axelbank. "This year's new outdoor equipment will be purchased with fund-raising monies. [They'll contribute to] salary increases, and we'll be able to buy special supplies we would have to forgo otherwise." Until then, schools and groups like Marble Hill will depend on the resources of parents—hopefully more and more computing parents. FC

## SOME PROGRAMS TO HELP RAISE FUNDS

The following programs, published in previous issues of FAMILY COMPUTING, can be adapted to work well in a carnival atmosphere where participation and take-home graphics are priorities. With a few you must load a second program (called a screen-dump utility) into the computer before you type them in to enable you to make printouts. Most need only minor modifications in their PRINT statements to output to a printer or be tailored to the particular season in which your fund-raiser takes place. Do it yourself if you have some knowledge of BASIC, or ask a programming-savvy friend, or other participant in the fund-raising campaign, to help you out.

These programs can be used "as is," or need simple modification to be tailored to a specific occasion:

*Wrapping Paper*, FC December 1983. Change the motif to hearts, jack-o'-lanterns, flowers, etc. by changing the crosses and stars that form the Christmas tree into another design using any characters you wish from the keyboard. Remember to maintain the same total number of DATA statements.

*Thank-You Note*, FC January 1984. For ideas on how to adapt this, refer to "Playing the Thank-You Note Game" in this issue.

*Disk Label Maker*, FC June 1984. Ideal for making colorful labels for spice jars, file drawers, disks, etc.

The following programs need modification in the PRINT statements or an added screen-dump utility in order to output to the printer:

*Valentine*, FC February 1984.

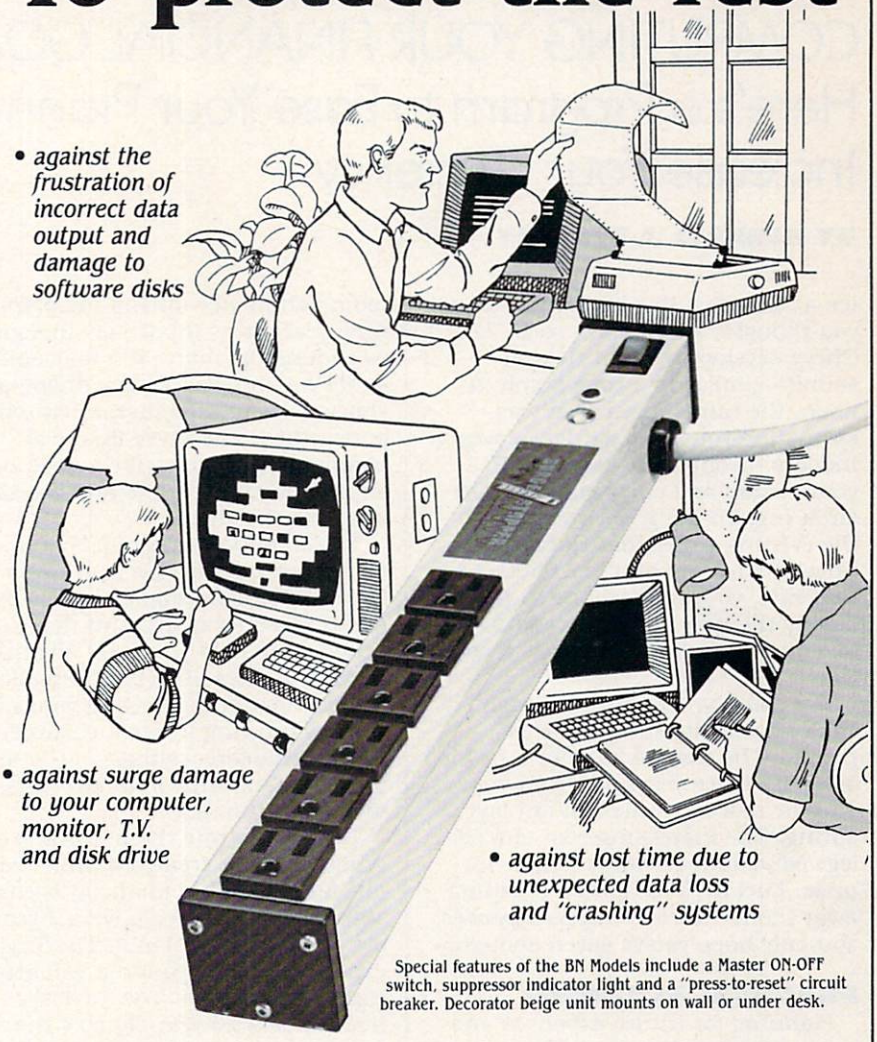
*Kids' Allowance Planner*, FC March 1984. Use unmodified as an interactive attention-getter.

*Mother's Day Card*, FC May 1984.

*Father's Day Card*, FC June 1984.

*Holiday Update*, FC November 1984.


# To protect the rest



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# HOME/MONEY MANAGEMENT

## COMPUTING YOUR FINANCIAL GOALS
## Here's a Program to Ease Your Planning and Increase Your Efficiency

**BY KIMBALL J. BEASLEY**

It's a Saturday, like any other, or so you thought. At 10 a.m., your '72 Chevy develops a slight ticking sound—similar to a time bomb. At noon, the rain shower that was sprinkling your rose garden moves indoors through the new leak in your ceiling and christens your Oriental rug. To top it off, you read in the evening paper that Harvard has raised its tuition another $500. At that rate, your kids will be in their 50s by the time you've saved up enough money to send them to college.

You can't be too upset, though. You've been expecting these expenses. The car was due for a major overhaul three years ago, and your 15-year roof warranty ran out last spring. The increasing cost of a college education certainly isn't a surprise. Luckily, you've been stashing away money to cover these expenses. You only hope you've saved enough.

### PRACTICAL PLANNING

Planning for future expenses and setting financial goals are necessary tasks for all of us. Setting aside money in a special interest-bearing account established for predictable expenses is a sensible way to plan. However, knowing exactly how often and how much to set aside while adjusting for inflation and the account's changing principal plus interest is no easy matter.

People who have a large amount of surplus cash in the bank don't have to worry about tuition, car payments, or major home repairs. They can simply draw from a reservoir of money as needs arise. Those of us with limited financial means, however, must plan our goals carefully. Our planning becomes complicated when the anticipated $10,000 tuition fee, for instance, increases to $20,000 in 10 years because of inflation. At the same time, setting aside too much money during the planning years is as financially unsound as coming up short. You may end up suffering an unnecessary financial shortage or missed investment opportunities. The savvy financial planner will try to strike a good balance between expenses and the savings to cover them.

The computer program that accompanies this article provides a way to establish financial goals by creating a special account deposit schedule to help you meet all anticipated expenses. The program allows for an inflation factor and your account's growing interest earnings. All financial forecasting—particularly when dealing with inflation rates—involves estimations.

To demonstrate the use of the program, we have created a profile of one family and its financial needs. Mary and Joe Taylor have a 7-year-old and 9-year-old child. The Taylors expect that both children will attend expensive colleges. The Taylor's house has a 20-year-old roof that was built to last 25 years. In two years, the Taylors plan to buy a new car. Joe also owes his business partner $5,000, due in seven years.

Of course, the Taylors are concerned about meeting these financial obligations when each comes due. They could put aside, say, $10,000 every year in a bank account earmarked just for these expenses. However, since Joe has a business to finance and basic family needs to cover, his modest income does not allow this large an annual outlay of cash. The Taylors would like to set up a special account which they could tap into for each anticipated expense.

Furthermore, at the beginning of each year, the Taylors want to deposit the minimum amount necessary so that the special account's fluctuating principal and interest balance won't be exhausted at any time during the planning period. It should be completely empty after the last planned expense is paid, however. Finally, the Taylors don't want to worry about adjusting their account for the effect of inflation on future prices.

### THE FIRST STEP

In order to organize their goals, the Taylors fill in a worksheet of anticipated expenses before they sit

EXPENSE WORKSHEET

| END OF YEAR | EXPENSE AMOUNT | SUBJECT TO INFLATION | COMMENTS |
|---|---|---|---|
| 2 | $5,000 | YES | NEW CAR DOWN PAYMENT |
| 3 | $3,000 | YES | CAR PAYMENTS ($250/MONTH) |
| 4 | $3,000 | YES | CAR PAYMENTS |
| 6 | $4,000 | YES | REPLACE ROOF |
| 7 | $5,000 | NO | PAY OFF DEBT TO PARTNER |
| 9 | $5,000 | YES | JAMES' TUITION |
| 10 | $5,000 | YES | JAMES' TUITION |
| 11 | $5,000 | YES | JAMES' TUITION |
| | $5,000 | YES | JOHN'S TUITION |
| 12 | $5,000 | YES | JAMES' TUITION |
| | $5,000 | YES | JOHN'S TUITION |
| 13 | $5,000 | YES | JOHN'S TUITION |
| 14 | $5,000 | YES | JOHN'S TUITION |

KIMBALL J. BEASLEY *is a senior engineer with a consulting firm in Princeton, New Jersey. He has written numerous magazine articles dedicated to practical applications for the personal computer.*

# ANNOUNCING...

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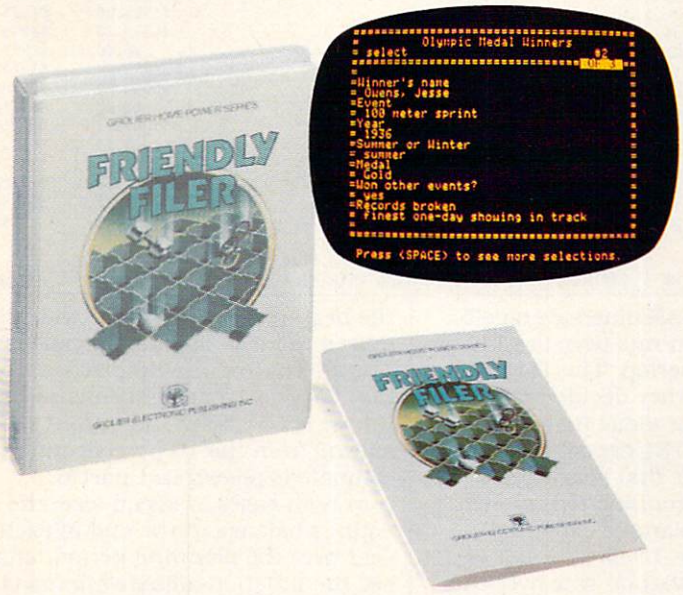


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### OUTPUT WITH 5% INFLATION RATE

| YEAR | MINIMUM DEPOSIT: DEPOSIT AT START OF EACH YEAR | MINIMUM DEPOSIT: LUMP-SUM DEPOSIT AT START OF YEAR 1 | END OF YEAR: EXPENSE PLUS INFLATION | END OF YEAR: ACCOUNT BALANCE |
|---|---|---|---|---|
| 1 | $4779.69 | OR $38731.53 | $0.00 | $5257.66 |
| 2 | $4779.69 | | $5512.50 | $5528.58 |
| 3 | $4779.69 | | $3472.87 | $7866.22 |
| 4 | $4779.69 | | $3646.51 | $10263.99 |
| 5 | $4779.69 | | $0.00 | $16548.05 |
| 6 | $4779.69 | | $5360.38 | $18100.13 |
| 7 | $4779.69 | | $5000.00 | $20167.81 |
| 8 | $4779.69 | | $0.00 | $27442.25 |
| 9 | $4779.69 | | $7756.64 | $27687.49 |
| 10 | $4779.69 | | $8144.47 | $27569.43 |
| 11 | $4779.69 | | $17103.39 | $18480.64 |
| 12 | $4779.69 | | $17958.56 | $7627.80 |
| 13 | $4779.69 | | $9428.24 | $4219.99 |
| 14 | $4779.69 | | $9899.65 | $0.00 |

SPECIAL ACCOUNT INTEREST RATE = 10 %
ESTIMATED AVERAGE INFLATION RATE = 5 %

**Chart A**

### OUTPUT WITH 10% INFLATION RATE

| YEAR | MINIMUM DEPOSIT: DEPOSIT AT START OF EACH YEAR | MINIMUM DEPOSIT: LUMP-SUM DEPOSIT AT START OF YEAR 1 | END OF YEAR: EXPENSE PLUS INFLATION | END OF YEAR: ACCOUNT BALANCE |
|---|---|---|---|---|
| 1 | $7103.94 | OR $57565.79 | $0.00 | $7814.33 |
| 2 | $7103.94 | | $6050.00 | $10360.11 |
| 3 | $7103.94 | | $3993.00 | $15217.46 |
| 4 | $7103.94 | | $4392.30 | $20161.24 |
| 5 | $7103.94 | | $0.00 | $29991.70 |
| 6 | $7103.94 | | $7086.24 | $33718.97 |
| 7 | $7103.94 | | $5000.00 | $39905.21 |
| 8 | $7103.94 | | $0.00 | $51710.06 |
| 9 | $7103.94 | | $11789.73 | $52905.67 |
| 10 | $7103.94 | | $12968.71 | $53041.87 |
| 11 | $7103.94 | | $28531.16 | $37629.22 |
| 12 | $7103.94 | | $31384.28 | $17822.20 |
| 13 | $7103.94 | | $17261.35 | $10157.41 |
| 14 | $7103.94 | | $18987.49 | $0.00 |

SPECIAL ACCOUNT INTEREST RATE =10%
ESTIMATED AVERAGE INFLATION RATE =10%

**Chart B**

down at their computer. (*See expense worksheet.*) Home maintenance, education, and automobile expenses are just a few of the areas most people will need to include on their list. There are probably other expenses that will be unique to your particular situation whether it's a second computer or a new set of golf clubs.

The Taylors' next step is to key the BASIC program provided with this article into their computer. Joe runs the program using the worksheet to answer each computer query. In a few moments, the computer responds with the appropriate output on the printer (*see Chart A*).

The Taylors can now see that $4,779.69 deposited in the special 10 percent account at the beginning of each year will cover all of their anticipated major financial goals and expenses with an assumed average 5 percent inflation rate over the 14-year planning period. The Taylors also see that if they decide to make a one-time deposit today instead of each year, $38,731 deposited at the beginning of the first year will be enough, with accumulated interest, to cover these planned expenses.

Of course, the Taylors cannot be sure that the inflation rate over the next 14 years will average 5 percent. In fact, they think it may be closer to 10 percent. To examine this possibility, Joe answers YES to the query: DO YOU WISH TO CHANGE THE INTEREST OR INFLATION RATE? He enters 10 percent as the special account interest rate. Then, he enters 10 percent in response to the computer's ESTIMATED AVERAGE INFLATION RATE query. The resulting computer output tells Joe that a deposit of $7,103.94 at the beginning of each year will be required to meet all planned expenses. The alternative one-time deposit option for this 10 percent inflation estimate is $57,565. The output resulting from the 10 percent inflation estimate is shown in Chart B.

In both cases, Joe can view the account's balance at the end of each year over the planning period, and see the inflation-adjusted financial goal/expense figure.

Obviously, it is quite simple to try various combinations of estimated inflation rates and account interest rates to compare the impact of each combination on the results. In short, this program and your personal computer can be very useful tools for establishing a special account deposit schedule tailored to meet anticipated expenses and your long-range financial goals.

**Base Version (Commodore 64)/*Financial Goal Planning***

```
10 DIM T(100,2),A(100)
20 TRU=-1
30 FOR X=1 TO 33:SP$=SP$+CHR$(32):U$=U$+CHR$(45)
40 NEXT X:LS$(0)=LEFT$(SP$,19)
50 FOR Y=1 TO 100
60 T(Y,0)=0:T(Y,1)=0:T(Y,2)=0
70 NEXT Y:C=1
80 PRINT CHR$(147);
90 PRINT SPC(8);"FINANCIAL GOAL PLANNING"
100 PRINT:PRINT "PLANNED EXPENSE (END=0)";
110 INPUT T(C,0):IF T(C,0)=0 THEN C=C-1:GOTO 160
120 PRINT "  YEAR OF EXPENSE";:INPUT T(C,1)
130 PRINT "  SUBJECT TO INFLATION (Y/N)";:INPUT T$
140 GOSUB 2000:T(C,2)=TRU*T
150 C=C+1:GOTO 100
160 PRINT:PRINT "SPECIAL ACCOUNT INTEREST RATE";:INPUT
 T$:E=VAL(T$)/100
170 IF E=0 THEN 160
180 PRINT "ESTIMATED AVERAGE INFLATION RATE";:INPUT T$
:G=VAL(T$)/100
190 FOR X=1 TO 100:A(X)=0:NEXT X:L=1
200 FOR X=1 TO C
210 A(T(X,1))=A(T(X,1))+T(X,0)*(1+G*T(X,2))^T(X,1)
220 IF T(X,1)>L THEN L=T(X,1)
230 NEXT X
240 OPEN 4,4:CMD 4
250 PRINT SPC(17);"MINIMUM DEPOSIT";SPC(21);"END OF YE
AR"
260 PRINT SPC(7);"+";U$;"+   +";LEFT$(U$,24);"+"
270 PRINT SPC(7);"DEPOSIT AT START  LUMP-SUM DEPOSIT";
280 PRINT SPC(4);"EXPENSE PLUS";SPC(5);"ACCOUNT"
290 PRINT "YEAR";SPC(4);"OF EACH YEAR";SPC(4);"AT STAR
T OF YEAR 1";
300 PRINT SPC(4);"INFLATION";SPC(7);"BALANCE"
310 PRINT LEFT$(U$,4);SPC(3);LEFT$(U$,16);" ";
320 PRINT LEFT$(U$,18);SPC(3);LEFT$(U$,12);"  ";LEFT$(
U$,12)
330 F=1:GOSUB 1000:T=P
340 GOSUB 3000:LS$(1)=LEFT$(SP$,15-LEN(T$))+"OR $"+T$
350 B=0:FOR Y=1 TO L
360 B=(B+A)*(1+E)-A(Y)
370 IF B>=0 THEN W=A:GOTO 390
380 W=A-B/(1+E):B=0:F=Y+1:GOSUB 1000
390 T$=MID$(STR$(Y),2)
400 PRINT T$;:T=W:GOSUB 3000:PRINT SPC(10-TRU*(Y>9));P
F$;LS$(TRU*(Y=1));SPC(3);
410 T=A(Y):GOSUB 3000:PRINT PF$;:T=B:GOSUB 3000:PRINT
"  ";PF$
420 NEXT Y
430 PRINT:PRINT "SPECIAL ACCOUNT INTEREST RATE";SPC(4)
```

→

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```
;"=";E*100;"%"
440 PRINT "ESTIMATED AVERAGE INFLATION RATE =";G*100;"
%"
450 PRINT#4:CLOSE 4:T$="":PRINT CHR$(147);
460 PRINT "DO YOU WISH TO CHANGE THE"
470 PRINT "INTEREST OR INFLATION RATE (Y/N)";
480 INPUT T$:GOSUB 2000:IF T THEN 160
490 PRINT "DO YOU WISH TO START AGAIN (Y/N)";
500 INPUT T$:GOSUB 2000:IF T THEN 50
510 END
1000 P=0:FOR S=F TO L
1010 P=P+A(S)/(1+E)^(S-F+1)
1020 NEXT S
1030 IF (L-F)<0 THEN F=L
1040 A=P*E*(1+E)^(L-F)/((1+E)^(L-F+1)-1)
1050 RETURN
2000 T$=LEFT$(T$,1):T=(T$=CHR$(89) OR T$=CHR$(121)):RE
TURN
3000 T$=STR$(INT((T+1)*100))
3010 PF$=RIGHT$(T$,2)
3020 T=VAL(LEFT$(T$,LEN(T$)-2))-1
3030 T$=MID$(STR$(T),2)
3040 PF$=T$+"."+PF$:T$=PF$
3050 PF$=LEFT$(SP$,11-LEN(PF$))+"$"+PF$:RETURN
```

## MODIFICATIONS FOR OTHER COMPUTERS

### ADAM & Apple

Use the base version, except change lines 20, 80, 240, 390, 450, and 3030 to read as follows:

```
20 TRU=1
80 HOME
240 PR#1
390 T$=STR$(Y)
450 PR#0:HOME
3030 T$=STR$(T)
```

### IBM PC & PC*jr*

Use the base version, with the following alterations: Omit line 240. Change **PRINT** in lines 250–320, 400, 410, 430, and 440 to **LPRINT**. Finally, change lines 80 and 450 to read as follows:

```
80 CLS
450 CLS
```

### TRS-80 Models III & 4

Use the base version, with the following alterations: Omit line 240. Also, change lines 10, 80, 90, 250–320, 400, 410, and 430–450 to read as follows:

```
10 CLEAR 1000:DIM T(100,2),A(100)
80 CLS
90 PRINT TAB(20);"FINANCIAL GOAL PLANNING"
250 LPRINT TAB(17);"MINIMUM DEPOSIT";TAB(53);"END OF Y
EAR"
260 LPRINT TAB(7);"+";U$;"+   +";LEFT$(U$,24);"+"
270 LPRINT TAB(7);"DEPOSIT AT START  LUMP-SUM DEPOSIT"
;
280 LPRINT TAB(45);EXPENSE PLUS";TAB(62);"ACCOUNT"
290 LPRINT "YEAR";TAB(8);"OF EACH YEAR";TAB(24);"AT ST
ART OF YEAR 1";
300 LPRINT TAB(46);"INFLATION";TAB(62);"BALANCE"
310 LPRINT LEFT(U$,4);TAB(7);LEFT$(U$,16);" ";
320 LPRINT LEFT$(U$,18);TAB(45);LEFT$(U$,12);"  ";LEFT
$(U$,12)
400 LPRINT T$;:T=W:GOSUB 3000:LPRINT TAB(11);PF$;LS$(T
RU*(Y=1));"   ";
410 T=A(Y):GOSUB 3000:LPRINT PF$;:T=B:GOSUB 3000:LPRIN
T "  ";PF$
430 LPRINT:LPRINT "SPECIAL ACCOUNT INTEREST RATE";TAB(
33);"=";E*100;"%"
440 LPRINT "ESTIMATED AVERAGE INFLATION RATE =";G*100;
"%"
450 T$="":CLS
```

Note: Use the up-arrow ↑ key (upper left-hand corner of the keyboard) to enter the ^ character in lines 210, 1010, and 1040. This character will look like a left bracket ([) on the screen, but will show up as a ^ on most printers. FC

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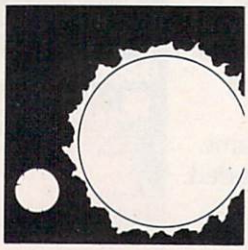

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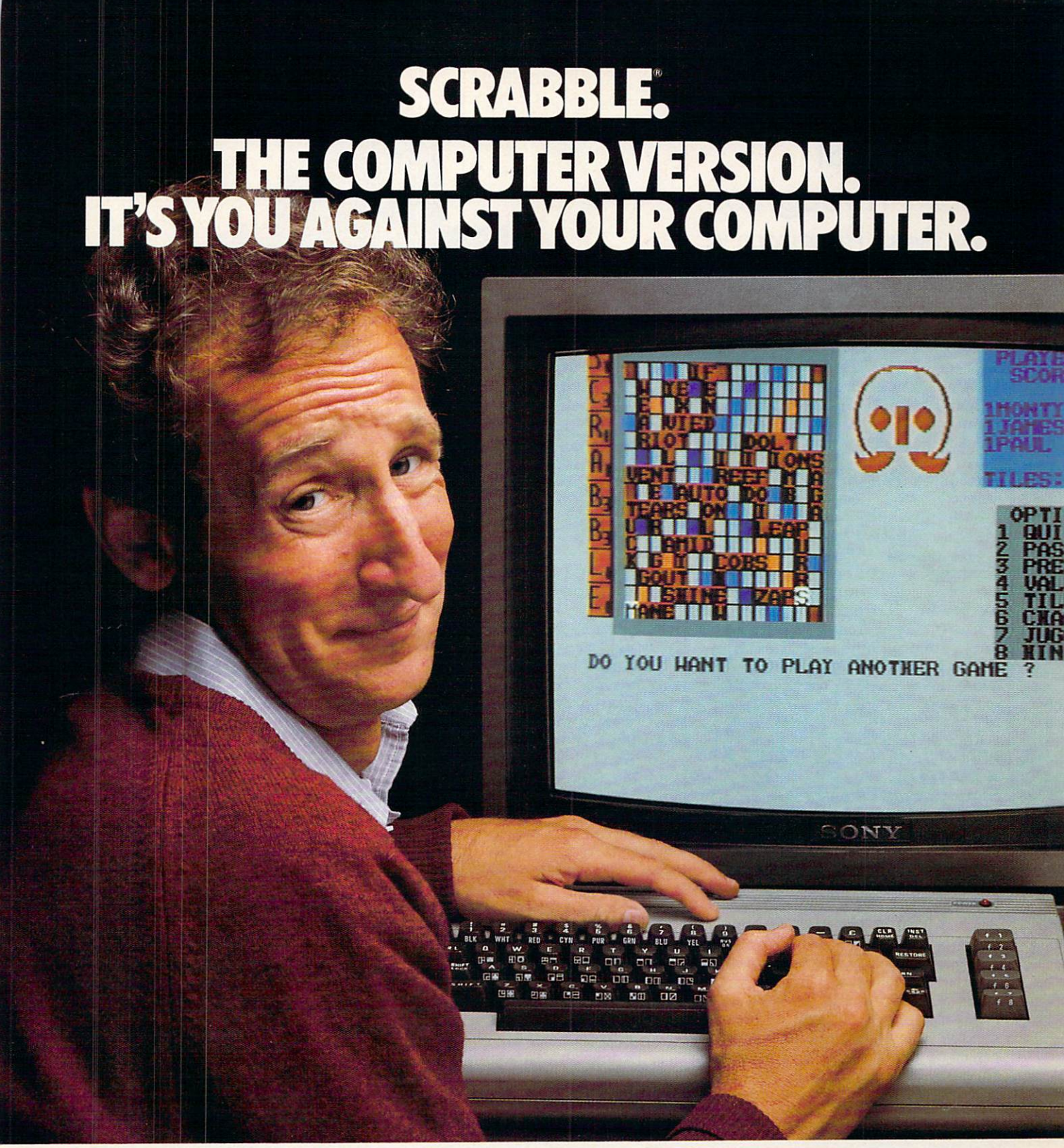

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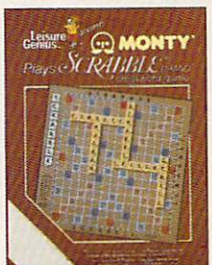


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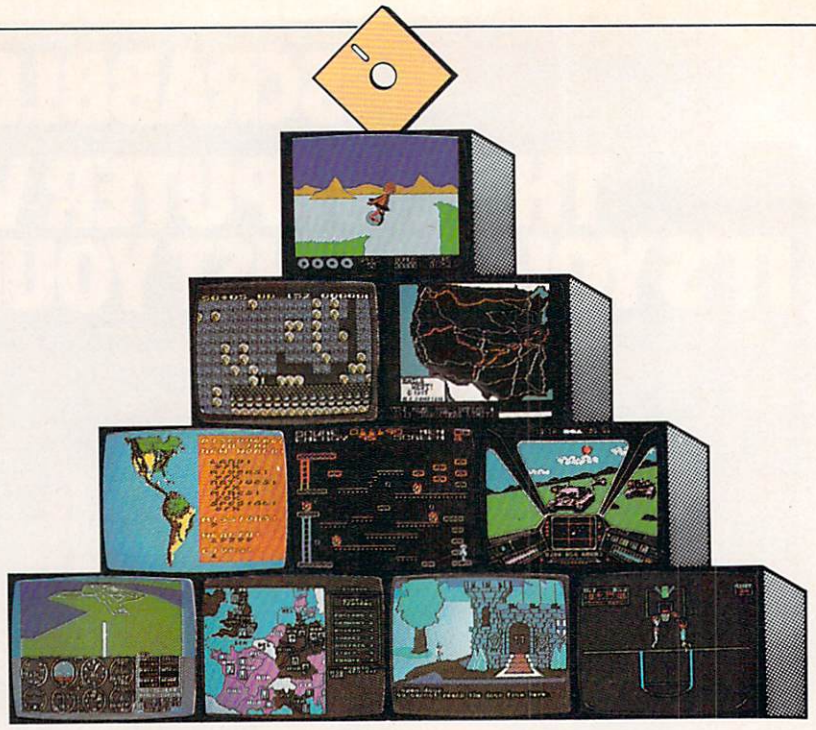
# GAMES

## 84'S FINEST
## A Run-Through of the Best Programs Reviewed This Year

**BY JAMES DELSON**



1984 was a superb year for games. Although arcade games continue in popularity, strict shoot-'em-ups have given way to legions of more sophisticated challenges—games that require more than the ability to aim well.

With hundreds of games from which to choose, I had trouble narrowing down the greats to fit into anything as orderly as a 10-Best list. As a result, my "Top 10" has mushroomed into a roster of the best programs in 18 different categories. These are programs that, though in some cases were published before 1984, didn't cross my desk until this year.

GAME OF THE YEAR/
BEST FINANCIAL GAME
**Rails West!**
*Strategic Simulations*;
(415) 964-1353

This role-playing adventure about the building of the American railroads is by far the most exciting, fascinating, creatively designed game of 1984. It's a financial program, which means that it can be tough-going in places. But any serious game player would be nuts not to buy it. It's suitable for gamers 12 years old and up, and has various levels of difficulty, length, and complexity. It features the best computerized opponents I've encountered thus far. Play it solo, or against a number of human and/or computer competitors. The game's design has so many variables that it doesn't repeat itself, guaranteeing it to be as exciting a year from now as it is today. (For Apple II series, Atari Home Computers; $39.95.)

CONTINUING SERIES
**Knight of Diamonds** and
**Legacy of Llylgamyn**
*Sir-tech*; (315) 393-6633

The second and third games in the long-running *Wizardry* series live up to the excitement of their predecessor. This best of all role-playing series is a great value because it's a long-runner: I spent 10 hours every weekend for two seasons last year fighting monsters, casting spells, mapping labyrinths, and earning imaginary fame and fortune. (For Apple II series; *Knight of Diamonds*, $34.95; *Legacy of Llylgamyn*, $39.95.)

ROLE-PLAYING
ADVENTURE
**The Seven Cities of Gold**
*Electronic Arts*; (415) 571-7171

With a shorter game length than *Wizardry*, a less complex play system than *Rails West!*, and (unfortunately) the design of a solitaire game (though several players may work together to control the central character), this is one of the finest games on the market. It's a simulation of the Great Age of Discovery, when Spanish explorers set out to tame the uncharted lands of the New World. The scenario comes complete with sailing ships; plunder; free trade; a host of choices including whether or not to spare the indigenous peoples, and how much food to take on your voyage; and the dream of all adventurers—personal glory. (For Atari Home Computers, Commodore 64; $39.95.)

ARCADE/
SHOOT-'EM-UP
**Skyfox**
*Electronic Arts*; (415) 571-7171

A fast, furious relief from the mental labors of role-playing or finance simulation, this razzle-dazzle flying fantasy puts you in the cockpit of a high-tech fighter plane. You obliterate tanks, planes, and spaceships that are out to destroy Earth. Thanks to superb, through-the-windscreen graphics, all other flight simulators' visuals pale by comparison. (For Apple II series; $40.)

STRATEGY/ARCADE
**Archon II: ADEPT**
*Electronic Arts*;
(415) 571-7171

Intricate strategies combined with hand-eye skills are required for success in this "sequel" to *Archon*, a must for gamers of every age and taste. Two players maneuver their casts of fantasy characters around a board. When opponents meet on the same square, they face off on a separate battle screen. One match, either solo or two-player, takes anywhere from 15 minutes to two hours. (For Atari Home Computers, Commodore 64; $40.)

STRATEGY
AND TACTICS
**Gulf Strike**
*Avalon Hill*; (301) 254-5300

*Gulf Strike* is an enormous war game in which air, sea, and land units from the U.S., Iran, and their allies fight U.S.S.R./Iraqi forces to gain control of the Persian Gulf. It takes hundreds of hours to play, yet is never slow and is always completely involving. (For Atari Home Computers; $39.95. Planned for Apple II series, Commodore 64.)

*Next month,* JAMES DELSON, FAMILY COMPUTING*'s games critic, interviews the designers behind* Archon II: ADEPT.

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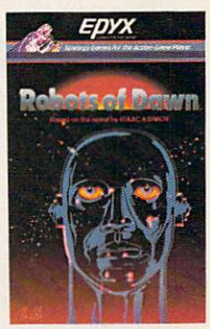


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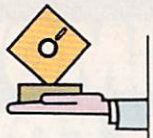
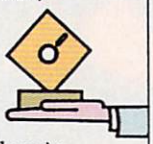
# GAMES



POLITICAL
**Geopolitique 1990**
*Strategic Simulations*; (415) 964-1353

If you'd rather settle international disputes peacefully through intimidation, diplomatic missions, or other political means, this game's for you. Of course, if as the U.S. player (the computer plays Russia) you can't win by fast-talking friend and foe, there's always the disk's war scenario, "Geowar". (For Apple II series, Commodore 64; $39.95.)

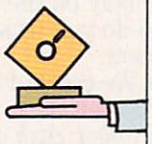


MULTIPLAYER
**Diplomacy**
*Avalon Hill*; (301) 254-5300

This adaptation of the classic board game is just the ticket for those who wish to combine tactics and strategy with political maneuvering. Up to seven players or teams control a major European power at the turn of the 20th century. By making deals or invading other countries, each tries to gain control over more than half of the continent. The computer supplies dummy players to fill out the seven if you're short, but these electronic substitutes are born losers. Played with seven people, however, this game is dynamic. (For IBM PC/PC*jr*; $50. TRS-80 III/4 at Radio Shack stores.)

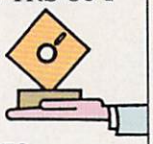
HYBRID
**Sundog: Frozen Legacy**
*FTL Games*; (619) 279-5711

This combination arcade/role-playing adventure, financial simulation, outer space shootout, and intragalactic exploration is fresh and absorbing, and takes weeks to play. You begin with an abandoned spaceship. Check for damage, then shuttle into town to obtain spare parts and information. Fly to other planets in repeated quests until you succeed in taking a crew of frozen voyagers to a planet they set out to colonize. This game's a sign of things to come, pointing towards scenarios that offer a wide variety of experience in one package. (For Apple II series; $39.95.)



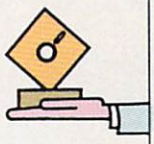
TEXT-ONLY ADVENTURE
**Suspended**
*Infocom*; (617) 492-1031

You are a human brain that controls a group of robots that maintain a planetary facility. Each robot has serious limitations, so you must coordinate their efforts. That's like trying to juggle six live grenades in a darkened room. It takes practice. (For Apple II series, Macintosh, Atari Home Computers, Commodore 64, IBM PC/PC*jr*, TI-99/4A, TRS-80 I/III/4; $49.95.)



TEXT/GRAPHIC ADVENTURE
**The Mask of the Sun**
*Broderbund*; (415) 479-1170

Mystery, adventure, and thrills abound on your expedition into the South American interior. The game features plenty of puzzles to solve, strange customs and creatures, and an occasional cliff-hanger. (For Apple II series, Atari Home Computers, Commodore 64; $39.95.)



ARCADE/ ROLE-PLAYING ADVENTURE
**King's Quest**
*Sierra Inc.*; (209) 683-6858

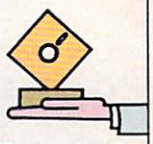
Here is a state-of-the-art text/graphic adventure with such innovative features as animated graphics; joystick controlled movement such as walking, jumping, climbing, and crouching; scrolling screens; and sound. This is the first of a new generation. Players seek to restore the once great powers of a weakened ruler by acquiring several magic items. Scour the countryside; trade, fight, and bargain with people and creatures you encounter. (For Apple II series, IBM PC; $49.95.)

SIMULATOR
**Flight Simulator II**
*subLogic*; (217) 359-8482

Fly a light aircraft across the U.S., using keyboard or joystick to control every function of a real plane in what is far and away the best computer simulation of a real-life experience. Then go on to play a W.W.I flying game. (For Apple II series, Atari Home Computers, Commodore 64; $49.95.)

FOR YOUNGSTERS
**B.C.'s Quest for Tires**
*Sierra Inc.*; (209) 683-6858

With simple joystick controls, kids help B.C. roam through the prehistoric world avoiding obstacles in search of his loved one. Excellent graphics and content make this the cutest game of the year. (For Apple II series, Atari Home Computers, Coleco ADAM, Commodore 64, IBM PC/PC*jr*; $34.95 [disk], $39.95 [cartridge].)



ARCADE
**Boulder Dash**
*First Star*; (212) 532-4666/
*Micro Fun*; (312) 433-7550

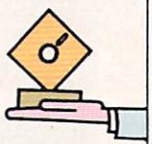
Here's a new twist. This program was so good it was turned into a coin-operated arcade game after debuting as a home version. Players move Rockford, the bug, through 16 screens (five levels), trying to survive and accumulate wealth. Only after collecting gems and avoiding falling boulders, menacing butterflies, or oozing amoeba, can you go on to the next screen. A game for all ages. (First Star: For Atari Home Computers, IBM PC/PC*jr*; Micro Fun: For Coleco ADAM, Apple II series, Commodore 64; $24.95–$39.95.)

CONSTRUCTION SET
**Mr. Robot and His Robot Factory**
*Datamost*; (818) 709-1202

This sophisticated ladder game contains a built-in modification program allowing players to alter or create boards for further use and substantially extending the play-life of the program. Fun for all ages and ideal for group play. (For Apple II series, Atari Home Computers, Commodore 64; $39.95.)

SPORTS
**Julius Erving and Larry Bird Go One-on-One**
*Electronic Arts*; (415) 571-7171

Few games are so absorbing that you forget you're playing on a computer. You'll forget with *One-on-One*. The real-life players helped develop the game, and their personalities are built into the play system. It is a remarkable basketball simulation. (For Apple II series, Atari Home Computers, Commodore 64, IBM PC; $40.)



A TOUGH CATEGORY TO CATEGORIZE
**Galactic Gladiators**
*Strategic Simulations*; (415) 964-1353

Although this game has been remaindered by S.S.I., it's one of the best role-playing adventures ever. It allows you to create, alter, and send teams of warriors into single combat, group encounter, and even self-designed quests. It's best described as a game for toy soldiers played inside a computer, but *Dungeons & Dragons* fans will go ape over it as well. Check out that price, too. (For Apple II series, IBM PC/PC*jr*; $19.)

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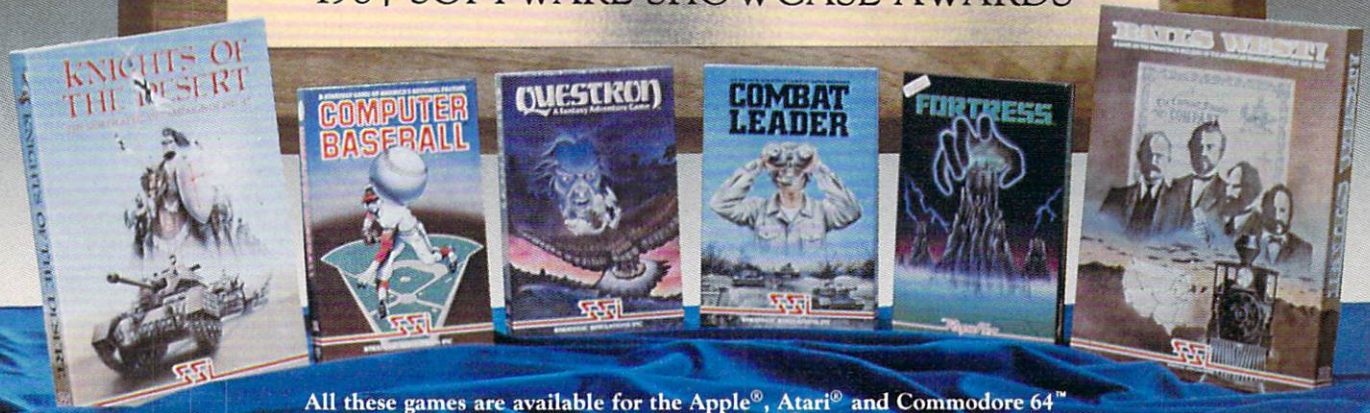


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# TELECOMPUTING

## ELECTRONIC MAIL More Amazing Than the Pony Express!

**BY LESTER BROOKS**

"Gadzooks (or something similar)!" you cry, as you realize that Dad's birthday is tomorrow, it's near midnight, and you haven't even sent him a card. What to do? Don't panic. Send an electronic-mail greeting through your computer, and it will be waiting in his computer for him to read before breakfast.

You have this make-or-break memo that must be in Tallahassee before noon tomorrow . . . but the snow is 2-feet deep and still falling, a rock slide has closed the only road to town, and the dogs won't step outside to chase the rabbits, much less pull your sled. What to do? You can send that precious text via electronic mail and be certain of delivery before the deadline.

### WHAT'S IT ALL ABOUT?

Just what is e-mail, anyway? Very much what it sounds like. To send e-mail you must have a computer with a modem and communications software plugged into a telephone line. Beyond that, it's simple: To reach that elusive, uncommunicative son at college, type on your computer WHERE SHALL I SEND MONEY AND HOW MUCH? REPLY BY E-MAIL. You send this via telephone line to one of the services offering e-mail (*see accompanying box*), where it's stored in Junior's electronic "mailbox." When he next logs onto the service, a bulletin appears on his computer monitor notifying him that he has a "letter." He can read it immediately and dash off a response, which you'll have before you can say "the check is in the mail."

You can send e-mail messages of almost any format or length. You can send a couple of lines, a memo, letter, poem, report, or even a manuscript, like the one for this article.

E-mail has convenience appeal. You can do the whole thing, from salutation to delivery, while slouching around in your robe and slippers. (Try that at your local post office and you'll raise some eyebrows, to say the least.) You don't even have to scavenger-hunt for stationery, envelope, pen, stamps, and a clear spot on your desk where you can write. You can do it all on your computer keyboard, at any time of day or night.

E-mail advantages? Speed, reliability, and accuracy. You know that the message, as you typed it, can be read immediately, or as soon as your addressee is on-line.

Many businesspeople love e-mail because it ends "telephone tag." (That's when you telephone Fred, who's out when you call, and then he calls back when you're out, and on and on. With e-mail, your message is there waiting for Fred's return and he can leave a reply for you even though you're out.)

Disadvantages? The big ones used to be whether your addressee had a computer, and, if so, whether he or she subscribed to the same service you did. For instance, if you're a CompuServe subscriber you can send an e-mail message to any other CompuServe subscriber. (You find out if your addressee is a member by consulting CompuServe's subscriber directory.) Likewise, your friend, who's a Source subscriber, can send messages to any other Source subscribers. But you two can't send electronic messages from CompuServe's system to The Source, or vice versa.

Now, however, you can send a message from your computer keyboard to anyone with a postal address. Your letter starts out electronically, but if your addressee can't be

### PICK OF THE MONTH

*Every month this column will spotlight a best buy in telecommunications hardware and software. This month our pick is the Anchor Automation Volksmodem. This "no frills" (you dial the phone yourself) 300-baud modem is inexpensive, reliable, and easy to use. The Volksmodem lists for $79; cables available for most computers are $13 each. For information contact:*

ANCHOR AUTOMATION
6913 Valjean Ave.
Van Nuys, CA 91406
(818) 997-6493

*Commodore 64 and VIC-20 users: A Volksmodem cable is available for $22.95 from:*

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Mercer Island, WA 98040
(206) 236-2983

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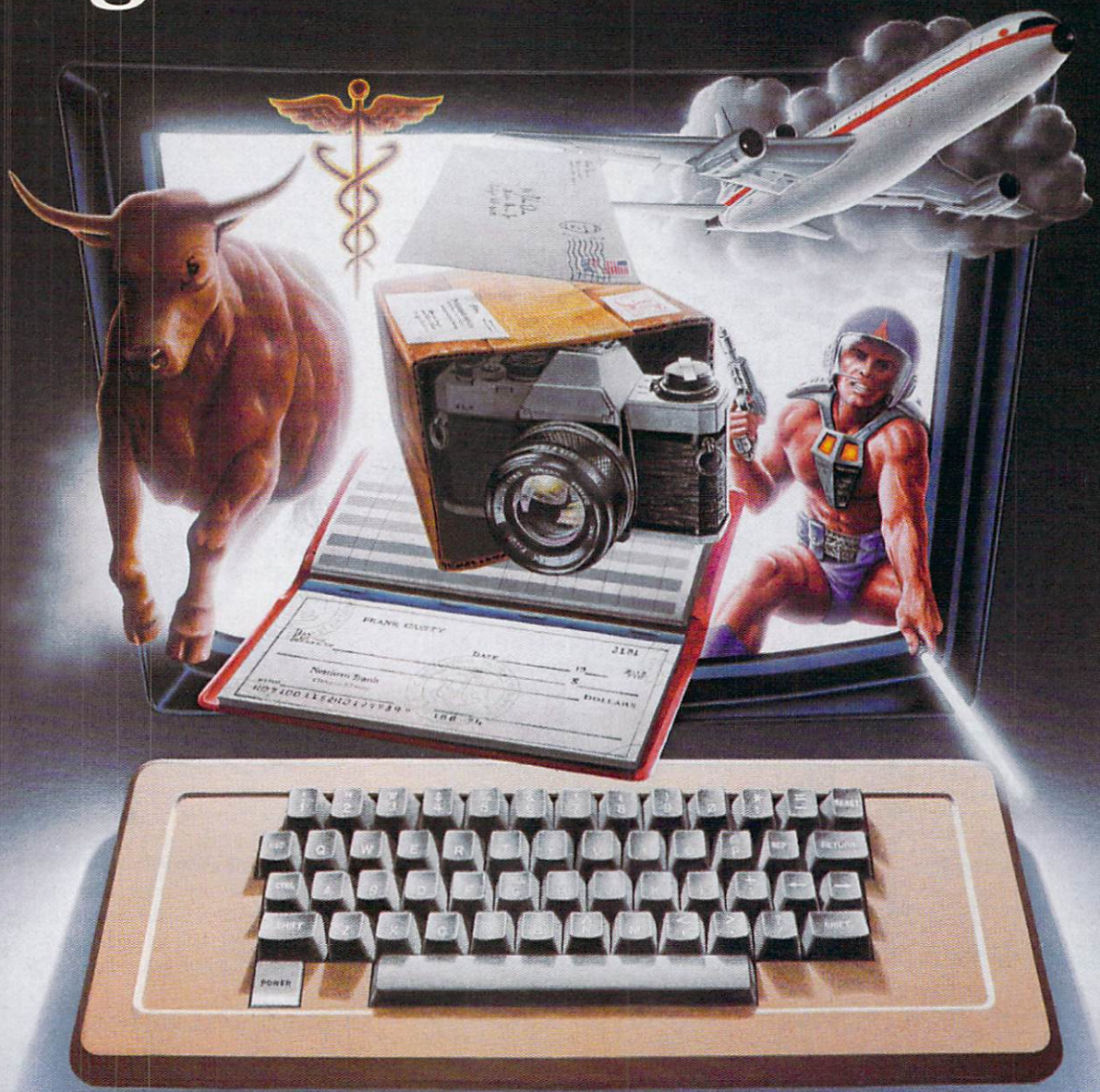
LESTER BROOKS *is a freelance writer from New Canaan, Connecticut. His last article for* FAMILY COMPUTING *was "Users' Groups: Strength in Numbers," in the March issue.*

ILLUSTRATION BY HOLLY KOWITT

# We don't care which computer you own. We'll help you get the most out of it.



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| Bruce Lee (No IBM)..... | $35 | $24 |
| Deadline..... | $50 | $33 |
| Enchanter..... | $40 | $27 |
| Flight Simulator II(NoIBM) | $50 | $36 |
| Frogger..... | $35 | $24 |
| LodeRunner (C/64 cart.$27) | $35 | $24 |
| Millionaire (IBM $39)..... | $50 | $33 |
| Planetfall (IBM $34)..... | $40 | $27 |
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# TELECOMPUTING

reached that way (because he or she doesn't have a computer or doesn't subscribe to your system) you can have it delivered as a Mailgram or MCI laser-printed message.

One human failing that affects e-mail is people's inconsistency. You can't be sure Aunt Lucy will check her electronic mailbox promptly and find your message. (Of course, if she's expecting love letters or you've notified her in advance, this can be less of a problem.)

Also, if your addressee doesn't have a printer, he or she won't be able to save a copy of your electronic message very easily. And, since the cost for some e-mail services depends on the amount of on-line time you use, you might run up a considerable bill as you type a lengthy letter or document. (Canny e-mail users prepare their messages ahead, log onto the system, and then "upload" them.)

## LOTS OF OPTIONS

What are your e-mail choices? There are plenty. For example, if you subscribe to The Source, CompuServe, or Delphi, you can send your message directly to a fellow subscriber's "mailbox." Or, you can send a telegram via Western Union's "EasyLink" service. Your addressee will be telephoned and read your message, and a copy will be delivered by local mail. If you want to send a Mailgram, which is delivered by local mail, you can use EasyLink, CompuServe, or The Source networks.

MCI Mail is one of the newest contenders in this field. In addition to its true computer-to-computer e-mail capability, it can print your letter on paper and deliver it to any postal address, such as your Uncle Hieronymus the hermit, who can't be reached by computers. Your electronic message goes to the MCI distribution point closest to Uncle Hi, is laser-printed on paper, and delivered in one of three ways: 1) by courier within four hours, 2) by courier "overnight letter", or 3) by regular mail from a nearby post office.

Finally, you might consider the hundreds of free electronic bulletin boards as being a type of e-mail. After all, you log on, read other people's messages, and leave notices of your own.

How do the costs compare? They vary, and are difficult to compare because e-mail companies charge for their services in different ways. When you're shopping for a service, be sure to factor in such considerations as: the sign-up or subscription fee, the connect-time charges (which usually vary depending on what time you use the service and whether you're transmitting at 1200 or 300 baud), and whether there's a minimum monthly fee. It's best to first figure out how and when your family will use the service, so you can choose the one that makes the most sense for your needs. FC

## E-MAIL SERVICES

Choosing an e-mail service for your family will require some research. To give you a head start, here's a listing of some of the most popular services. Be sure to consider exactly how and when you'll use the service, so that you sign up for the one that offers *you* the best deal.

**EasyLink**
**Instant Mail**
Western Union
One Lake St.
Upper Saddle River, NJ 07458
(800) 445-4444

**EMAIL**
CompuServe Information Service
5000 Arlington Centre Blvd.
P.O. Box 20212
Columbus, OH 43220
(800) 848-8199

**Delphi**
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3 Blackstone St.
Cambridge, MA 02139
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(617) 491-3393

**MCI Mail**
Digital Information Services Corp.
c/o MCI Communication
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Washington, DC 20036
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**SourceMail**
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## ELECTRONIC EDITION

FAMILY COMPUTING *has started an "electronic edition" on CompuServe. Here, you may read fast-breaking news and reviews, download programs that have been published in* FAMILY COMPUTING, *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 (SourceMail) for* FAMILY COMPUTING *on The Source (account No. T15483).*

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# COMPUTING CLINIC

## DVORAK KEYBOARD • ADAM GRAPHICS & TEXT • USED COMPUTERS • WHEN TO TURN OFF

**BY JEFFREY BAIRSTOW**

**Should I leave my computer (an IBM PC) switched on rather than turning it on and off frequently?**
KATHRYN NORCROSS BLACK
*West Lafayette, Indiana*

The typical personal computer and its peripherals consume about 150–200 watts of electricity when switched on but not in actual use. That's about the same as a moderately powerful lamp, and the cost is probably only pennies per day. Switching a computer on and off can produce power surges which, over a long time, might produce component breakdowns.

My general advice, for someone who works periodically through the day with a computer, is to switch the machine on in the morning and leave it on until finishing work at the end of the day. However, do turn down the monitor's brightness and contrast when not using the computer—to avoid "burning" an image into the delicate phosphors of the screen. Some computers, such as the Atari 800 and the TI-99/4A, automatically change screen colors or blank the screen, respectively, to finesse this "burning" problem.

**How can I operate my Coleco ADAM so that the top half of the screen is graphics and the bottom half is text?**
JOEL VAN ALLEN
*Grass Valley, California*

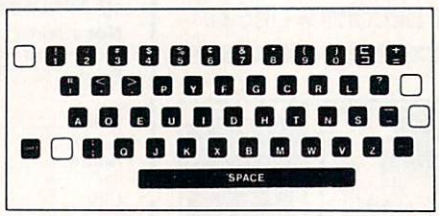
You can mix graphics and text in both low- and high-resolution. The low-res graphics mode automatically provides a four-line text "window" at the bottom of the screen. To enter the low-resolution mode from BASIC, use the GR command.

You can also use one of the two high-resolution modes. The HRG command will put you in a hi-res graphics mode and leave the same four lines at the bottom of the screen for text.

Useful low-res commands include PLOT (to plot a point), COLOR= (to set the color for the next plotting command), and HLIN and VLIN (to draw lines). Commands available in hi-res include HPLOT and HCOLOR.

**What is the layout of the Dvorak keyboard?**
CHRIS BOHN
*Edwards, California*

The Dvorak keyboard, patented in 1936 by Dr. August Dvorak and his brother-in-law, William Dealey, puts the five vowel keys, "AOEUI," together under the left hand in the center row, and the five most frequently used consonants, "DHTNS," under the fingers of the right hand (*see Home-School Connection in the March* FAMILY COMPUTING). Proponents of the Dvorak keyboard claim it's much faster to use than the standard "QWERTY" keyboard, especially for children or nontypists. One woman trained in the Dvorak system has reached a speed of 200 words per minute, faster than the recorded high of 170 on the QWERTY keyboard.




Some computer keyboards, such as the IBM PC's, can be reprogrammed to the Dvorak format. Also, a Key Tronic keyboard, in Dvorak format, is available for use with the IBM PC. The Apple IIc has a switch that alters it to the Dvorak format. All other Apple computers can be programmed to use the Dvorak format, according to the Dvorak International Federation. A program called *SmartKey II Plus*, by Software Research Technologies Inc. (3757 Wilshire Blvd., Suite 211, Los Angeles, CA 90010) will convert any CP/M, MS-DOS, or PC-DOS computer to the Dvorak format.

The Dvorak International Federation (11 Pearl St., Brandon, VT 05733; [802] 247-6020) will gladly send you more information.

**Where can I buy a used computer? What is the chance of getting "taken" when buying a used computer?**
JEFFREY COHEN
*Fresh Meadows, New York*

Your best sources of reliable used computers are probably your local users' groups. Check computer stores or area schools for their addresses. Also, regional computer "shoppers" are springing up, and they're good sources. For instance, in the New York area, *Computer Living/New York* (Meyer Publications, 155 E. 23rd St., New York, NY 10010) publishes classified ads listing used equipment. The national publication *Computer Shopper* (P.O. Box F, Titusville, FL 32781) does the same.

Used computers are also advertised on computerized bulletin board systems (BBS's), and on the bulletin boards of CompuServe and The Source.

As when buying any piece of used equipment, the password is "caveat emptor"—buyer beware. Computers themselves, once past the initial "burn-in" phase, are actually quite reliable. Still, it's a good idea to see the computer in operation before you buy, and have a friendly expert check it out for you. Pay particular attention to mechanical items, such as disk drives or printers, that can wear out. (*For further tips, see "Buyer's Guide To Used Computers," in the April 1984* FAMILY COMPUTING.)

JEFFREY BAIRSTOW, *a technical journalist who lives in West Redding, Connecticut, was a founder and managing editor of* Computer Decisions *magazine. He has also taught math and computer science. His family, including two preschoolers, uses a variety of computers.*

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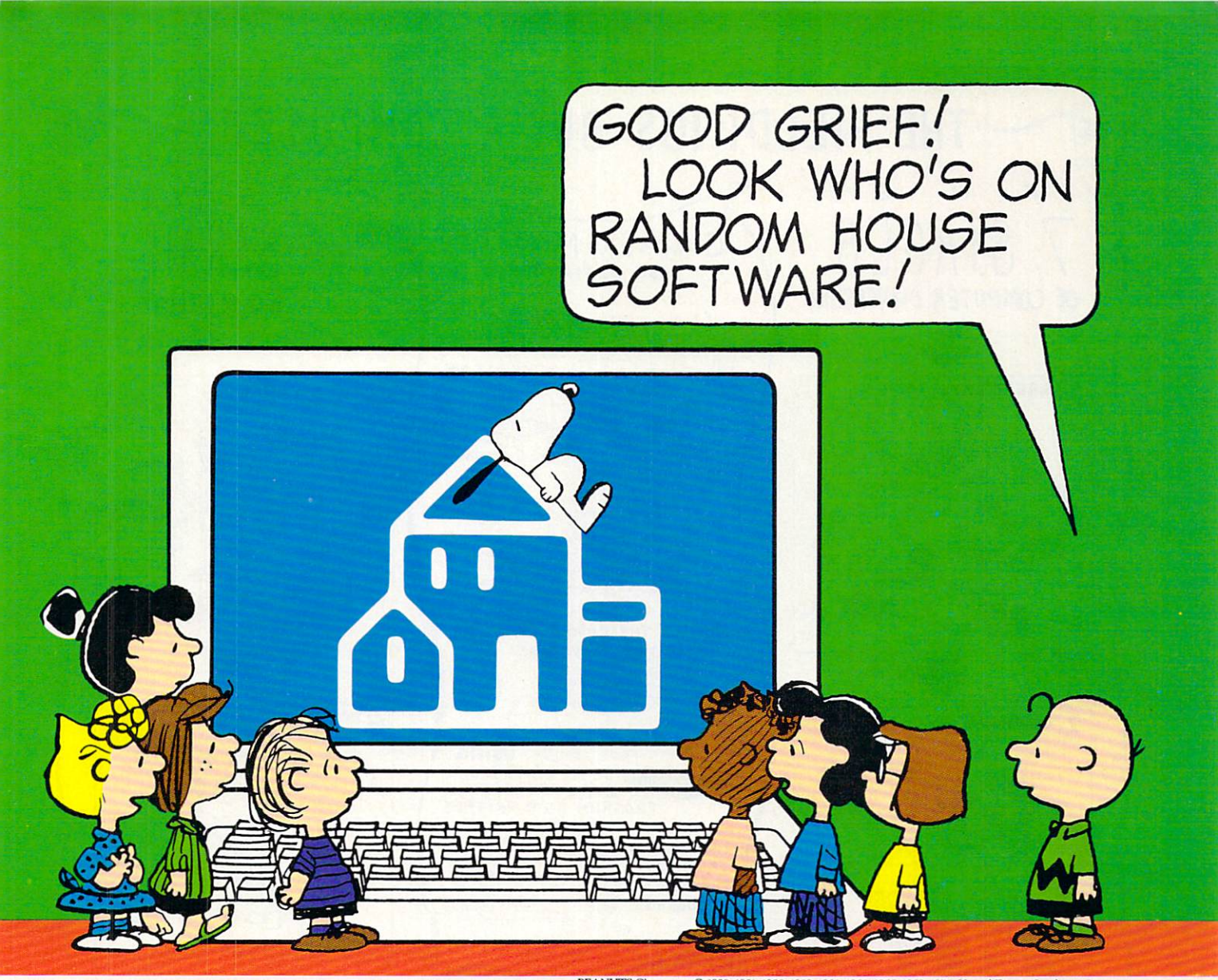


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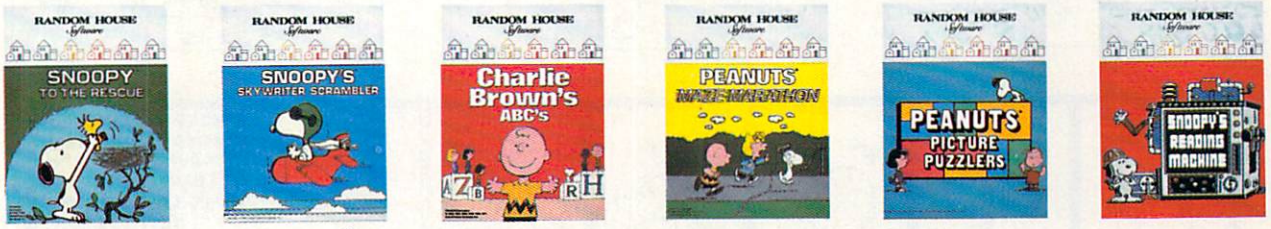


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†For Apple II,+ IIe, IIc, Commodore 64 (disk drive only) and soon for IBM P.C. Jr. (Trademarks of Apple Computer, Inc. Commodore Electronics Ltd. and International Business Machines Corp.)

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~or~

## THE 7 STAGES OF COMPUTER OWNERSHIP

BY SARAH KORTUM

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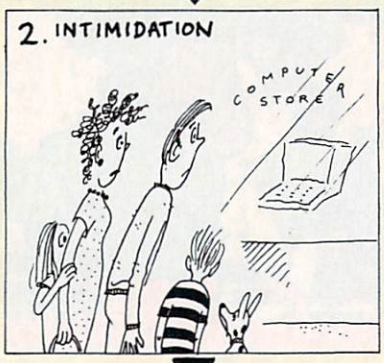
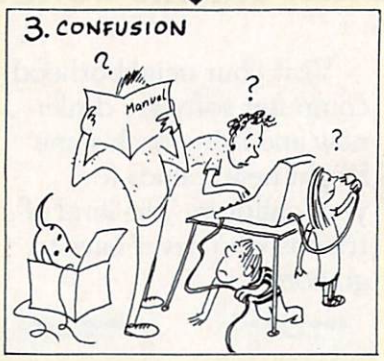
### 2. INTIMIDATION

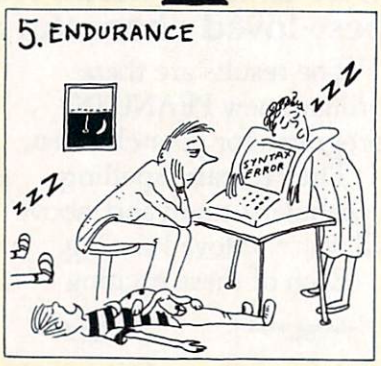



### 3. CONFUSION

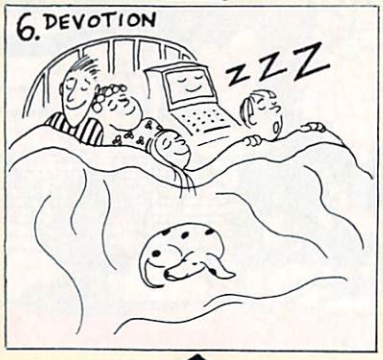



### 4. ASTONISHMENT

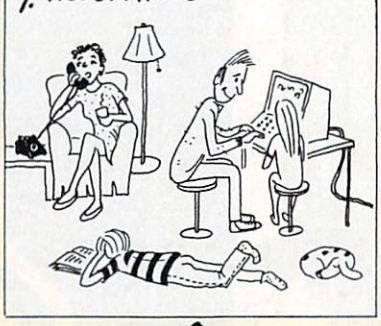
### 5. ENDURANCE



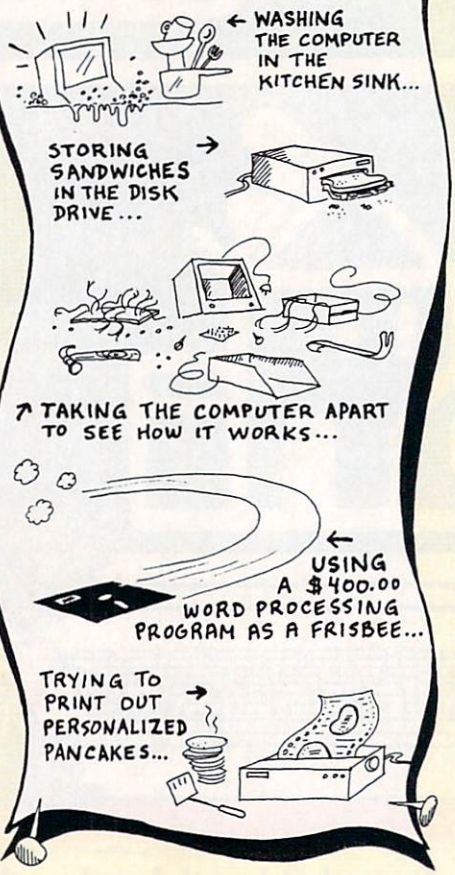

### 6. DEVOTION



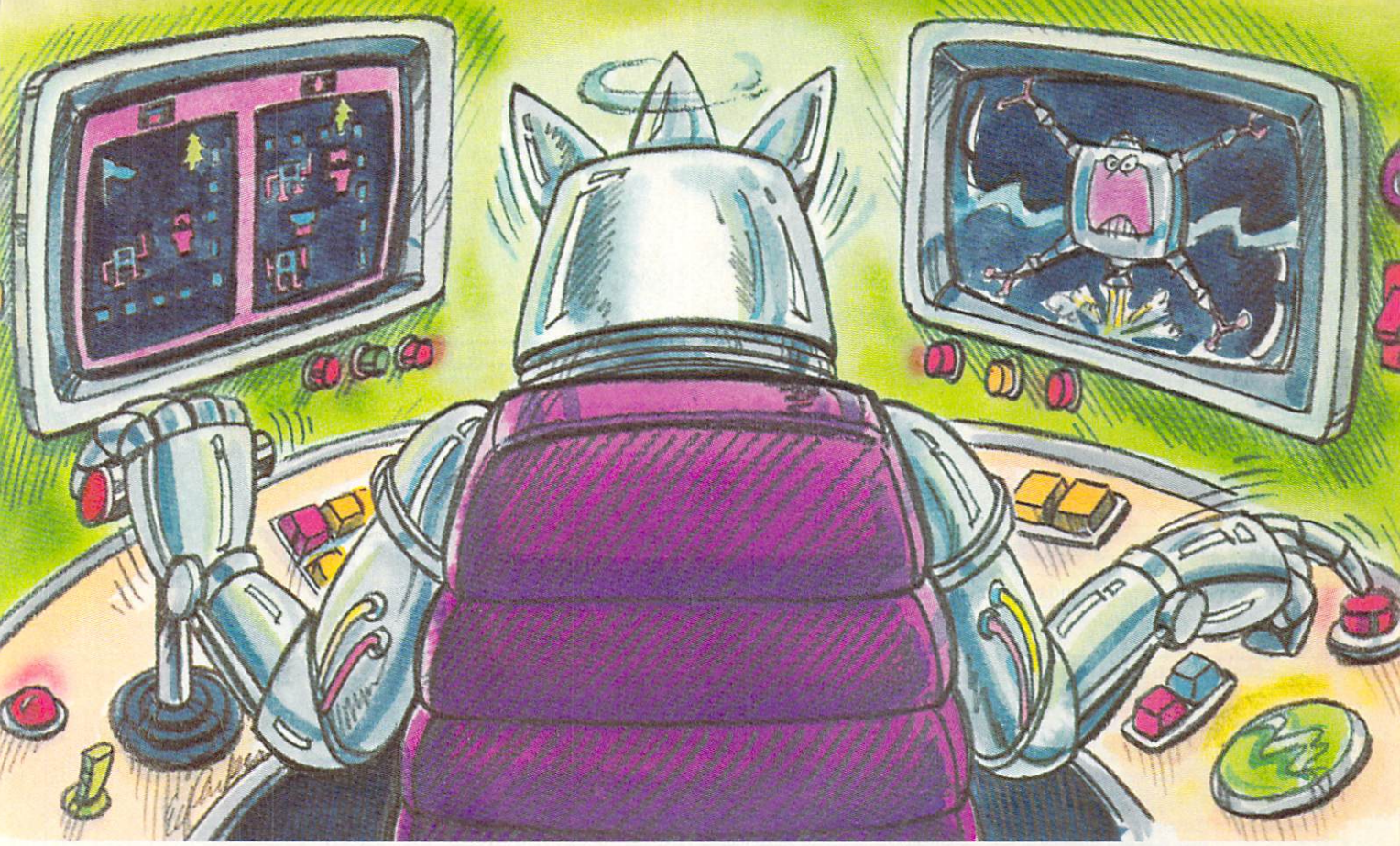

### 7. ACCEPTANCE



### COMMON MISTAKES FOR BEGINNERS



ZAP!



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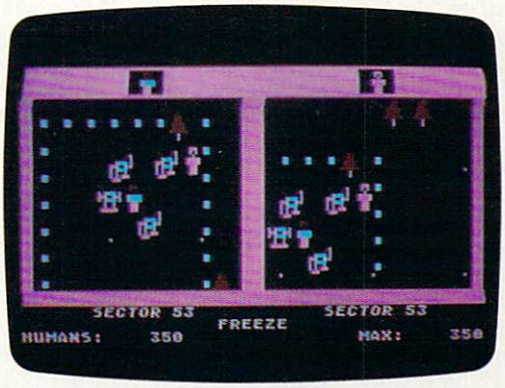


You'll battle Max and his robot marauders in a field bigger than any you've ever seen. Your team must invade robot territory and grab their flag before they take yours. But be careful; Max has devised a fiendish strategy against you. And, of course, you can't expect mercy from robots.

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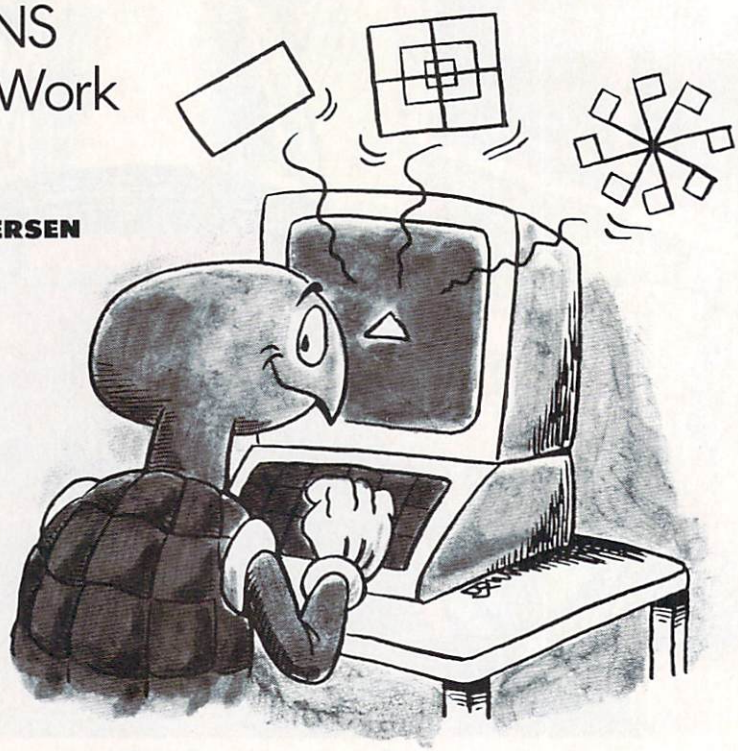
# LEARNING LOGO

## THEME AND VARIATIONS
## Make Your Procedures Work Harder with Variables

**BY MINDY PANTIEL AND BECKY PETERSEN**



| ISSUE | TOPIC |
|---|---|
| **September** | Meeting the turtle: seven simple commands. |
| **October** | Logo learning aids: turtle shortcuts. |
| **November** | Teaching your turtle: debugging and saving. |
| **December** | Adding sparkle: programming Logo colors; trying new shapes. |
| **January** | Variations on a theme: changing sizes and shapes. |
| **February** | Advanced Logo: where to find out more. |

*This is the fifth in a series of articles on Logo, a powerful and flexible programming language with strong roots in education. Logo was developed as a tool and medium children can use to "discover" the rules of math, geometry, and logic in an easy and natural way. The appeal of "discovery learning" has brought Logo to the attention of educators worldwide, and the availability of Logo for low-cost microcomputers has caused it to become an important component of the computing curriculum in many schools.*

*Unless another dialect of Logo is specified, programs and examples in this series will run on Krell and Terrapin Logo for the Apple. Most will run on other versions of the language (and other machines) with little, if any, modification. If you have another version of Logo, we suggest you use your manual as a companion to this series so that you can pinpoint differences wherever they occur.*

Over the past few months you've learned a lot of Logo.

If you've followed the series, you're likely to have mastered the basic turtle-graphics commands (FD, BK, RT, LT, PU, and PD); learned how to use the REPEAT command; practiced writing, editing and debugging procedures; and learned to use one procedure as a subprocedure of another. This month, we're going to introduce a few more terms and concepts that will help make your procedures more powerful and flexible. First, we'll take a look at how Logo uses *variables*—names that stand for numeric values. Then we'll focus on a few more useful Logo commands.

MINDY PANTIEL *and* BECKY PETERSEN *of Niwot, Colorado, are contributing editors to* FAMILY COMPUTING *and authors of* Kids, Teachers and Computers, *published recently by Prentice-Hall.*

### VARIABLES

To see what variables are all about, let's start by looking back at one of our old procedures—SQUARE. If you've saved SQUARE on disk or tape, you can load it into your computer now (if you haven't, enter either of the procedures shown below). Call SQUARE up into the Logo editor with the command TO SQUARE or EDIT "SQUARE, depending on the version of Logo you use. You should see something similar to this on your screen:

```
TO SQUARE
FD 50 RT 90
FD 50 RT 90
FD 50 RT 90
FD 50 RT 90
END
```

or,

```
TO SQUARE
REPEAT 4[FD 50 RT 90]
END
```

The SQUARE procedure, as shown above, tells the turtle to draw a square with sides 50 turtle steps long. What if, instead, you want the turtle to draw squares 30 or 75 turtle steps on a side? One solution might be to define a new procedure for each size of square, one containing the command FD 30, the other, FD 75. Eventually you might define a whole collection of SQUARE procedures, each differing from the others only in the value of the constant that tells the turtle how long the sides of the square should be.

Variables offer another solution to this problem. Let's edit the SQUARE procedure above, replacing the number 50, wherever it occurs, with the expression **:SIDE** and adding the same expression to the procedure title:

```
TO SQUARE :SIDE
FD :SIDE RT 90
FD :SIDE RT 90
FD :SIDE RT 90
FD :SIDE RT 90
END
```

or,

```
TO SQUARE :SIDE
REPEAT 4[FD :SIDE RT 90]
END
```

:SIDE is a variable, a name that can stand for any value we want. By substituting :SIDE for a constant in the body of the procedure, we have told FD to use :SIDE's value as input, instead of a regular number. By placing :SIDE in the procedure title, we

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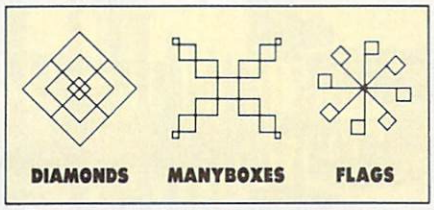
are telling SQUARE that it should expect to be given a value for :SIDE each time the procedure is executed.

What have we accomplished? Now SQUARE will respond to any number input we choose to give it, drawing a square with that number of turtle steps on a side. For example, if you execute SQUARE 10, the computer will substitute the value 10 wherever :SIDE appears in the body of the procedure, and draw a square with sides 10 turtle steps long. Try it. Now try SQUARE 20, then SQUARE 30.

The name we have chosen for our variable is arbitrary. We could have called it :LENGTH or :NUMBER or :S. Logo will accept almost any group of characters preceded by a colon as a variable name. It's important that the variable name be written exactly the same both in the title of the procedure and within it.

Using your new SQUARE procedure as a subprocedure, see if you can write new procedures which draw these graphics:




Remember that SQUARE now expects to be given a number as input each time it is executed. What happens if you enter SQUARE alone?

## MORE THAN ONE VARIABLE

Procedures can also be written using more than one variable. Just choose a name for each variable you need and include it in the title line. (Remember: A variable name *must* begin with a ":".) For example, the following procedure uses two input values to draw rectangles of varying sizes and shapes:

```
TO REC :HEIGHT :LENGTH
FD :HEIGHT RT 90
FD :LENGTH RT 90
FD :HEIGHT RT 90
FD :LENGTH RT 90
END
```

Naturally, each time you execute REC, you'll have to provide values for :HEIGHT and :LENGTH. Try executing REC 100 10 to make a tall, thin rectangle. Try REC 10 100 for a short, squat one. See if you can figure out what REC 100 100 makes.

Variables can be used with any shape-making procedure you define. They can stand in for numeric inputs to any Logo command that expects a number or numbers. The following procedure uses three variables in conjunction with a variety of commands. Supplied with the proper inputs for number of sides, turtle turns in each angle, and length of each side, it can draw any regular polygon in any size you like!

```
TO ANYPOLY :SIDES :ANGLE :LENGTH
REPEAT :SIDES[FD :LENGTH RT :ANGLE]
END
```

Try executing ANYPOLY 3 120 50 for a triangle. (*See Logo No. 4, in the December issue, for a review of procedures that generate polygons.*)

## THE FAMILY CHALLENGE

This month's "Family Challenge" puts together a little bit of everything we've introduced: variables, setting the turtle's position, and printing things on the screen. Let's see if your family can recreate yourselves as snow people. Each family member can create a procedure that draws his or her counterpart. Then together, you can all write a final procedure that combines all the snow figures.

Since the circles that make up the various parts of a snow person's body are different sizes, the first challenge is to define a procedure that uses a variable to create the different circles needed. Each family member can use the same procedure, but change the variable input to suit their own size in relation to the others.

SETXY (or SETPOS) can be used when putting all of the separate family member's subprocedures together, to place each snow person in an appropriate location on the screen.

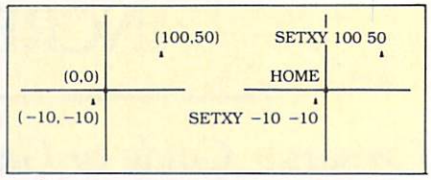
As a final touch, use the PR statement to add the names of all the family members to your picture.

## NOW—SOME NEW VOCABULARY

The more you know of Logo, the easier it is to express yourself. Here are some more Logo commands to add to your vocabulary.

**SETXY.** The command SETXY (or **SETPOS**, depending on your Logo version) is used to place the turtle in a specific spot on the screen other than HOME. It can be especially helpful when you want the turtle to make a shape in a particular place.

SETXY is always used with a pair of inputs representing the X and Y coordinates of the place you want the turtle to go, figuring the HOME position as 0,0. For example, SETXY 100 50 places the turtle 100 steps to the right of the HOME position and 50 steps up. SETXY –10 –10 puts the turtle 10 steps to the left of the center of the screen and 10 steps down. (Note: the SETPOS version of this command requires the user to place the X and Y values in brackets, like this: SETPOS [100 50]. Try SETXY (or SETPOS) with some coordinate pairs of your own. Notice that if the turtle's pen is down, SETXY will cause a line to be drawn between the turtle's old position and its new one. What command could you use, prior to SETXY, to prevent this?




One caution when using SETXY with youngsters: most don't know what negative numbers are. Often they'll need a little help from parents to understand what an X,Y axis is all about, as well. Use the turtle to demonstrate, perhaps taping an axis made of crossed strings to the screen, centered over the HOME position. This can serve as an aid to visualizing how different X and Y values make the turtle move around.

**HT and ST.** These two commands stand for **HIDETURTLE** and **SHOWTURTLE**. HT is used when you want to make the turtle disappear while still drawing on the screen. When the turtle is hidden, the execution of a drawing is generally speeded up. In addition, this command keeps the turtle from being a distraction while drawing. The ST command is used to make the turtle visible again.

**PRINT.** PR for short, the PRINT command directs Logo to print its input on the screen. Among other things, inputs to PRINT can be a list of words (a Logo list is any group of words or characters enclosed in square brackets, [ ]). For instance, you might be able to guess what message PRINT [TRY THE FAMILY CHALLENGE.] prints on the screen.

## MOVING ON

Next month we'll conclude our step-by-step look at Logo. Our last article will include a brief look at some advanced features of the language. We'll also discuss some special applications of Logo for very young children. Now, give this month's "Family Challenge" a try. FC

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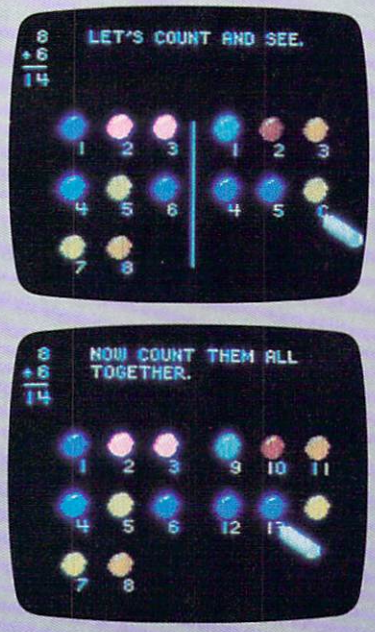
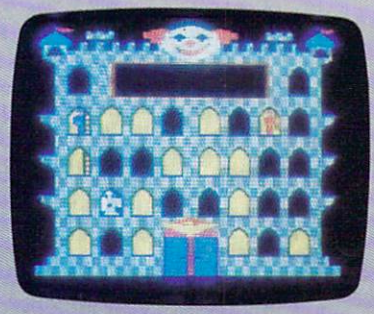



*The Professor uses colorful graphics to provide children with an identifiable illustration to convey an abstract idea.*



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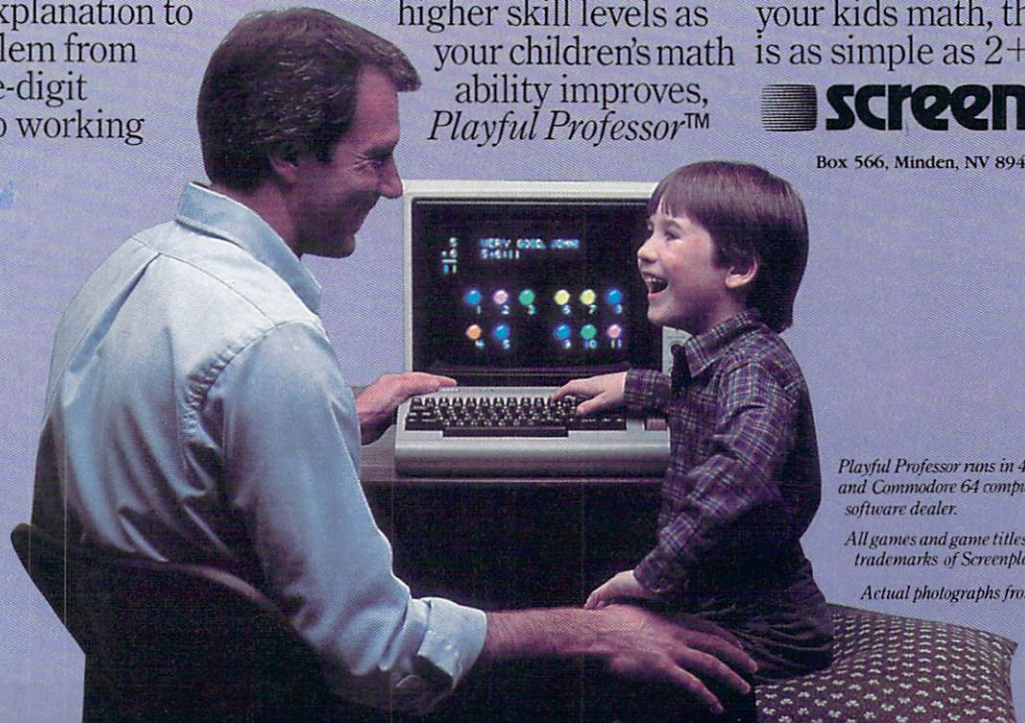

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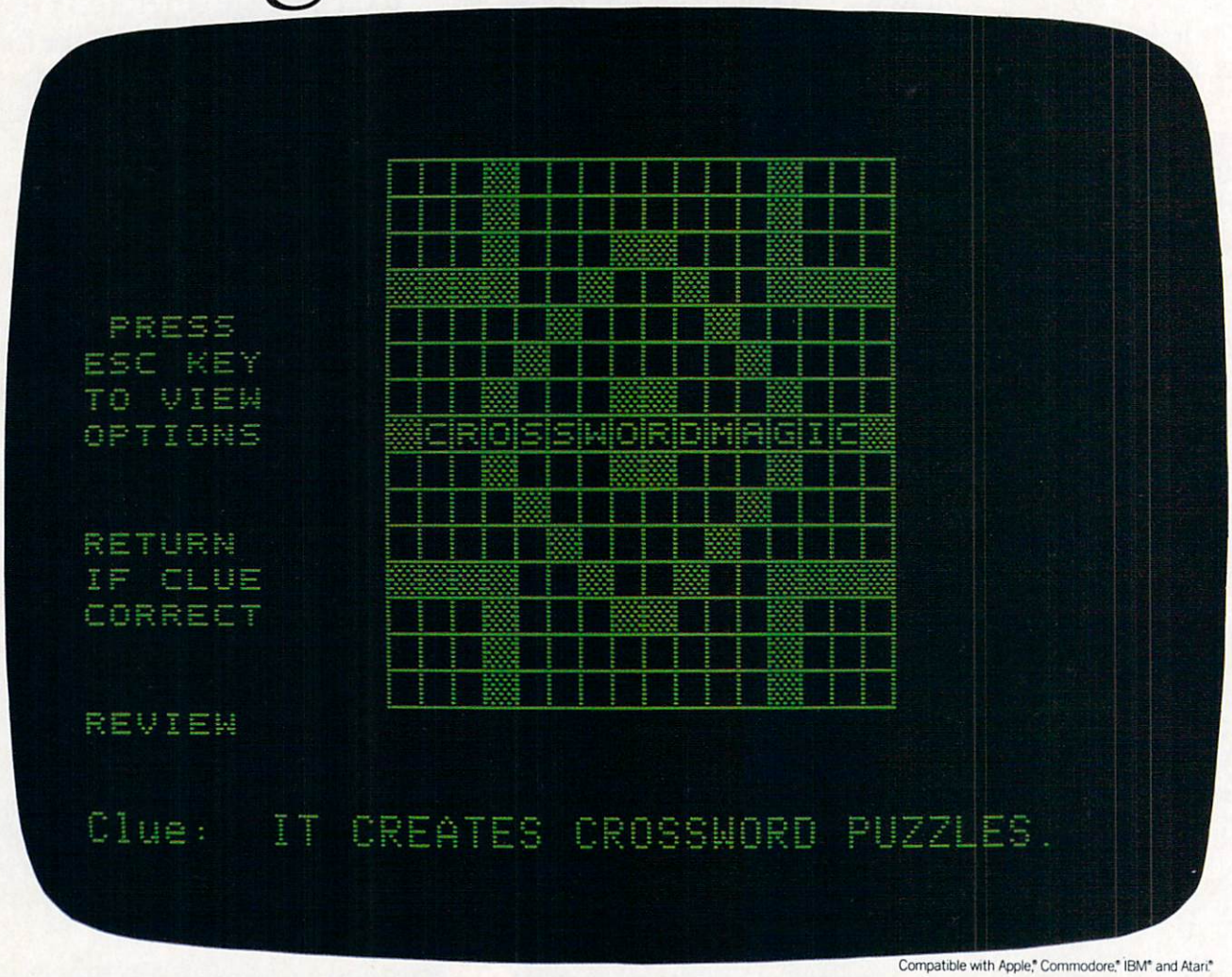


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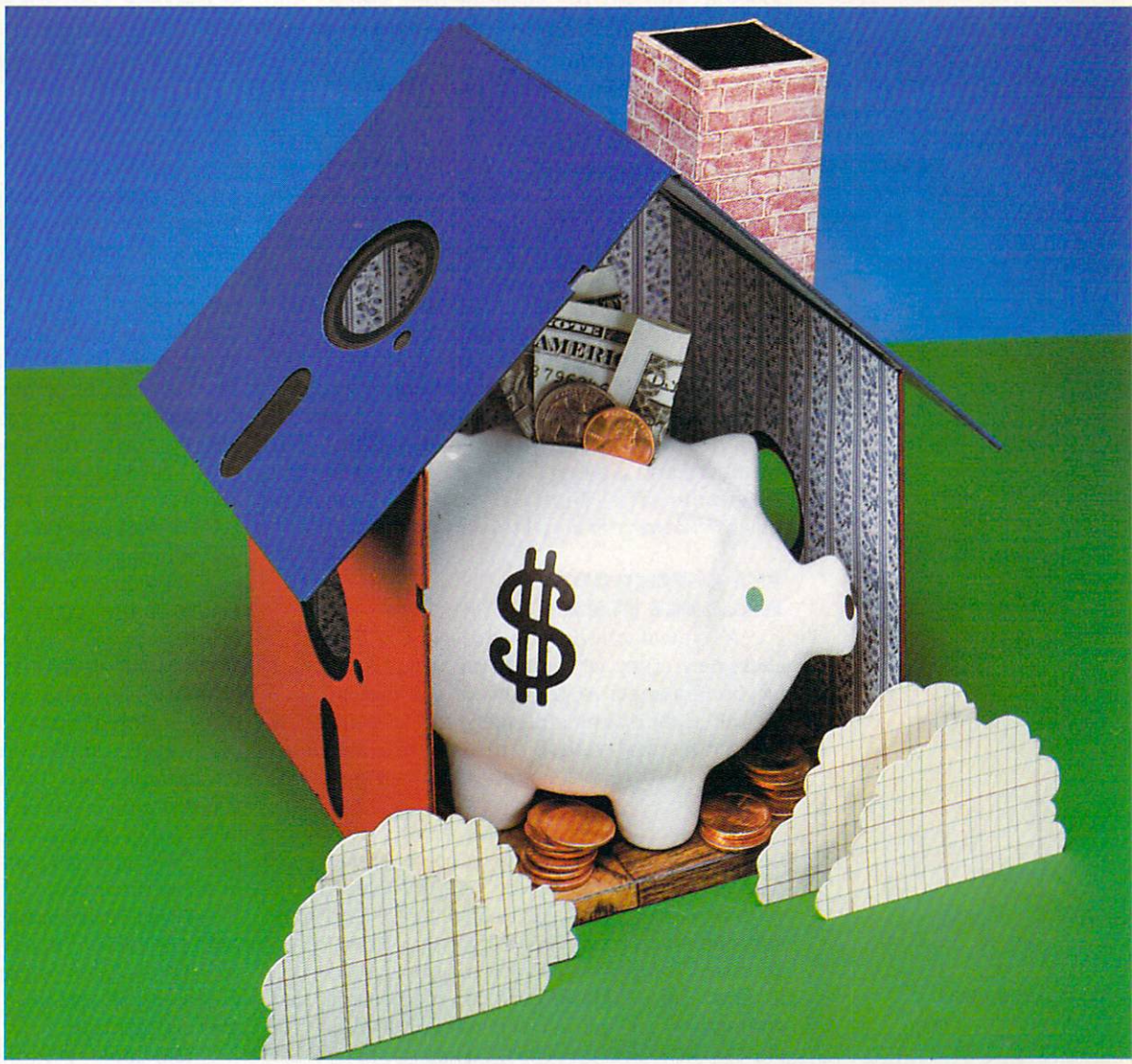
BY LAWRENCE J. TELL



January can be the cruelest month. The bills roll in for holiday expenses, the income-tax forms arrive reminding you of that deadline a few months away. Whether you're struggling with a checkbook that refuses to balance or planning finances for the coming year, the computer can help you crunch numbers before they crunch you.

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let you wrestle those numbers into submission and get a better grasp on your financial state.

## ELECTRONIC SELF-HELP

Home-finance software come in four basic flavors, suited to taking care of a variety of tasks. The simplest resemble an electronic checkbook, which records and sometimes prints all your checks, and reconciles your checkbook. Budget programs keep track of household expenditures and income, enabling you to monitor the family finances. The more elaborate personal-accounting programs combine checkbook and budget features while keeping tabs on the value of your assets and possessions, as well as tax-deductible expenditures. Finally, financial-counseling programs help you analyze those complex money decisions—how big a mortgage to take out or whether to trade in your car. A few integrated programs offer checkbook, budget, and accounting features as well as financial advice based on sophisticated financial formulas.

**FINANCIAL-COUNSELING PROGRAMS GUIDE YOU IN PLANNING AHEAD FOR THE FUTURE.**

Think of these programs as electronic self-help books and organizational tools. The good programs will help you tackle everyday financial chores in a logical, organized fashion, often performing calculations and balances quicker than if you were to do them manually. The fancier financial-counseling programs can even be fun to use. If you enjoy tinkering with numbers and playing "What if," a program like Electronic Arts' *Financial Cookbook* may displace *Wizardry* or *Pac-Man* on your shelves.

## THE CHECKBOOK-BALANCE BLUES

A typical checkbook program will record each new entry while keeping a running total of your balance. At the end of the month, you reconcile your bank statement by entering both the bank's and your balance, noting deposits applied to, or checks not cashed on your account.

Electronic checkbooks really come in handy when you need to retrieve records of past expenditures. Maybe you're thinking of switching from gas heat to oil. The oil company estimates you'll pay $700 in annual fuel bills. You turn to your checkbook program and order a report of all checks written to the local gas company since last fall. A few seconds later, the checks and amounts are neatly displayed in chronological order, and you've got a handy way of comparing the potential cost of oil with the actual cost of gas.

Each program uses its own search and retrieve method. Timeworks' *Electronic Checkbook*, for instance, asks you to choose how you'd like to search: by check number, transaction description, special code, date, amount, and so on. Request any combination of cross-references—all checks written in October for more than $100, for example. At tax time, you can use this feature to retrieve all checks you've previously coded as tax-deductible. Then simply transfer the amounts to your tax forms.

Some checkbook programs also print your checks, although you'll need preprinted check forms that must be ordered separately. Though hardly essential, this feature does come in handy if you're writing the same check every month, like a mortgage payment to the bank. *Quicken*, from Intuit, for instance, offers an automatic payment feature that calls up a check you've entered as a memorized transaction. Simply enter a code, retrieve the check, modify the date or amount as necessary, and print it out with a few simple keystrokes.

## MAKING THE BUDGET FIT

Budget programs offer an entirely new way of keeping tabs on your family finances. You set up your household accounts by listing the various types of expenses: rent, utilities, groceries, dining out, etc. Then you list your income categories and set up files for your bank and credit card accounts. You supply a monthly budget amount for each category: how much you anticipate spending or earning.

Once you've worked out the various budget categories, you're ready to enter transactions. Every time you spend money or pay a bill, you enter the amounts in the appropriate category. The program plugs the data into different parts of your budget program and stores it on a data disk for future reference. Each time you enter a credit card payment, for instance, the program deducts the amount paid from your checking account—if you paid by check. It also reduces your charge card balance by the amount of the payment. It records the payment in the appropriate budget category: $125 for clothing, $15 for dinner, $75 for travel, and so on.

As with electronic checkbooks, budget programs really shine when you need to retrieve information about your finances. You can compare your actual spending this year for groceries against your budgeted amount, or graph the difference using a graphics module found on a program such as Array's *Home Accountant*. You can also print out an item-by-item list of expenditures.

This feature is especially useful at tax time. Compile a list of tax-deductible expenditures by coding each tax item when you enter it. At year's end all you have to do is call them up and make a printout.

The most comprehensive budgeting programs really act as personal accountants. They don't just measure the money as it comes in and goes out. They keep running totals of your savings and other assets, such as stocks and bonds, and the value of your car and home. Armed with that data, a program such as Scarborough System's *Your Personal Net Worth* can instantly calculate your financial net worth—that is, the sum of all your assets minus the money you owe (like the home mortgage and any bank loans). Watching your savings grow or your debts pile up is the first step toward financial self-awareness.

LAWRENCE J. TELL *is a New York-based financial journalist. His last article, "Adrift in the Sea of Tax Forms?," appeared in the April 1984* FAMILY COMPUTING.

## FINANCIAL COUNSELORS

If a personal accountant/budget program is like a financial thermometer monitoring the health of your family's wealth, then financial-counseling programs are a form of preventive medicine. They help you make wise financial decisions in order to keep that thermometer in the healthy range.

Financial-counseling programs guide you in planning ahead for your future. Take Electronic Arts' unique *Financial Cookbook*, a program with some 30 "recipes" for making financial decisions. Let's say you've accumulated $40,000 in a bank account that pays 8 percent interest annually. How many years will those savings last once you've retired? That depends on how much you need to live on each month. If $500 a month sounds right, enter that into the program. Next, the program asks for the inflation rate. By entering 5 percent, you're telling the program to raise your monthly withdrawal by 5 percent a year to keep pace with inflation. And finally, it asks for your tax bracket—to figure how much you'll owe in taxes on the interest your account earns.

Hit the "calculate" key and see the answer: six years and 11 months. If you hadn't figured for inflation, your $40,000 would have seemed to last 14 months longer.

## FIGURING OUT WHAT'S WORTH IT

Financial programs are a varied lot. How do you decide which one is the right one for you? Some require so much work at the keyboard that you'd be better off just sharpening that trusty pencil and tapping a few numbers into your pocket calculator. That's especially true if your family finances aren't any more complex than, say, keeping the electric bill within bounds. So, be realistic about your financial situation. Does it require computerizing in the first place?

Setting up a household budget can be a monumental task—what with getting yourself organized, deciding on a structure, and setting up a budget with categories and codes. You'll need all the help you can get.

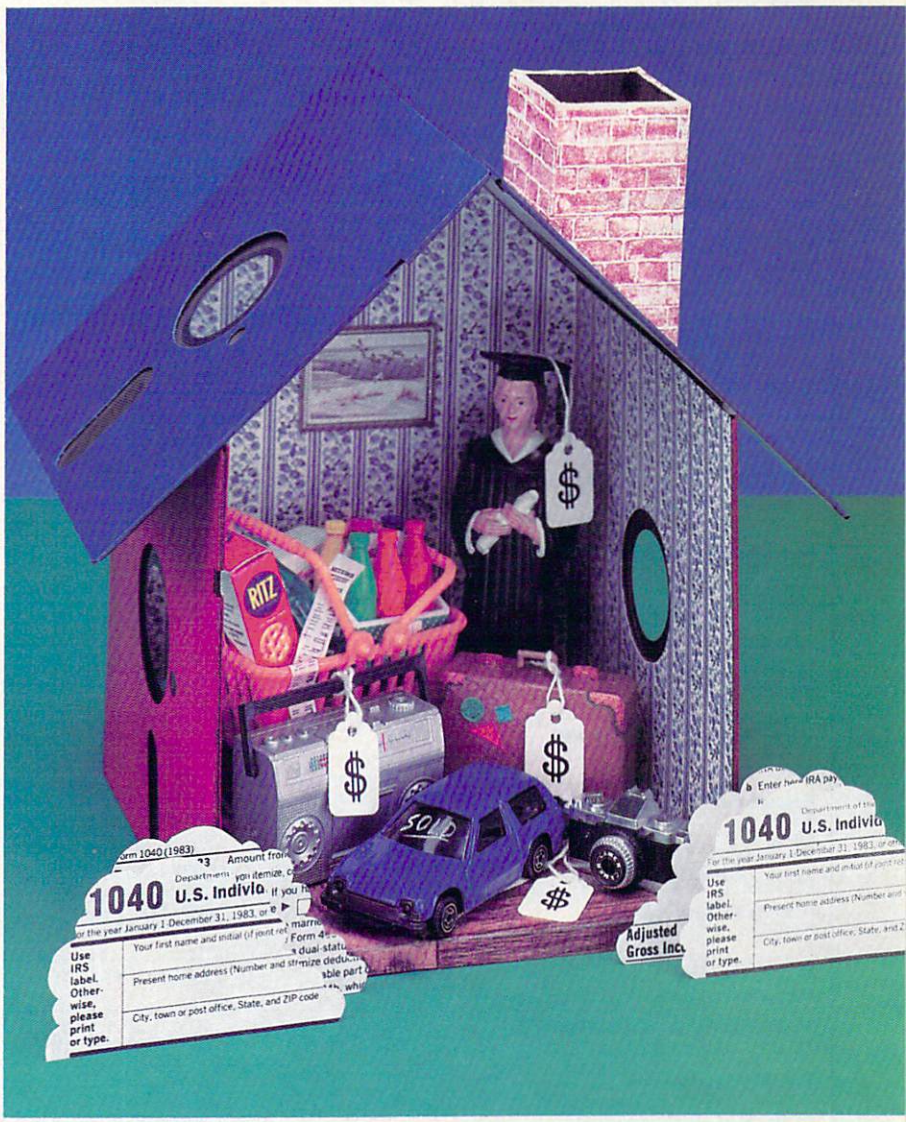
Look for programs that make those tedious steps a bit less painful. Scarborough Systems' *Your Personal Net Worth*, and Sundex's *Certified Personal Accountant* include preprogrammed categories for your household budget—such as groceries, utilities, rent, taxes—but permit changes and additions to suit your spending patterns and financial needs.

No doubt, especially in the early stages of implementing your new accounting package, you'll run up against a wall because you've forgotten to enter some crucial information. A program that nudges you for all pertinent information is valuable in these circumstances. HesWare's *Finance Manager* sends a message to the screen with advice on how to escape the predicament. If your monthly loan payment simply won't compute, the program will point out that you neglected to enter, say, the number of years the loan will run. It even moves the cursor to the missing data-entry point.

Unfortunately, few of these expensive pieces of number-crunching software include a calculator. You'll find you need to keep a pen, pad, and calculator handy for simple math.

## USERS BEWARE

Even the best home financial software can lead the unwary user astray. Of course, if you enter the wrong interest rate on your potential home mortgage, a program's likely to give you some bad advice about whether or not to buy the house. Also, many people have a tough




enough time just keeping their checkbooks straight, let alone avoiding easy-to-make mistakes in data entry.

Frequently, the fault lies not in ourselves, but in the software. Sometimes, the manuals don't adequately explain the powerful analytical tools borrowed from the world of high finance and placed at your fingertips. An unsuspecting user could easily misinterpret the data and stumble into a financial morass.

For example, most financial programs use a concept known as "present value" to tell you

# HOME FINANCE SOFTWARE

| TITLE/PRICE REQUIREMENTS | MANUFACTURER | HARDWARE | TYPE | SA | TD |
|---|---|---|---|---|---|
| **Basic Accounting** $89 | Firefighter Software (800) 641-0814 | Apple II/II plus/IIe, 48K (disk). | C B | Y | Y |
| **Cash Budget Management** $49.95 | Radio Shack (817) 338-2395 | TRS-80 CoCo, 16K (disk). | C B | Y | N |
| **Certified Personal Accountant** $149.95 | Sundex Software Corp. (303) 440-3600 | Apple II series, 64K (disk); IBM PC/PC*jr*, 128K (disk). | C B | Y | Y |
| **Checkbook** $29.95 | Batteries Included (714) 979-0921 | Commodore 64 (disk). | C | Y | Y |
| **Checkbook Manager** $9.95 | Triton Products Co. (800) 227-6900 | TI-99/4A, 32K (disk). | C | N | N |
| **Checks & Balances** $74.95 | CDE Software (213) 661-2031 | IBM PC/PC*jr*, 196K (disk). | C B | N | Y |
| **Chequemate Plus** $79.95 (Apple); $149.95 (PC) | Masterworks Software, Inc. (213) 539-7486 | Apple II/II plus/IIe, 48K (disk); IBM PC, 64K (w/DOS 1.0, 1.1, otherwise needs 128K), (disk). | C B | N | Y |
| **Complete Personal Accountant** $79.95 | Futurehouse (919) 967-0861 | Atari Home Computers, 48K (disk), translator required for XL series; Commodore 64 (disk); TRS-80 CoCo, 32K (disk); versions planned for Apple, IBM. | C B | N | Y |
| **Dollars and Sense** $99 (Apple II plus/IIe); $119 (IIc); $149 (Mac); $165 (IBM PC); $179 (IBM PC/ PC*jr* w/*Forecast*) | Monogram (213) 215-0529 | Apple II/II plus/IIe, 48K (disk)/IIc, 128K (disk)/ Macintosh (disk); IBM PC, 64K/PC*jr*, 128K (disk). | C B PV/FV | Y | Y |
| **Dow Jones Home Budget** | Dow Jones Co., Inc. (609) 452-2000 | IBM PC, 128K (disk). | C B | Y | Y |
| **Easy Finance I-V** $21.95 each | Commodore (215) 431-9100 | Commodore 64 (disk). | F Loans, PV/FV, annuities, stock values | Y | N |
| **Electronic Checkbook** $29.95 (C 64); $69.95 (IBM) | Timeworks, Inc (312) 948-9200 | Commodore 64 (disk); IBM PC/PC*jr*, 128K (disk). | C | Y | Y |
| **Family Budget** $34.95 | Dynacomp (716) 671-6160 | Apple II series, 32K (disk); Atari Home Computers, 32K (disk); TRS-80 I/III/4, 16K (disk). | B | Y | N |
| **Finance Manager** $99.95 (Apple); $139.95 (IBM) | HesWare (415) 468-4111 | Apple II series, 48K (disk); IBM PC, 128K (disk). | C,B Loans, PV/FV, interest rates | N | Y |
| **Financial Cookbook** $50 | Electronic Arts (415) 571-7171 | Apple II series, 48K (disk); Atari Home Computers, 48K (disk); C 64 (disk); IBM PC/PC*jr*, 64K (disk). | F PV/FV | N/A | Y |
| **Home Accountant Plus** $150 | Arrays, Inc./Continental Software (213) 410-3977 | IBM PC, 128K (disk). | C, B FV, savings | Y | Y |
| **Home Accounting** $39.95 | TOTL Software, Inc. (206) 468-2214 | Commodore 64 (disk). | C, B Loans | N | Y |
| **Home Financial Decisions** $5.95 | Triton Products Co. (800) 227-6900 | TI-99/4A, 16K (cartridge). | F Loans | N/A | N/A |
| **Home Management Six-Pack** $79.95 | Our OwnWare (215) 331-7900 | Apple II series, 48K (disk). | F Loans, PV/FV, IRA | N | N/A |
| **Household Budget Management** $5.95 | Triton Products Co. (800) 227-6900 | TI-99/4A, 16K (cartridge; needs disk or cassette system). | B | Y | N |
| **J.K. Lasser's Your Personal Money Manager** $79.95 | Simon & Schuster (212) 245-6400 | Apple II series, 128K (disk); IBM PC/PC*jr*, 128K (disk). | C B | Y | Y |
| **Managing Your Money** $199.95 | MECA (203) 222-1000 | IBM PC, 128K/PC*jr*, 256K (disk); (IBM PC*jr* cartridge, 128K, available through IBM). | C,B,F | Y | Y |
| **Money Manager** $24.95 (C 64);$59.95 (IBM) | Timeworks, Inc. (312) 948-9200 | Commodore 64 (disk); IBM PC/PC*jr*, 128K (disk). | B | Y | N |
| **Peachtree Home Accountant** $140 | Peachtree Software (800) 247-3224 | IBM PC/PC*jr*, 128K (disk). | C,B Loans FV/PV | Y | Y |
| **Personal Accountant** $29.95 (C 64, cassette); $34.95 (C 64, disk; Atari); $49.95 (Apple); $89.95 (IBM;Mac) | Softsync, Inc. (212) 685-2080 | Apple IIe/IIc, 64K (disk)/Macintosh (hard disk); Atari Home Computers, 48K (disk); Commodore 64 (disk & cassette); IBM PC/PC*jr*, 128K (disk). | C B (IBM, Mac) Loans, FV/PV | Y | Y (Mac) |
| **Personal Finance System** $39.95; $42.95 (double density) | Dynacomp (716) 671-6160 | Apple II series, 32K (disk); Atari Home Computers, 32K (disk); Commodore 64 (disk); IBM PC/PC*jr*, 64K (disk); TRS-80 I/III/4, 16K (disk). | C | N | Y |
| **Quicken** $99 | Intuit (415) 322-0574 | IBM PC/PC*jr*, 192K (disk). | C B | Y | Y |
| **Time Is Money** $100 | Turning Point Software (617) 923-4441 | Apple II series, 48K (disk). Version planned for IBM PC/PC*jr*. | C B | N | Y |
| **Women's Ware: Budget** $49.95 | Neon Software (203) 346-6322 | IBM PC/PC*jr*, 128K (disk). (IBM PC requires color graphics board). | B | Y | Y |
| **Women's Ware: Checkbook** $49.95 | Neon Software (203) 346-6322 | IBM PC/PC*jr*, 128K (disk) | C | N | Y |
| **Your Personal Net Worth** $79.95 (Atari; C 64); $99.95 (Apple; IBM PC) | Scarborough Systems (914) 332-4545 | Apple II series, 48K (disk); Atari Home Computers, 48K (disk); Commodore 64 (disk); IBM PC/PC*jr*,128K (disk). | F | Y | Y |

| CP | AUTO | COMMENTS |
|---|---|---|
| Y | Y | Hard to set up, but *** documentation provides guidance. Full-service accounting program. |
| N | N | Easy to use, with good sorting features. *** documentation. |
| Y | Y | Full-service accounting program with net-worth report and stock-portfolio monitor. |
| N | Y | Simple command menu makes it easy to use. |
| N | N | Easy-to-use checkbook program. |
| Y | Y | Documentation is too technical—written from a programmer's point of view. |
| Y | N | Basic checkbook/budget program. |
| Y | Y | Full-service accounting program includes mailing list and appointment calendar. |
| Y | Y | Checkbook/budget functions can be supplemented with extensive tax-planning program (IBM PC/PC*jr*). Also permits stock-portfolio management. |
| Y | N | Full-service accounting program. Experienced user can save time by switching off prompts for data entry. |
| N/A | N/A | Disk I handles calculations; II calculates PV/FV, stock values, rate of return on investments; III–V are for business use. Programs include built-in calculator and helpful glossary. Useful for comparing alternative scenarios without repetitive data entry. |
| N | N | Easy to use. |
| N | N | Limited home-budget program also keeps charge-account records. |
| Y | Y | Good on-screen help guides user through data entry. |
| N/A | N/A | Easy to use. Offers 30 "recipes" for financial calculations. Beware of hidden assumptions that may distort results. |
| Y | Y | Full-service budget program, but minimal financial counseling. Tedious setup common to this type of program. Runs faster (on hard disk) than earlier version. *** documentation. |
| N | N | Easy-to-use graphic display. **** documentation. |
| N/A | N/A | Full range of financial-counseling features: rent vs. buy for home, PV/FV, loan & savings calculations. Uses sophisticated financial methods with hidden assumptions. *** documentation. |
| N/A | N/A | No manual—all instructions and HELP appear on-screen. Calculates PV by asking for your estimate of inflation. Also includes telephone directory, inventory of personal property and credit cards, etc. |
| N/A | N/A | Features good graphic displays of budget vs. actual expenses. |
| N | Y | Not available for review at press time. |
| Y | Y | Complete program with powerful tax planner. Built-in calculator. Reads data already entered into other parts of program. Complete on-screen help. Good stock-portfolio monitor. |
| N/A | N/A | Enters figure in whole dollars only. Includes graphic display. Works with *Electronic Checkbook*. |
| Y | N | Easy to get net-worth statement. |
| N | N | Keeps home balance sheet based on accounting principles. Includes name/address data-base manager. |
| N | N | Very simple checkbook program. |
| Y | Y | Easy-to-use program set up like a checkbook. |
| Y | Y | Powerful home-budget/checkbook program. |
| N | N | Easy to boot and operate. **** documentation, but condescending. |
| N | N | Same as above. |
| Y | N/A | Excellent on-screen help. Easy data entry includes stock portfolio. Useful inquiry key lets user access index of budget categories. |

**NOTES TO THE CHART:**

**Type:** C = Checkbook programs; B = Budget programs; F = Financial-counseling programs that perform a variety of calculations: loan analysis, savings-account interest, buy vs. rent decisions, etc.; PV/FV = Present-value/future-value calculations performed. (Present-value calculations help you compare financial alternatives. Future-value calculations help you figure out what you might earn in a situation in which interest is accrued.)

**SA:** Furnishes sample accounts.

**TD:** Identifies tax-deductible items.

**CP:** Prints checks, usually on preprinted forms.

**AUTO:** Processes recurring transactions automatically.

**Key:** Y = Has feature; N = Does not have feature; N/A = Feature not applicable.

**Documentation:** **** = Excellent; *** = Very good. All other documentation is adequate unless otherwise noted.

which choice is preferable: buying vs. renting a home, for instance. Present value illustrates the financial truth that it's better to have a dollar today than the same dollar a year from now—because you can invest the $1 today in a savings account and, with interest, earn 5–10 cents more after a year. Likewise, it's always cheaper to make a $1 payment a year from now than today.

Present value comparisons are used on any scenario that stretches into the future. But the program must ask the user to supply an appropriate interest rate to determine exactly how much greater (or smaller) that dollar will be after several years. An unknowing user might skip right over a question asking for the interest rate on a savings account while figuring a loan scenario. That mistake might make a very costly decision look overly inviting.

## THE TAX BRACKET TRAP

Similarly, programs that calculate your tax savings must take your marginal tax bracket into account. People frequently confuse tax bracket with tax rate. Your marginal tax bracket is the rate at which the next dollar you earn over and above your present income will be taxed. This bracket is always higher than your tax rate, which is the percent of income you pay in taxes.

Your bracket determines how much a given tax deduction actually saves in taxes, as well as the tax you'd owe on savings interest. If you're hasty in figuring your bracket—or simply don't know what it is and leave the item blank—you'll seriously distort the final results. *Financial Cookbook* provides two helpful features on this score: It tells you all about tax brackets, and its profile utility remembers the numbers you've entered and applies them to other scenarios.

## WHAT SOME FAMILIES SAY

Regardless of how good the package you get your hands on is, be prepared to spend some time computerizing your family finances. Budgeting and balancing require a discipline both on and off the computer, as these FAMILY COMPUTING reviewers discovered. Concentration and commitment are the main ingredients for the successful application of a computer to a financial situation. You've heard what the financier says about home-finance software. Here's what some families say.

**ROBIN RASKIN:**

I've made the plunge and I'm glad I did. When I first sat down at the computer with my pile of manila envelopes and receipts, I was tempted to stay with my tried-and-true "pencil-and-paper storage system." Sundex's *Certified Personal Accountant* helped ease the transition.

It was the on-screen tutorial that got me up and running in the first place. The only time I had to use the manual was to prepare my tax categories, and that's only because I'm ignorant of the fine distinctions between many financial terms.

I like *CPA*'s overall strategy. You've got two big categories: accounts and budgeting. Accounts takes care of the big picture—my expenses and earnings, assets and liabilities. The budget helps me out in the shocking actualities—just how much I spent on groceries this month and how much more that figure is than what I'd planned.

The program's management of my accounts was more useful than the budgeting component. To make the budget work, you've got to type in a year's worth of estimated budgets for all categories. Trying to estimate my expenses for a year was a waste of time.

**BETSY BYRNE:**

Until *Your Personal Net Worth* came into our lives, our budget was nonexistent, and our financial planning reminiscent of the Stone Age. Needless to say, April 14 always found us burning the midnight oil, overwhelmed by piles of disorganized information. This year, we tried several programs before deciding on *Your Personal Net Worth*. Some were much too simple for our needs (we need to have categories for more than one source of income, for instance). Others, we found almost incomprehensible to us nonaccountant types.

The excerpt from Sylvia Porter's book included in the *Net Worth* package made us realize that our biggest problem had been not understanding how to create a budget. It took a while to set up and organize our financial information (the computer can't take over that task), but now everything from Timmy and James' Cub Scout dues ($1 per week) to credit card payments and utility bills (more than $1 per week) is itemized each week—with a lot more money left over than we'd ever suspected.

*Net Worth* gives us a nice printout, and impresses the heck out of (as yet non-computer using) relatives! And, when my husband asks, "What on earth did you do with all that money I gave you last week?" I always have an answer.

**JOHN LINCOLN:**

Getting my personal income and expenses into a good computerized checkbook-management program was the first step in managing my family's finances. The second step was investing in *Financial Cookbook*.

The disk holds more than 30 different financial-analysis programs. They answer questions like "How much money should I be saving each month toward my son's education." My son is 10 years old, so I have eight years of saving ahead of me. I don't know what college will cost in 1992, but I can estimate that the "buying power" I want is about $25,000 in today's dollars. Here's the way I fill in the screen:

THE BUYING POWER YOU WANT: $25,000
NUMBER OF YEARS: 8
INFLATION RATE: 6%
INTEREST RATE EARNED: 8%
COMPOUNDING PERIOD (days): 365
MARGINAL TAX RATE: 20%

I hit the "compute" button and instantly the calculation appears:

MONTHLY DEPOSIT REQUIRED: $318

The printout also contains a breakdown, year by year, of interest earned, taxes paid, cash balance, and actual buying power (cash balance adjusted for inflation).

Of course, in the case of my son and his tuition, the information *Cookbook* provides is only as good as the information put into it. Because the inflation rate will change over the next eight years, I'll be running regular updates on the tuition calculation.

Many programs provide a brief explanation of these difficult concepts in an accompanying manual. That's good enough for starters, but it doesn't help you avoid pitfalls in using the program. TI/Triton Product's *Home Financial Decisions* is more helpful: Its manual warns you about distortions that could enter into the picture. In a calculation on buying or renting a home, it even cautions against placing too high an expected resale value because the number "has a significant effect on final results."

You can solve this problem yourself. Simply experiment to discover which factors cause the biggest change in the total, and which ones hardly seem to matter. That way, you'll know what to watch for and when a program might lead you into ruin.

### TIMES, THEY ARE A CHANGING

Don't assume that once you've initialized your data disk and installed your software your work is done. Change whips through the financial world with amazing speed. Few programs can keep up.

For instance, the single most confusing decision facing nearly every home buyer today is what kind of mortgage to take: fixed rate or one of the several different adjustable types. Yet none of the programs in our chart lets you make the necessary comparisons. A few give you the tools to figure it out for yourself, but so would a business-level pocket calculator. ARMs, as the adjustables are called, are simply too complex an innovation for most software companies to have included in the programs.

Some programs have clever ways to keep your software up-to-date. *Managing Your Money* offers a simple utility for do-it-yourself updating when tax laws change. It takes only a few simple keystrokes. This ingenious feature should be included in every program that relies on tax calculations. MECA will also distribute a newsletter mentioning changes in tax laws and tips written by the program's author, financial columnist Andrew Tobias, to all purchasers of the software who pay an extra fee.

*Managing Your Money* accurately bills itself as an "integrated home financial package." It might be considered a Cadillac among software of its type. It offers a full range of budget and counseling services, and makes it easy, and sometimes fun, to work through your financial chores.

Some families won't ever need some of its more advanced features. Remember that once you plug into a checkbook or home-budget program, you have to adhere to its intricate, electronic ways. Forget to enter several checks, or neglect to account for some expense, and those carefully balanced budget categories can go haywire. On the other hand, some of us yearn for help in organizing our finances. Imagine what you could do with an item-by-item printout of the family's living expenses—to help plan for the future, travel, or education; to make it easier to figure your taxes; or just to see where those hard-earned dollars go. You won't be enslaving yourself to an elaborate home-budget program, you'll use it as a tool for your financial emancipation.

First, you have to know what you want. Then, it's easy to narrow the choice of programs to one that will fit your needs. FC

# "I Hereby Resolve To..."

## HERE'S A SAMPLING OF COMPUTER NEW YEAR'S RESOLUTIONS FROM OUR READERS

**BY ROBIN RASKIN**

NAME: Lynette Stuart
RESIDENCE: Des Moines, Iowa
OCCUPATION: Work with developmentally disabled children
COMPUTER: Apple IIe
APPLICATIONS: Programming and games, developing instructional aids to use with my students

RESOLUTION: I know three different forms of BASIC, and I'm fluent in Logo. Now, I intend to learn more about Pascal and will use this knowledge to aid my youngsters.

NAME: Patricia McConnel
RESIDENCE: Moab, Utah
OCCUPATION: Author
COMPUTER: Osborne 1 and Epson PX-8
APPLICATIONS: Word processing, research and record-keeping, telecommunications

RESOLUTION: I resolve to hike to Delicate Arch, the most spectacular rock formation in Arches National Park, with my new Epson PX-8 lap computer in my rucksack. I will sit under the arch and write a poem on my computer, and feel secure that I am the first person in the world to do so. That's the fun of belonging to the Computer Age.

NAME: James Franklin
RESIDENCE: Birmingham, Alabama
OCCUPATION: Juvenile Probation Officer, Family Court, Jefferson County
COMPUTER: Coleco ADAM
APPLICATIONS: Word processing, games

RESOLUTION: I'm going to continue to pester software companies to create programs for ADAM users.

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ROBIN RASKIN *is a contributing editor to* FAMILY COMPUTING. *She wrote "Diary of a Computer Shopper" for the December 1984 issue.*

### A RESOLUTION FOR COMPUTER-AGE PARENTS

WHEREAS, we understand that by the time our children grow up and enter the work market, computers will be as ubiquitous as typewriters now; and

WHEREAS, we also understand that in the near future, computer-literate people will have significant career advantages over those who are computer-ignorant; and

WHEREAS, we further understand that in the future, computers will be affecting people's lives, whether or not they have jobs;

NOW, THEREFORE, we resolve to see that our children have the opportunity to become computer-competent at the earliest possible age. To accomplish this, we further resolve:

To purchase and use a personal computer in the home so that our children are guaranteed access to computer learning;

To become computer-literate ourselves in order to be better prepared to encourage and support our children;

To purchase high-quality, interactive learning software, such as Logo and educational games, and to join our children in the learning process;

To support and encourage the schools, in any way we can, as they purchase computers and train teachers to use them;

To encourage our girls to take math, science, and computer courses all the way through school, since without a background equal to boys in these areas many career options will then be closed to them;

To explore all the options inherent to computers for our handicapped children, since the enabling potentials of computers can make the difference between dependency and self-sufficiency;

To stay informed and involved with the economic, sociological, and political issues connected with computing, since the groundwork that is laid now will affect the work climate our children will inherit from us;

—PATRICIA McCONNEL

NAME: Bob Umlas
RESIDENCE: Yonkers, New York
OCCUPATION: Senior Technical Consultant, CBS
COMPUTER: Apple Macintosh
APPLICATIONS: Make "To do" lists and phone number lists; keep data bases for numerous hobbies, finances, and budget; design architectural plans, business and greeting cards; word processing

RESOLUTION: I am going to beat *Sargon III* (a chess game). I am going to find the damsel in *Transylvania*. I am going to cross-reference my jokes. I am going to write a marketable data-base program called *KWOC* (*Key Word Out of Context*).

NAME: Eleanor Notarangelo
RESIDENCE: Highspire, Pennsylvania
OCCUPATION: Typesetter
COMPUTER: Coleco ADAM
APPLICATIONS: Word processing, typing in BASIC programs

RESOLUTION: I resolve to get myself and my computer more organized, to spend more time with my computer, and to begin computerizing my recipes, telephone numbers, and addresses.

NAME: Charles Wadham
RESIDENCE: Fresno, California
OCCUPATION: Manager of Training, New York Life Insurance Co.
COMPUTER: IBM PC/XT
APPLICATIONS: Programming, use *Lotus 1-2-3* and *MultiMate* to prepare church-related documents

RESOLUTION: To discover and buy several fun/learning programs for my grandchildren. To find and use a genealogical indexing program to file the 200 handwritten pages of notes I've amassed over the last 20 years. To continue to learn and work with financial portfolio-management programs, particularly those with graphics features.

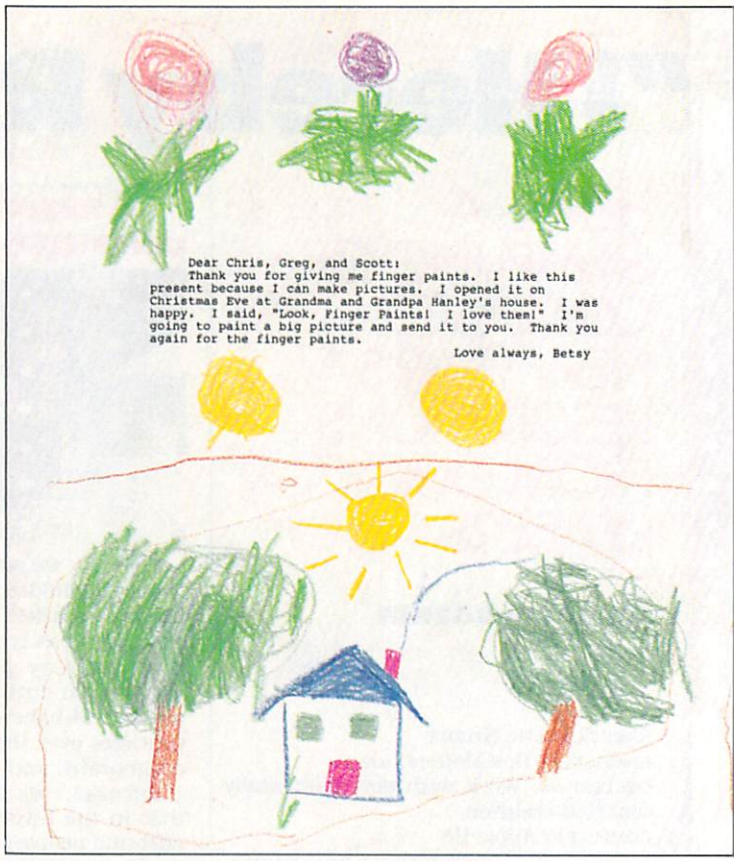
NAME: Joan LeClere
RESIDENCE: Jacksonville, Florida
OCCUPATION: Writer
COMPUTER: Kaypro II, Commodore 64
APPLICATIONS: Word processing by day, programming and operating a bulletin board by night

RESOLUTION: I gave up making resolutions when I was 12, but: I resolve to finish my third novel that's stuck at page 35 and to write more computer-related articles. I plan to learn about sequential and random files so I can modify some of my BASIC programs. I resolve to raise my head from this keyboard occasionally to pay closer attention to my family. FC

# Playing the Thank-You Note Game

## HOW A SIMPLE PROGRAM CAN ENCOURAGE CHILDREN TO MIND THEIR MANNERS

**BY LORENE HANLEY DUQUIN**



Dear Chris, Greg, and Scott:
Thank you for giving me finger paints. I like this present because I can make pictures. I opened it on Christmas Eve at Grandma and Grandpa Hanley's house. I was happy. I said, "Look, Finger Paints! I love them!" I'm going to paint a big picture and send it to you. Thank you again for the finger paints.

Love always, Betsy

*Using the* Thank You Note Game, *4-year-old Betsy Duquin wrote and illustrated a note to her three cousins (right), while her 6-year-old brother, Tommy, used the program to write to his grandparents (far right).*

Christmas had come and gone and my children were still spending every possible minute on our new Apple IIe. There was only one problem: No one had the time or the desire to write thank-you notes for any of their other gifts.

My husband, Dick, and I wrestled with a couple of ideas that might encourage the kids to follow some basic rules of etiquette. But *nothing* could get them excited about sitting down to write those thank-yous.

Finally, noting how difficult it was to tear any of the kids away from the keyboard, Dick suggested, "Maybe they'd be more interested if they could write their thank-you notes on the computer."

It was a good idea, but I wasn't sure it would work. Our four children are still young. Maybe the oldest, who's 8, could use our word-processing program to write thank-you notes, but he hadn't used the software before and certainly wasn't familiar with the complicated editing commands. I was afraid that using the computer to write a simple note would be frustrating and would only result in the kids hating to write thank-you notes more than ever.

"But we always just sit down with the kids and ask questions about the gifts they received," Dick insisted. "Then they write down their answers and it becomes the thank-you note. I don't see any reason why we couldn't do the same thing with the computer."

Maybe he was right.

Using our word-processing program, we began to write on the screen all the questions we usually ask the kids, such as:

WHO WILL THIS NOTE GO TO?
WHAT DID THIS PERSON GIVE YOU?
WHY DO YOU LIKE THIS PRESENT?

Dick wisely suggested that we add some simple instructions and make it seem like a game, allowing the kids to answer the questions themselves. By the time we finished, the screen looked like this:

THE THANK YOU NOTE GAME

FILL IN THE BLANK: Dear _____

FINISH THESE SENTENCES:

Thank you for giving me . . .
I like this present because . . .

NOW WRITE ANSWERS TO THE FOLLOWING QUESTIONS, USING COMPLETE SENTENCES:

WHEN DID YOU OPEN THIS PRESENT?
HOW DID YOU FEEL WHEN YOU OPENED IT?
WHAT DID YOU SAY WHEN YOU OPENED IT?
WHAT WILL YOU DO WITH THIS PRESENT?

NOW FINISH THIS SENTENCE: Thank you again for . . .

WHEN YOU'RE DONE, USE THE DELETE KEY TO ERASE THE INSTRUCTIONS, WHICH ARE WRITTEN IN CAPITAL LETTERS. BUT SAVE EVERYTHING YOU WROTE. THEN ASK MOM OR DAD TO CHECK YOUR SPELLING. MOVE THE SENTENCES TOGETHER, AND PRINT OUT THE NOTE.

We saved the game on a blank disk, and I could hardly wait until the next morning when the kids could try it out.

"You know," I said to Dick. "This just might work."

The next day, 8-year-old Christopher was the first to try it out. He started with a note to his aunt and uncle, thanking them for the remote-control truck they had sent from California.

When he finished, the screen looked like this:

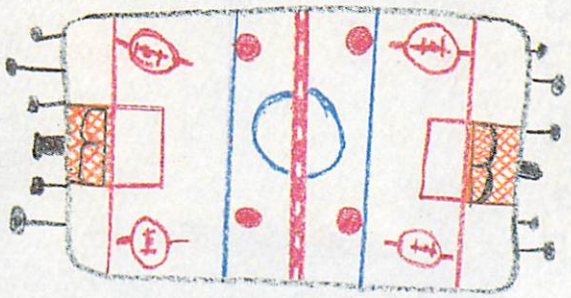
THE THANK YOU NOTE GAME

FILL IN THE BLANK: Dear Uncle Dennis and Aunt Lynette:
FINISH THESE SENTENCES: Thank you for giving me the truck.
I like this truck because it goes by itself.

LORENE HANLEY DUQUIN *has written for a number of magazines, including* McCall's, Family Circle, *and* Seventeen.

Dear Grandpa and Grandma:
Thank you for giving me the hockey game. I like this present because I want to be a hockey player when I grow up. I opened it on my birthday. I was so happy. I said, "I always wanted a game like this." I'm going to ask all my friends if they want to come over and play hockey with me. Thank you again for the hockey game.

Love always,
Christopher



## USING YOUR COMPUTER TO MAKE LETTER WRITING FUN

By answering questions and completing sentences, kids can write a variety of charming and creative notes. Use your word-processing program to save the instructions and questions on a disk. When your child finishes writing, review the note and help with spelling, grammar, and punctuation. Then delete the instructions and move the sentences together. Voila! A letter that was fun and educational to write should be a delight for someone to receive.

There are any number of ways you can adapt the thank-you note idea to write letters to pen pals, get well cards, cover letters to accompany mail orders, and letters of complaint.

To write a program for your children to use for letters to friends, relatives, and pen pals, you might include the following:

FILL-IN-THE-BLANK: "I'm writing to you because . . ."

ANSWER THESE QUESTIONS IN COMPLETE SENTENCES:

HOW HAVE YOU BEEN FEELING?

WHAT IS YOUR FAVORITE THING TO DO AT HOME?

HOW IS EVERYONE ELSE AT YOUR HOUSE FEELING?

WHO ARE YOUR BEST FRIENDS?

WHERE DO YOUR BEST FRIENDS LIVE?

TELL ABOUT ONE EXCITING THING THAT HAS HAPPENED AT HOME OR AT SCHOOL RECENTLY:

COMPLETE THIS SENTENCE: If you can write back to me, I'd like you to tell me . . .

NOW WRITE ANSWERS TO THE FOLLOWING QUESTIONS, USING COMPLETE SENTENCES:

WHEN DID YOU OPEN THIS PRESENT? I opened it on Christmas morning.

HOW DID YOU FEEL WHEN YOU OPENED IT? When I opened it I felt happy.

WHAT DID YOU SAY WHEN YOU OPENED IT? I said this is excellent. I always wanted a truck like this.

WHAT WILL YOU DO WITH THIS PRESENT? I'm going to call my friend who has a truck just like it so we can have races.

NOW FINISH THIS SENTENCE: Thank you again for the truck.

After we corrected a few misspelled words, added a comma here and there, deleted the instructions, and moved the sentences together, the note looked like this:

*Dear Uncle Dennis and Aunt Lynette:*

*Thank you for giving me the truck. I like this truck because it goes by itself. I opened it on Christmas morning. When I opened it, I felt happy. I said, "This is excellent. I always wanted a truck like this." I'm going to call my friend who has a truck just like it so we can have races. Thank you again for the truck.*

We told Christopher he'd have to add a salutation at the bottom of the letter. He decided on LOVE ALWAYS, CHRISTOPHER. (We took this time to explain that different salutations are used, depending on the tone of the letter—that "Love always" or "Best wishes" was appropriate for friends and relatives, but "Sincerely" or "Yours truly" might be better for a more formal letter.)

When Christopher finished his letter, we printed it out. "This is fun," he said. "Now I'm going to write Uncle Jack and Aunt Marianne."

"Oh, no," 6-year-old Tommy protested. "We've got to take turns."

Betsy, our 4-year-old, solved the problem. She suggested that as each of them took turns at the computer, the ones who were finished could draw pictures to decorate their notes. The boys agreed. Chris hurried off to get the art supplies while I sat down to help Tommy play the game.

Tommy needed a little help reading the instructions and spelling words, but he was able to hunt for the right letters on the keyboard and write his own note. I helped with punctuation and grammar, and his finished product looked like this:

*Dear Great Grandpa and Grandma:*

*Thank you for giving me money. I like this present because I like to buy things for myself. I opened it on Christmas Day at Grandma and Grandpa Duquin's house. I was happy. I said, "Great! Money!" I'm going to use the money to buy a* Star Wars *figure at the toy store. Thank you again for the money.*

*Love always, Tommy*

Betsy was more of a challenge. She wanted to type the words herself but the boys objected, saying that it would take too long and they each wanted to have another turn. So Christopher read the questions to Betsy and I typed in her answers for her. Before long, she'd completed a note to her three cousins (*see thank-you note, above far left*).

We spent the whole afternoon playing the game, and when everyone had finished writing notes and drawing pictures, we printed out mailing labels, stuffed and stamped the envelopes, and drove to the post office where the kids mailed their own letters.

The *Thank-You Note Game* was a success.

"I can't wait until my birthday so I can write thank-you notes again," Christopher said.

Betsy and Tommy agreed. Dick and I just smiled. FC

# Connecting Home & School

## BANNOCKBURN SCHOOL WAS ACQUIRING COMPUTERS FOR WORD PROCESSING, SO THE KOBES FAMILY GOT ONE FOR HOME— TO HELP THEIR SON OVERCOME A WRITING PROBLEM

**BY NICK SULLIVAN**

"The school system around here (Bethesda, Maryland) is three-pronged," says Hedva Kobes, a 37-year old mother of two. "It's made up of teachers, kids, and parents. And the parents, in a highly literate community that puts a great deal of stress on education, are almost expected to have a computer at home."

The unspoken message has come across in many ways. The PTA has run ads asking parents who are "trading up" to donate their old computers to the schools. Even the local dry cleaners in this bricky, townhouse suburb of the nation's capital has three Okidata printers! "If computers have seeped down to the shopkeeper level of society, it's pretty clear they're here to stay," says Hedva, who works part time at the Association for the Care of Children's Health, in Washington, D.C.

One message was particularly clear. A school-sponsored computer club that Hedva had anticipated her son Solomon, 10, could enroll in was open only to those fourth- through sixth-graders who already knew BASIC. "I was really angry. Here I'd been waiting for this club . . . . "

And so, like many parents of school-age children, the rush of the Computer Age and the desire to raise "computer-literate" children brought David, 44, and Hedva Kobes closer to buying a computer. As in many high-powered suburbs across the country (David says Bethesda is full of "Type-A doctors"), the impetus came as much from the surrounding community as from the schools. The home in such communities has become part of the school's ecosystem—a spawning ground.

The Kobeses bought a computer about a year ago. They've used it, as they intended,

NICK SULLIVAN *is features editor of* FAMILY COMPUTING. *His last article was "How to Manage Your Money" in the November 1984 issue.*

*In the quiet of his study, David Kobes catalogs education programs he's tested on the computer.*

primarily as an educational tool for Solomon, and their daughter Deborah, 5. Game-playing and parental use have been secondary. Here's how they bought the computer, how they use it, and how they plan to use it in the future.

## THE SPARK

At the beginning of the 1983 school year, the Kobeses met the principal of Solomon's school at a parent-teacher function. They learned that the school was in line for county funds that would supply computers for word processing using the *Bank Street Writer* program (school version by Scholastic Inc.; consumer version by Broderbund).

"That was a real spark," says David, finance director at HealthPlus, a health maintenance organization. "We were beginning to worry about Solomon's handwriting, which was affecting his schoolwork, and realized that a computer could help."

More than a year later, however, the school word-processing program has not yet started. The Bannockburn Elementary School, in fact, has only a few computers that rotate between classes K–6. Regardless, the Kobeses took the bull by the horns.

Solomon, now in fifth grade, enrolled a year ago in a 10-session Logo seminar at a local Radio Shack store. "The idea of Logo was nice," says David, who is half-tempted to buy a Logo package to use at home. (*See the six-part Logo series in the September 1984–February 1985 issues of* FAMILY COMPUTING.)

## THE PURCHASE

All signs pointed toward the need for a computer in the Kobes household before the

*PHOTOGRAPHS BY SHEPARD SHERBELL*

children got older. Several neighbors with children had computers, even though some didn't use them much. (A nearby professor of English with young children has an unused computer, but he also ripped out his dishwasher because he doesn't like machines!)

"I thought it would be good to get a computer for the kids now before they get too old, so they grow up treating it like a typewriter or a telephone," says Hedva, who equates computer-literacy classes with memories of typing lessons in sixth grade. "For me, the computer is the ultimate supertoy—I have a distance from it I don't want my kids to have."

So David set out, in a methodical fashion, to research the field. He studied *Consumer Reports* and computer magazines, and talked to friends. "I went crazy with books, too." He settled on a Commodore 64 ($199), a Sharp 13" color TV ($299), a Commodore disk drive ($250), and an Okidata Microline 92A printer ($400). "Even though the printer cost twice what I had originally budgeted, I went with a fully addressable dot-matrix printer so we could print out Logo graphics." Buying a non-Commodore printer also meant he needed a Cardco printer interface ($75).

Even though the Kobeses are on their third disk drive (the first two malfunctioned and were replaced by Commodore), the system is now set up in the den and working fine. Figuring out software has been more difficult.

*Living in two worlds: Solomon Kobes plays soccer against the computer (top) and with his mother, Hedva, and sister, Deborah (below).*

## THE SOFTWARE PROBLEM

After spending so much money on hardware, "I got a little tight on software," says David. Actually, in the first nine months, the Kobeses have started building a library: *Homeword* (Sierra), for word processing; *Alphabet Zoo* (Spinnaker), a spelling maze-game for Deborah; *Story Machine* and *Fraction Fever* (both Spinnaker), simple writing and math programs; and *International Soccer* and *Pitstop* (both Commodore). "The games were just a sweetener," says David.

Except for *Homeword* and *Alphabet Zoo*, which the Kobeses treat as untouched islands they've discovered, they've been bothered by the short staying power of much software. "You pay $40 and get tired of it pretty quickly. In a lot of software I've seen, there are no levels; there is no variation, no growth," says David. "I had much more control over the hardware, knew what I was getting. But the software's been hit or miss."

Now, while he's thinking about buying Logo and a "filer" (data-base program), David is testing, rating, and cataloging 400 public-domain programs written for the Commodore PET. These relatively old educational programs run on the C 64 with an "emulator" disk. Amongst the pile, David's looking for an undiscovered gem for the kids.

Meanwhile, the primary goad to using the computer is to help Solomon with homework.

## HOMEWORK WITH *HOMEWORD*

To the outside observer, a final draft of Solomon's handwriting doesn't look so bad. His parents say, however, that the mechanical act of copying and recopying homework assignments until they are neat enough to hand in interferes with the creative process. Solomon and a handful of other students received "special permission" to hand in computer-generated homework, which, the Kobeses say, is contrary to the school's policy.

"School administrators apparently don't think teachers can objectively grade two types of papers—one printed by a computer and one handwritten—thus giving students with computers at home an edge," says David. Solomon, in fact, thinks that he gets better grades when he prints out his homework.

To date, Solomon uses the computer (and *Homeword*) only for short homework assignments. He'll do a first draft with pencil and paper, then his father will correct grammar and spelling. "His first draft has ideas, but needs a lot of correction," says Hedva. Solomon then enters this edited draft into the computer, where he can easily correct any typing mis-

takes. "Without the computer, he'd probably quit rather than rewrite the report," says David. "Making corrections on the computer is not nearly as painful as redoing the whole thing."

If he wasn't a clumsy hunt-and-peck typist, Solomon would do more original composition on the computer, and also longer book reports. "I think the key right now is learning to type," says Hedva. "It's [still] too much for a 10-year-old to think about typing in a four-page book report."

Will word processing on a computer further weaken Solomon's handwriting skills? His parents think not. "He does plenty of writing in the classroom," says Hedva. "Except for P.E., everything involves writing."

## FAMILY DYNAMICS

Deborah hasn't exactly taken to the computer like a fish to water. At her age, and with her streak of independence, she only wants to do things she can do alone. "She can't follow through from thinking 'I want to play with *Alphabet Zoo*,' to actually rigging it up," says her mother. Part of this hesitancy may be a function of the notoriously long load time of the Commodore disk drive. Even Solomon, who's twice Deborah's age, finds the wait annoying.

David's main involvement with the computer is helping Solomon with his homework, and searching for new software for the whole family. He thinks that Hedva, who has tinkered with word processing, could put her natural organizational skills to good use with a data-base program. David says he's been "unreliable as a programming teacher," and distrusts the somewhat "randomized learning" that kids get when they mess around on the computer together. One reason he's hesitant to buy Logo is that he's not sure Solomon or Deborah would use it alone; and David's not sure he has the time or knowledge to help them.

This attitude about organized learning, however, may reflect an ephemeral parental fear rather than a reality. Last summer Solomon learned some BASIC tricks from a friend down the road, Baldwin Robertson, who programs his own games. "Anyway," says David, "the way things are going, kids won't need to know programming when they grow up."

Living with a computer has changed family life in several ways. The old rule that the kids not watch TV when they have friends over does not extend to the computer. "The computer's visual like the TV but the kids are at least pushing buttons and learning something," says Hedva. "If you told them to go study fractions they'd never do it. But they'll play with *Fraction Fever*. It's fine with me, and fine with them. It's fun.

"The computer's been great for family dynamics; something we can do together. It's also great for the kids' self-confidence. Instead of an adult half-trying when playing a game with a kid, and saying, 'You're doing great,' the tables are turned. The kids actually know as much or more than their parents."

In the Kobes family at least, the school system is actually four-pronged. The computer is becoming key. FC

**"THE COMPUTER'S BEEN GREAT FOR THE KIDS' SELF-CONFIDENCE."**

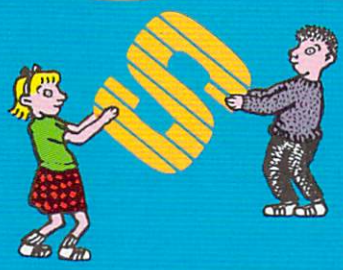
## ONE FAMILY'S EVOLVING COMPUTER HABITS

| REASONS FOR BUYING COMPUTER | 6 MONTHS LATER | NEXT STEPS |
|---|---|---|
| 1. Wanted Solomon to use word processing for homework.<br>*Handwriting is difficult and hard to read<br>*Editing/rewriting is easier with computer | By handwriting rough draft, typing into computer, then proofing and revising, Solomon has made good use of computer. | Learn typing. Learn how to type from an outline, rather than a fully written-out draft. Eventually, write directly on computer. |
| 2. Wanted Solomon and Deborah to learn with fun, educational software—not drill-and-practice type. | After much shopping, purchased four $40 programs. Each was used extensively for a few weeks, then infrequently. This short "life cycle" has been a disappointment. It's been difficult to find right combination of fun and learning software that has enough depth to last.[1] | Locate shopping guides or other means to test and evaluate programs more easily.[2]<br>Join users' group to share and/or trade programs. |
| 3. Wanted Solomon and Deborah to become "computer-literate."<br>*Logo<br>*BASIC | Solomon learned some BASIC playing around during the summer. Not yet purchased Logo because of relatively high cost, and unsure kids will use it on their own. | Buy Logo in near future,<br>or<br>Dad and Solomon will take a BASIC course together. |
| 4. Mom and Dad to use word processing and other software for home tasks. | Have used *Homeword*, but not extensively. | Continued growth, learning, and using word processing. Will very likely buy data-base program for home use. |

[1]See "Software to Challenge Your Children," in the November 1984 FAMILY COMPUTING.

[2]See monthly Software Guide and Software Reviews in FAMILY COMPUTING.

# 7 TRICKS FOR PROCESSING



There has been a good deal of confusion lately about the phrase "word processing."

Word processing can sound like the special job of a secretary. But that's not it at all. Using a computer to write gives you a location where writing and thinking take place, the breakthrough of always having a clean copy in front of you, and the reduction of weeks of revision and retyping to a matter of just hours. Word processing is a whole working environment.

A computer alone is not a word processor. It's just the machine that runs certain programs. The program is the word processor, and although such programs vary tremendously in their capabilities and functions, there are some general ways of using them that will make organizing, filing, and writing easier.

A few simple methods—tricks, if you will—can pave the way to highly efficient and practical word-processing habits. You don't need to spend a fortune on software to make good use of some of your computer's clever capabilities.

Starting a writing project by collecting lots of thoughts, ideas, and facts is much easier with a word processor than with paper and pencil. For example, with proper preparation, the computer works as an incubator for the perfect term paper. As I detail some of my tricks for better word processing throughout this article, I'll use a term paper as an example—but these tips work just as well for any other writing project.

P. GREGORY SPRINGER, *a freelance writer from Urbana, Illinois, is the author of a computer notebook for college students called* Electronic Notebook *(dilithium Press). He wrote the Telecomputing column in the September issue of* FAMILY COMPUTING.

## 1 WRITE AWAY

As soon as you've been assigned a term paper and chosen a topic, you should make an immediate effort to begin collecting thoughts, ideas, facts, and phrases. Seek and you will find! When you know you'll be writing on a particular subject, you're likely to stumble across ideas and information that can be added to that topic. Store these bits and pieces on a computer file, and frequently review what you have collected.

When the time comes to edit your information into a finished, written work, many of your thoughts on the subject will have grown, changed, and matured. Everything is properly stored in electronic memory. Perhaps you've even written some complete sentences and paragraphs that can be incorporated into the final paper.

## 2 TAKE IT FROM THE TOP

Eventually, the time comes when the paper is due. Don't panic. It shouldn't require much strength to pull together all the notes, quotes, and anecdotes you have already gathered in preparation for this moment. My technique, called the "top-of-file" plan, is one way to make writing the paper a more organized task.

If you have stored information on more than one computer file, or on paper, now is the time to compile all your notes together into one computer file. Make a backup of your raw "slushpile" of notes and ideas. You may want to refer back to it later.

Now you're ready to begin work on the final paper. Sort through the scattered ideas and information by reading through them a few more times. There may be repetitions and irrelevancies to delete. By sorting through what you have, you should be able to form a rudimentary outline.

As best you can, choose outline headings based on the information you have. For example, if you were doing a paper about the Romantic poets, you might choose the following ideas:

1) POETS IN ENGLAND
2) THE MOVEMENT IN AMERICA
3) PRESENT DAY CONSIDERATIONS
4) WILLIAM BLAKE'S CONTINUING INFLUENCE

The shuffle begins. If you list the four sections at the bottom of the slush file, you may then begin rearranging the information to fit into sections of your outline.

With your word processor's BLOCK or CUT-AND-PASTE functions, transfer a relevant sentence from your notes into part one. Move down a quote that fits into part three, and so on, until everything is rearranged under one of your headings, smoothing your work into order.

Once you compose a beginning for your paper, write it at the very bottom of your new file. With all your notes now organized into an outline of sentences and bits of information, you can begin writing from the bottom of this file. Gradually, you can transform the raw notes from above into coherent sentences and paragraphs below—revising sentences, correcting misspellings, adding thoughts, deleting the used-up notes as you go. This is real word "processing," and it works.

As you work, you delete all the notes above to create the finished pa-

# BETTER WORD

## CLEVER WAYS TO PUT YOUR WORD PROCESSING PROGRAM TO WORK

**BY P. GREGORY SPRINGER**

per beneath. When you've run out of notes to draw on, your cursor should be resting at the very top of a written research paper!

### 3 SHAPE UP

Once you've covered all the major points in your paper, it's time to "clean up" the copy. First, read through the paper as it appears on the screen. Correct any errors you find in spelling, grammar, or organization. If a paragraph might make more sense in another section, scout around and see where you might place it.

Next, print out a rough draft of your paper. Don't convince yourself that because it looked good on the screen, you don't need to review it on paper. Impressions of length, style, and clarity can be deceptive on the screen, and may change when the words are put onto paper.

### 4 STORE STOCK FORMATS

Once you become accustomed to using your computer, you can save a lot of time by storing formats you use regularly. How you do this depends on the word processor you use.

Some word processors work with menus while others require that you insert coded information at the start (and sometimes throughout) every written work. That code is then interpreted during the process of printing. If you have a word processor that uses codes, you may be able to save the formats you use most often.

For example, you may know that every report you write should have a page length of 56 lines, double spacing, a page-heading and numbering format, margins of 1 inch on each side, and other regular format patterns. Prepare the coded lines of information you would ordinarily type in at the beginning of every written work, and file the code permanently.

The next time you need it, you can call up the prepared format without having to hunt through the manual and retype the individual code.

### 5 NAME FILES

The disk directory or menu gives you a list of all your files on a particular disk. Some operating systems will alphabetize this list; most will not. So how can you name your files to keep them distinct and noticeable?

Say you are about to begin the study of "Romeo and Juliet," and you want to open a file for notes on the play. You could title the file ROMEO or JULIET or SHAKES. If you plan to keep several files of notes to be collected in alphabetical order, you could create an extension for each alphabetical limit: SHAKES/A-N, SHAKES/O-S, and SHAKES/T-Z.

Keep your titles clear and to the point. You wouldn't call the "Romeo and Juliet" files PLAY, for example, particularly if you are going to be studying other plays. Avoid confusion by being as specific and obvious as possible.

### 6 ADD GRAPHICS

You don't need expensive hardware or fancy software to use graphics. You can easily make computer screens and printouts easier to read and understand by using simple graphic symbols.

In the following THINGS TO DO list, common punctuation symbols available on any keyboard are used to divide up a list of deadlines, notes, and study plans. You can print out the list for a daily reminder of the work that needs to be done. Because it uses graphics, this is much faster and easier to read than a continuous list of words.

```
**********************************************
                THINGS TO DO
**********************************************
DEADLINES:                                    *
Tonight: WRITE TO COMPUTER SCHOOL             *
Wednesday: Finish paper on Shakespeare        *
- - - - - - - - - - - - - - - - - - - - - - - *
Feb. 5: Choose new paper topic                *
Feb. 20: Outline due                          *
March 11: Paper due                           *
April 7: Midterm                              *
June 28: Final, 3 p.m. Main Library           *
==============================================*
QUESTIONS:                                    *
Romeo's father first name?                    *
What kind of poison was it?                   *
Find out how to research ancient poisons      *
=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-*
PAPER PREP:                                   *
William Blake's love notions:                 *
compare to R&J                                *
Get "Great Romantic Notions", by              *
Eader, Call number 103.65/EAD                 *
++++++++++++++++++++++++++++++++++++++++++++++*
EXTRA NOTES:                                  *
Meredith's phone #: 555-6625                  *
Plan dinner with the folks soon               *
**********************************************
```

### 7 MAKE A DISK AND FILE INDEX

If you're like most computer users, it's hard (and probably impossible) to read the names of files that you've listed on the outside of any particular disk—you have to put the disk into the computer. Beyond keeping track of the files on each disk, you should have a method to keep track of all the files on *all* your disks. As your disk library grows, this can get complicated.

One way to get organized is to store all the titles on one special index file, which you may be able to keep on the same disk with your word processor and operating system.

Such a file, call it INDEX, is simply a listing of all your disks by name, color, number, or whatever. Under each heading or number, you list all the file names on *all* of your disks. You

ILLUSTRATIONS BY HOLLY KOWITT

may even use graphic dividers between disk listings to make it easier to read.

Whenever you start a file, check the INDEX for the disk you're working on, and add the new file name to the list. Similarly, when you delete a file, remove the name from the INDEX.

If you have forgotten which disk you have stored a file on, you may be able to use your word processor's SEARCH function, if it has one. Then you can SEARCH for the title through the INDEX.

Sometimes you will be in a hurry, or you may forget to add or delete a name from your INDEX. It's wise to set up a regularly scheduled time (weekly, monthly, etc.) to go back through your disks, note the names of all the files, and revise your INDEX to keep it as current as possible. And, to avoid loss, your backup disks should be named and numbered identically to your working set.

Remember: There are a lot of ways to put your word processor to work for you. These seven suggestions are just the beginning. Some other ways to use your word processor include: Storing all your correspondence on the same disk, so that letters are always on hand, and the disk acts as an electronic address book. (Depending on the configuration of your computer, word processor, and printer, you may even be able to slightly alter these files to print envelopes—without having to retype the addresses.) If you don't do a lot of letter writing, but do take a lot of notes, you'll find that notetaking improves when a computer is used. Certainly, portable computers make notetaking and collecting ideas much easier in the classroom or business meeting. And once you've entered notes into a computer, their value increases—they can be manipulated, printed out, revised, even typeset!

If you spend some time getting to know the variety of capabilities of your word processor, you're bound to come up with tricks of your own. FC

## WORD PROCESSING ON THE ADAM

One of the great things about the ADAM is that you can start word processing as soon as you turn on the computer. The built-in program, *SmartWRITER*, is extremely user-friendly and has most of the usual word-processing features. (And now that the ADAM disk drive is finally available, you can save your files on regular 5¼-inch disks.) But every computer, and every word-processing program has its unique features. Here's a guide to some of the tricks that ADAM owners have told us about.

| YOU WANT . . . | ADAM WILL . . . | ADAM WON'T . . . |
|---|---|---|
| . . . to format page, i.e., set margins (both horizontal and vertical), line spacing, tabs, and to tell the computer whether you are using letter- or legal-size paper. | . . . do it with the greatest of ease. Just hit Smart Key I and your options come up on the screen. Pick the options you want by pressing the keys *SmartWRITER* tells you to. When you've made your selections (or any other selections involving *SmartWRITER*) hit key VI. ADAM says DONE, and it is so. | . . . count lines and words for you, or automatically set itself to print something in the center of a page. You can use the Smart Keys to set a tab at the center of the page, then backspace half the number of spaces as there are characters in the text you want centered. |
| . . . to write the same thank-you letter to Aunt Sarah and Uncle John, and have them both think they're getting the original. | . . . permit you to delete AUNT SARAH and replace it with UNCLE JOHN (as well as replace "YOUR THOUGHTFUL GIFT SUBSCRIPTION TO FAMILY COMPUTING" with "THE RED PORSCHE 940 TURBO"). But you have to retrieve the whole first letter from the file tape and make the corrections you want using the SEARCH function. | |
| . . . to do homework problems involving mathematical or scientific notation; or flag text for footnotes. | . . . allow you to superscript or subscript, e.g., $A_2 = x^2 + 4$, by using Smart Key VI, and then going through the options it presents you with. Make sure you've chosen double spacing. | . . . automatically format a page to allow room for footnotes. You have to remember to leave enough lines at the bottom of the page. |
| . . . to make carbon copies or duplicate copies. | . . . allow you to make carbon copies because the striking force of the keys is great enough. A carbon form in triplicate should be no problem. | . . . automatically make duplicates without carbon. For multiple printouts of the same document you have to hit the PRINT key again, select your options anew, and command the printer to print—one copy at a time. |
| . . . to print only one section of a document. | . . . do it clumsily with command PRINT SCREEN. Or you can highlight the section you want to print and use the command PRINT HI-LITE. But, if you've given a separate file name to each document section, you can retrieve that section and print it in the usual way. | |
| . . . to create graphics with the printer. | . . . let you draw rigid-looking geometric patterns composed of the various characters found on the daisy wheel. | . . . be much more help than that because the "letter-quality" printer uses formed characters rather than a matrix of dots that can be arranged more flexibly. |
| . . . to work on the screen while the printer is printing. | | . . . let you do it. For that you need what's called a print buffer—which is not available as of this writing. |
| . . . to give up and start over. | . . . give you no problems. Just press the ESCAPE/WP key and the whole range of options is presented to you again. | . . . save your text if you hit the RESET switch on the memory console. |

# BUYER'S GUIDE TO JOYSTICKS

## IN THIS AGE OF FANCY COMPUTER DOODADS, A GOOD, SOLID JOYSTICK CAN BE A USER'S BEST FRIEND

**BY KEN COACH**

Joysticks look pretty much alike. They all have two crucial parts: a handle and a fire button (or two or three). When you start to use joysticks, though, you realize that each one is as different as a fingerprint.

While joysticks are used as drawing tools in some graphics programs (see "Picture Perfect" in the December 1984 FAMILY COMPUTING), and as glorified cursor-control keys in some educational software, they are designed primarily for gaming. Joysticks, in fact, are great scapegoats when learning a new game. A good score can be attributed to skill, while a poor performance is obviously the joystick's fault. "This stupid joystick . . . ." There's some truth behind this attitude—there are good and bad joysticks. But how can you tell the difference?

### GETTING A GRIP ON JOYSTICKS

The problem is, beauty is often in the eye of the beholder. Different people look for different qualities in a joystick depending on the size of their hand, their hand-eye coordination, etc. Beyond that, different games respond better to joysticks than others, and some games respond better to certain joysticks. In other words, the type and quality of the software is often a factor.

Most joysticks are spring-loaded to make them spring back to the center when you take your hand away. For some games, such as *Flight Simulator*, or for some graphics programs, it's better to use a free-floating stick that doesn't automatically center. High-quality joysticks have a switch to let you choose between the self-centering and free-floating modes.

### TWO TYPES

Another important factor to keep in mind is that there are two basic types of joysticks. Make sure you get one designed for your computer. Digital joysticks, often called "Atari-type," work with Atari, Coleco, and Commodore computers. Most can also be used with the Texas Instruments 99/4A, but require a plug-adapter. And some are designed with a numeric keypad, specifically for the Coleco ADAM. These digital joysticks cannot directly control the speed of an object, and can move it in only eight directions. They range in price from about $10 to $50.

Analog joysticks, which have much smaller shafts (or sticks), can control both the speed and position of an object for a full 360 degrees. These joysticks are used with the Apple, IBM, and TRS-80 Color Computer. Many analog joysticks can be calibrated to adjust the response of the stick to the user's particular style. They cost about $50.

The best way to decide if a joystick is right for you is to plug it into your computer, boot up your favorite game, and spend an hour or two testing it out. That, of course, is not always possible, so our FAMILY COMPUTING "playtesters" have checked out a range of joysticks from leading manufacturers for comparison purposes. Refer to the chart first to see which joysticks work on your computer, then check our mini-reviews.

### ATARI

Atari's original joystick is a classic, but the new ProLine is even better. It works on all Atari computers, and is smaller and more streamlined than the old Atari sticks. It's self-centering, and has fire buttons on the sides of the base. Our testers were impressed with the ProLine's response, and the placement of the fire buttons.

### CHAMPIONSHIP ELECTRONICS

Championship Electronics has two joysticks, both with suction-cup bottoms for secure table-mounts, and retractable cables. The JC-250 Super Champ has a 10-foot cable that disappears into the base, while the JC-351 Mini Champ has a 4½-foot cable. Both sticks have a fire button on top of the stick. The Super Champ has a second one in the trigger position. The Mini Champ, which has a button on each side of the base, is not very sturdy.

### COIN CONTROLS

Coin Controls makes a series of joysticks under the Competition Pro label, ranging from the very low quality model 200X to the very high quality model 5000. All of the joysticks are of medium size, although the 200X and 1000 are slightly shorter. We tested models 3000 and 5000.

The 3000 has a wide fire bar instead of a button in front of the pistol-grip stick. There's also a trigger fire button, and another fire button on the top of the stick. Each of the three is always live.

KEN COACH *is a producer for the Canadian Broadcasting Co., and a freelance writer specializing in computer topics.*

Wico's The Boss

Discwasher PointMaster

Kraft Joystick (Atari)

Wico Command Control (Apple)

Suncom Tac-2

Suncom Tac-3

# GUIDE TO JOYSTICKS

| COMPANY | MODEL | PRICE | HANDLE SIZE | FIRE BUTTONS | COMPATIBILITY |
|---|---|---|---|---|---|
| **Apple** (408) 996-1010 | Apple IIe Joystick | $59.95 | Small | Two, both on base | AP |
| **Atari, Inc.** (408) 745-2000 | Atari Joystick | $8.95 | Medium | One, on base | AT/COM |
| | ProLine | $19.95 | Medium | Two, one on each side of base | AT/COM |
| | Space Age | $14.95 | Large | Trigger-type, with stick on top | AT/COM |
| **Championship Electronics** (415) 961-0664 | JC-351 Mini Champ | $9.99 | Small pistol grip | Three, one on each side of base and on stick | AT/COM |
| | JC-250 Super Champ | $12.99 | Medium pistol grip | Two, one on top of stick and trigger | AT/COM |
| **Coin Controls** (800) 323-8174 or (312) 228-1810 | Competition Pro Model 1000 | $12.95 | Short | Bar on front of base | AT/COM |
| | Competition Pro Model 200X | $8.95 | Short | As above | AT/COM |
| | Competition Pro Model 3000 | $15.95–$17.95 | Medium pistol grip | Three, one on bar, top, and trigger | AT/COM, TI, COL |
| | Competition Pro Model 5000 | $17.95 | Medium ball-top | Two, one on each side of base | AT/COM, TI, COL |
| **Commodore, Inc.** (215) 431-9100 | VIC-20 Joystick | $10 | Small | Fire buttons One, on front of base | AT/COM |
| **Discwasher** (314) 449-0941 | PointMaster | $16.95 | Large pistol | One, mounted on shaft | AT/COM |
| | PointMaster Pro | $27.95 | As above | As above | AT/COM |
| **GIM Electronics** (516) 741-3133 | Fire Command | $39.95 | Medium, large base | Two, one on each side of stick | AT/COM, COL |
| | Fire Command | $44.95 | As above | Four, two on each side of stick | COM |
| | S-3000 | $49.95 | Small | Two, on base | AP, IBM |
| **IBM** (800) 447-4700 | IBM PC*jr* Attachable Joystick | $40 | Small | One, on base | IBM |
| **Kraft** (800) 854-1923 | Joystick | $12.95 | Small | One, left side | AT/COM |
| | Switch Hitter | $14.95 | Small | Two, one on each side of base top | AT/COM |
| | Premium | $49.95 | Small | One, on left side | AP, IBM, TRS |
| **Newport Controls** (408) 358-3439 | Prostick II | $24.95 | Medium ball-top | Two, one on each side of base front | AT/COM |
| | Prostick III | $29.95 | Medium ball-top | Two, one on each side of base front. | COL |
| | Prostick 2002 | $29.95 | Medium ball-top | As above | TI |
| **Personal Peripherals Inc.** (214) 758-8874 | Enjoystick | $19.95 | Small | Two, one on each side of base | AT/COM |
| | Joystick | $44.95 | Medium | Two, both on base top | AP, IBM |
| **Pride Electronics** (801) 298-1814 | Power-Stick | $8.95 | Tiny | Two, on base | AT/COM |
| | Power-Stick | $15.95 | Tiny | As above | COL |
| **Suncom** (312) 459-8000 | Slik Stik | $7.99 | Short | One, on left side of base top | AT/COM |
| | Starfighter | $10.95 | Medium | As above | AT/COM |
| | Tac-2 | $12.95 | Medium ball-top | Two, one on each side of base | AT/COM |
| | Tac-3 | $14.95 | As above | Three, two in front, one on top of handle | AT/COM |
| | Starfighter for Apple | $49.95 | Medium | Three, one each side of top, and one in front of base | AP |
| **Tandy/Radio Shack** (817) 338-2395 | Radio Shack Deluxe Joystick | $39.95 | Medium | One, on base | TRS |
| | Radio Shack Joysticks | $24.95/pair | Small | One, on base | TRS |
| **Wico** (800) 323-4041 or (312) 647-7500 | Command Control Bat Handle | $26.95 | Large | Two, on base and on stick | AT/COM |
| | Command Control Super Three-Way | $32.95 | Medium (choice of three handles) | As above | AT/COM |
| | Command Control Joystick | $31.95 | Medium | Two, on either side of keypad | COL |
| | Computer Command | $49.95 | Medium | Two, on base | AP, IBM |
| | The Boss | $17.95 | Large pistol | Two, on base or top of stick | AT |

Joysticks marked AT/COM are compatible with Commodore and Atari computers and, in most cases, can be used with an adapter on the TI-99/4A. Joysticks for other computers are marked as follows: AP for Apple, COL for Coleco's ADAM, IBM for the PC and PC*jr*, TRS for TRS-80 Color Computer, and TI for the TI-99/4A if an adapter is not required.

Competition Pro 5000

Championship Electronics Mini Champ

Kraft Premium Joystick

Newport Controls Prostick III

Championship Electronics Super Champ

Competition Pro 3000

The model 5000, which has a straight stick with a ball-top for a grip, and two fire buttons on the base, received raves from our testers. Everyone found it sturdy, with a "good feel." It responded well, and rested comfortably in the hand.

### DISCWASHER

The PointMaster series from Discwasher has two models: the basic model and the Pro, which has suction cups to hold it on a tabletop, and a feature called "constant fire." By holding down the button, you can fire continually. Despite this nifty feature, however, the PointMaster sticks did not rate too highly with our testers, who thought they had a "flimsy" quality.

### GIM ELECTRONICS

GIM's Fire Command probably comes the closest of any joystick reviewed here to capturing the feel of an arcade stick. It's almost a foot wide and weighs 5 pounds, making it far heavier than any other controller for the home market. It sits firmly on a table, or squarely on your lap, and allows you to use two hands without worrying about losing control of the joystick. Both the stick and the base are of extremely rugged construction.

Our testers liked this joystick and agreed it lent an arcade feel to a living room. But they also thought it was not quite as responsive as some of the other sticks, and that the fire button was sometimes slow on the draw.

## JOYSTICK BUYING TIPS

**1.** Make sure the joystick is designed for your computer. If it's an Atari-type joystick and you have a TI, ask for an adapter plug.

**2.** Pick up the joystick and decide if it feels comfortable in your hand. Remember that you might spend an hour or two at a time in heavy combat! An uncomfortable stick will cause your hand to tire. Stiffer sticks especially tend to cause fatigue, because they force the hand holding the shaft to fight the hand holding the joystick base.

**3.** Check the fire button(s). Are they in convenient spots for your gaming style? Is there a trigger on the shaft, atop the stick, or on the base? Or does it have a combination? A nice (and rare) combination is a triggerlike button on the shaft for the thumb, and one on top for the forefinger. If you're left-handed, make sure the fire button allows easy access for southpaws, too.

**4.** Check the quality of construction. Does the joystick look and feel strong enough to fire repeated broadsides at enemy invaders? Some people like suction cups that hold a stick on a table, but most seem to prefer holding the joystick in their hands.

**5.** Plug in the joystick for a road test. Do movements on the screen occur as soon as you move the stick, or is there a lag? Is the fire button quick or slow? One good way to test a joystick is to play a game you're very good at on the beginner's level. If you miss a shot then it's more likely the joystick's fault than yours.

**6.** Does the joystick have a free-floating option or is it only spring-loaded (self-centering)? Drawing (with a graphics program) and some game-playing is easier with a stick that does not always spring back to the center.

### KRAFT

Kraft joysticks are small and neat, and known for their "precision feel." The Atari-type model is adequate, though Kraft is better known for its deluxe sticks—the Kraft Premium line available for Apple, IBM, and TRS-80 CoCo. Kraft also sells an adapter for the TI-99/4A.

The Premium Joystick allows you to set each axis independently—in free-floating or spring-centering mode. Small calibration controls allow you to align the stick accurately with cursor position. With these features, the joystick is good for both drawing or gaming, and can be adjusted to suit the user.

### NEWPORT CONTROLS

The Prostick line from Newport Controls features left- and right-side fire buttons, and an option that blocks the stick from making diagonal movements. This feature is helpful in right-angle maze games, such as *Pac-Man*.

The Prostick is a sturdy, dependable product that received high marks from our testers. It was the favorite stick for a fast-moving game of *Archon* or *Boulder Dash*. But, some users might find the joystick's feel too "stiff" or hard on the hands, especially those who get excited in the heat of a game. Overall, though, the Prostick is a responsive joystick that fires well.

### PRIDE ELECTRONICS

The Power-Stick, formerly marketed by Amiga, is the smallest joystick on the market. It's so tiny you can use it with one hand, moving the shaft with your thumb. Two-handed use is also possible, of course, and the Power-Stick has buttons for either right- or left-handed play.

The Power-Stick allows for precise movements and responds well in delicate maze-type games. Its "dainty" feel also works well with some shoot-'em-ups, though in games requiring bold action, such as *Boulder Dash*, our testers sometimes found the small shaft a liability.

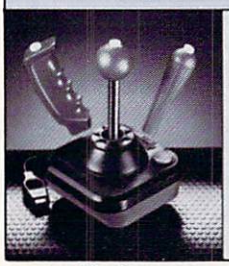
### SUNCOM

Suncom makes four different Atari-type joystick models, and one for the Apple. In design, all models have small, compact bases much like the Kraft sticks, but larger handles that are easier to grip. From the Slik Stik ($7.99) on up to the Starfighter ($49.95), all models have a reputation for "good handling." The Slik Stik will break down with heavy playing, but with such a low price it's a great deal while it lasts. The Starfighter for Apple affords excellent control and has a nice feel.

### WICO

Wico, which makes several joysticks that work with a wide range of computers, has built a strong reputation for quality and durability. The Boss, a basic Atari-type stick, costs somewhat more than similar sticks from other manufacturers ($17.95); but has an arcade-size pistol grip shaft, and is of rugged construction. Testers liked the choice of a fire button on top of the stick or on the base.

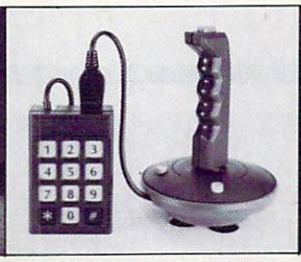
The Command Control model is available in bat-shaped-handle, a ball-top-handle, and pistol-grip models. There is also a combination model that allows you to choose from all three. All Command Control joysticks have two fire buttons, one on the base and one on the stick. FC



Wico Super Three-Way Joystick

Suncom Slik Stik

Wico Command Control Bat Handle (Atari)




Championship Electronics Champstick (Coleco)

Suncom Starfighter

# Quick.

## How many plates can the Juggler juggle?

### Chinese Juggler

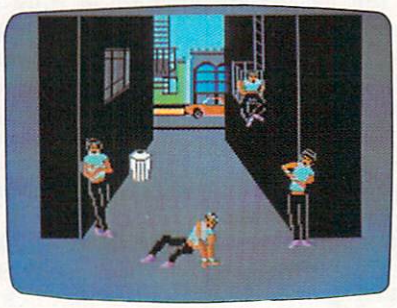
That depends on you. You are the Juggler and your act is the delicate art of plate spinning. Yours will be a tough act to follow if you succeed in matching colors and spinning plates on all 8 poles at the same time.

As your skill increases, so does the pace and the challenge of the game. You must act with speed and precision or the curtain will come down and your act will be all washed up!

Chinese Juggler is a refreshing departure from the usual shoot-em-ups and strategy games. It's fun, fast-paced and will delight players of any age. For Commodore 64. New from Creative Software.

**$24.95**

## How do you moonwalk, snake and tut?



### Break Street

You'll soon become a break dancing expert with our latest bestseller, Break Street. Now that combination of gymnastics, mime, funk, and just plain show-off, leaves the sidewalks and comes home to your Commodore 64.

Individual play guides you through the footwork of moonwalk, backspin, windmill, tut, and the rest of those sidewalk moves. Slow motion and lively musical accompaniment help you perform each move step by step. String together a whole series of moves and record them for future replay.

Catch the beat of the street with Break Street. For individual or team play. New from Creative Software.

**$24.95**

**The answers are at your finger tips.**

## What's the capital of Alaska?

### Roll Call USA

Do you know? Get ready to outwit your family and friends with Roll Call USA's fun facts on states,capitals and major industries.

Roll Call USA combines history and geography facts into a colorful question and answer game that challenges your knowledge of the 50 states, their capitals, major industries and statehood dates.

Feel confident? Drill yourself with a Flash Test. The game is speeded up, so think fast. Your answers are tallied up at the end for a final score.

Roll Call USA, a game of USA trivia for team or individual play. For Commodore 64. New from Creative Software.

**$14.95**

Call and order today! Use your Visa, MasterCard or personal check. Toll Free **1-800-331-7990** (outside California), **1-800-448-1001** (in California), or **1-408-745-1655.** MONEY BACK GUARANTEE. If not completely satisfied, return within 10 days for full refund.

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C R E A T I V E  S O F T W A R E

230 East Caribbean Drive, Sunnyvale, CA 94089

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# the Programmer

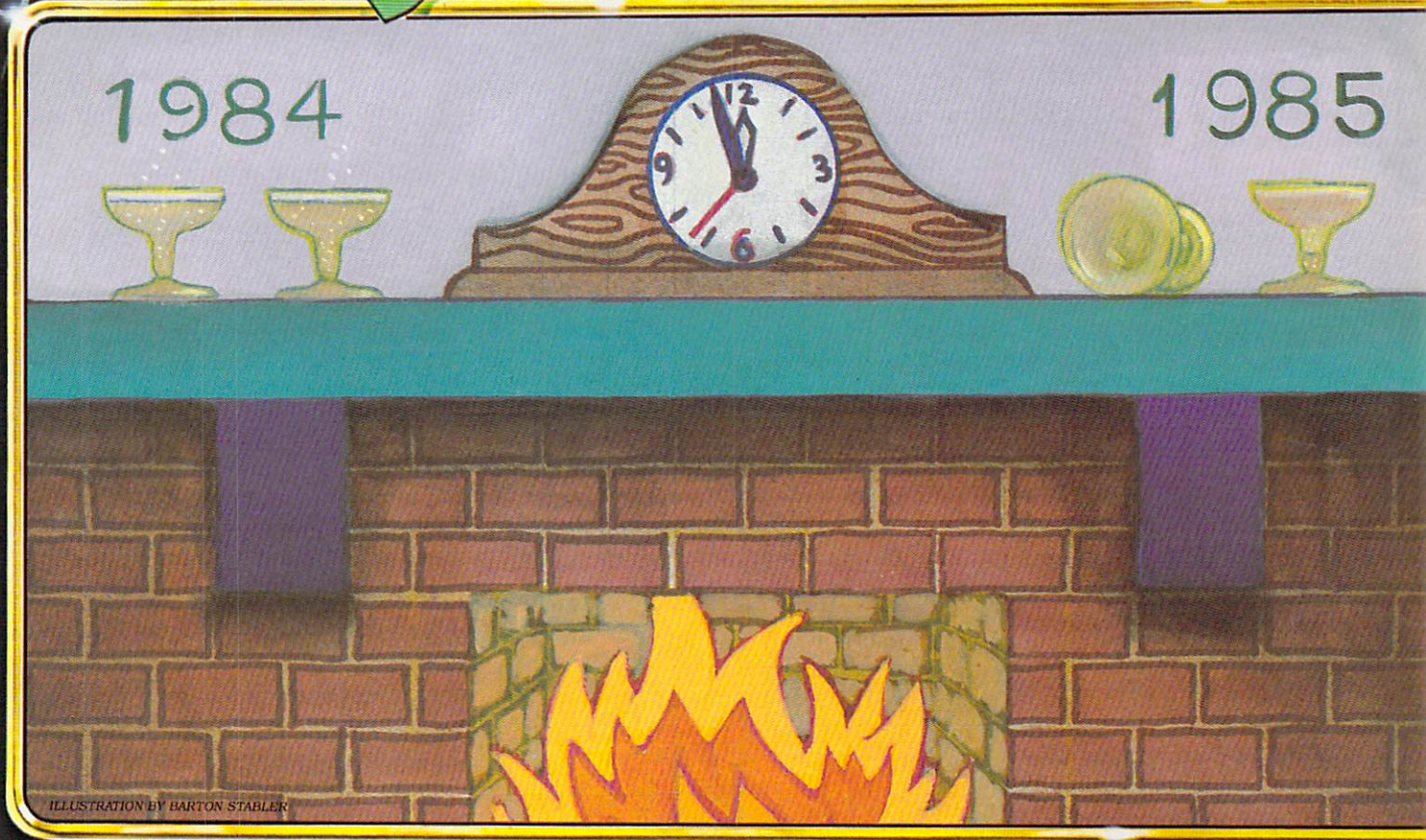



ILLUSTRATION BY BARTON STABLER

★ J A N U A R Y ★

**WINTER PROGRAMS**

Page 64

Warm your winter nights
with a
cheery *Fireplace* program;
and turn your
computer into a time machine
with
*Perpetual Calendar.*

**PUZZLE**

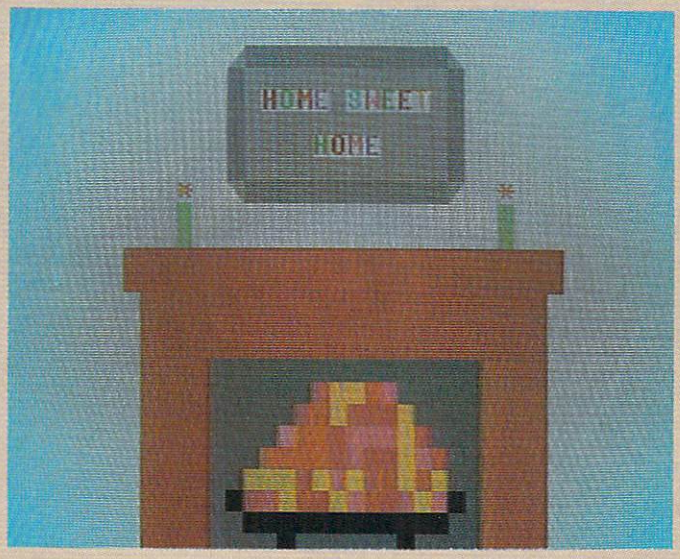
Page 77

It's romance
among the radishes
with the
*Supermarket Sweethearts.*
Calling all
coupon finders!

ILLUSTRATION BY JIM CHERRY III

# FIREPLACE

**BY JOEY LATIMER**




There's nothing nicer than curling up in front of a fire on a cold winter night. Now, with the help of your computer, some of the old-time fun of a roaring fire can be yours. Just type in our *Fireplace* program and gather 'round the cheery screen!

### ADAM & Apple/*Fireplace*

```
10 DIM C(5)
20 HOME
30 GR
39 REM --READ FIRE COLORS INTO ARRAY C--
40 FOR X = 1 TO 5
50 READ C(X)
60 NEXT X
69 REM --DRAW BROAD AREAS OF PICTURE--
70 FOR X = 1 TO 14
80 READ KO,A,B,C,D
90 COLOR= KO
100 FOR RO = A TO B
110 HLIN C,D AT RO
120 NEXT RO,X
129 REM --DRAW DETAILS OF PICTURE--
130 FOR X = 1 TO 13
140 READ KO,CO,RO
150 COLOR= KO
160 PLOT CO,RO
170 NEXT X
179 REM --SET LOCATION AND LENGTH OF A FLAME--
180 CO = RND(1)*10+15
190 RO = 2*RND(1)*(5-(19-CO)*(CO < 19)-(CO-21)*(CO > 2
1))
199 REM --COLOR AND DRAW THE FLAME--
200 FOR X = 37 TO 37-RO STEP -1
210 COLOR= C(RND(1)*5+1)
220 PLOT CO,X
230 NEXT X
239 REM --COLOR AND DRAW CANDLE FLAMES--
240 COLOR= C(RND(1)*3+1)
250 PLOT 10,10
260 COLOR= C(RND(1)*2+1)
270 PLOT 29,10
280 GOTO 180
999 REM --FLAME COLOR DATA--
1000 DATA 13,9,13,9,1
1999 REM --DRAWING DATA--
2000 DATA 8,16,18,6,33,8,19,39,8,31,5,27,39,13
2010 DATA 26,3,12,15,10,10,3,12,15,29,29,5,1,13
2020 DATA 13,26,6,2,7,14,25,12,8,12,14,25,14,7
2030 DATA 10,17,21,0,6,6,16,22,0,5,5,17,21,0,4
2040 DATA 4,18,20,0,3,3,19,19,0,38,38,15,24,0
2050 DATA 14,37,0,16,39,0,23,39,0,25,37,13,18,7
2060 DATA 13,20,7,8,19,10,8,19,9,13,24,2,13,25
2070 DATA 2,13,25,3,1,17,3,1,17,4
```

### Atari/*Fireplace*

```
9 REM --RESERVE MEMORY FOR NEW CHARACTER SET--
10 S=(PEEK(106)-4)*256
20 POKE 106,S/256
30 GRAPHICS 1+16
39 REM --TRANSFER CHARACTERS IN "HOME SWEET HOME"--
40 FOR X=1 TO 7
50 READ CH
60 FOR Y=CH*8 TO CH*8+7
70 POKE S+Y,PEEK(57344+Y)
80 NEXT Y
90 NEXT X
99 REM --REDEFINE CHARACTERS !, ", #, AND $--
100 FOR X=8 TO 39
110 READ A
120 POKE S+X,A
130 NEXT X
139 REM --RESET CHARACTER SET POINTER--
140 POKE 756,S/256
149 REM --SET COLOR REGISTERS--
150 POKE 708,156
160 POKE 709,20
170 POKE 710,56
180 POKE 711,252
189 REM --DRAW FIREPLACE SCENE--
190 FOR X=1 TO 15
200 READ KO,A,B,C,D
210 COLOR KO
220 FOR RO=A TO B
230 FOR CO=C TO D
240 PLOT CO,RO
250 NEXT CO
260 NEXT RO
270 NEXT X
280 POSITION 7,3:PRINT #6;"HOME"
290 POSITION 8,4:PRINT #6;"SWEET"
300 POSITION 9,5:PRINT #6;"HOME"
309 REM --SET LOCATION AND LENGTH OF A FLAME--
310 CO=INT(RND(1)*6)+7
320 RO=INT(RND(1)*(CO-3-(CO>10)*(2*CO-20)))
329 REM --COLOR AND DRAW THE FLAME--
330 FOR X=21 TO 21-RO STEP -1
340 COLOR 129+32*(RND(0)>0.5)+INT(RND(0)*2)
350 PLOT CO,X
360 NEXT X
369 REM --COLOR AND DRAW CANDLE FLAMES--
370 COLOR 129+32*(RND(0)>0.5)+INT(RND(0)*2)
380 PLOT 4,6
390 COLOR 129+32*(RND(0)>0.5)+INT(RND(0)*2)
400 PLOT 15,6
409 REM --ROTATE COLOR REGISTERS FOR FLICKER EFFECT--
410 T=PEEK(710)
420 POKE 710,PEEK(711)
430 POKE 711,T
440 GOTO 310
999 REM --DATA FOR CHARACTERS IN "HOME SWEET HOME"--
1000 DATA 37,40,45,47,51,52,55
1999 REM --DATA FOR REDEFINED CHARACTERS--
2000 DATA 32,48,112,120,120,120,56,16
2010 DATA 4,12,14,30,30,30,28,8
2020 DATA 255,255,255,255,255,255,255,255
2030 DATA 255,1,125,69,85,93,65,127
2999 REM --DRAWING DATA--
3000 DATA 4,10,11,2,17,3,12,13,3,16
3010 DATA 3,14,23,3,4,3,14,23,15,16
3020 DATA 3,22,22,7,12,4,1,7,6,6
3030 DATA 4,1,7,13,13,4,1,1,7,12
3040 DATA 4,7,7,7,12,35,7,9,4,4
3050 DATA 35,7,9,15,15
3060 DATA 3,21,21,6,13,32,21,21,7,12
3070 DATA 3,23,23,8,11,32,23,23,9,10
```

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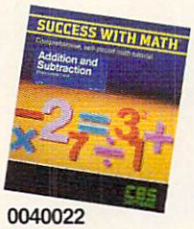


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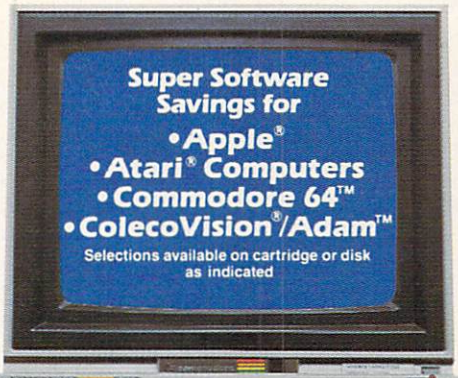

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### Commodore 64/*Fireplace*

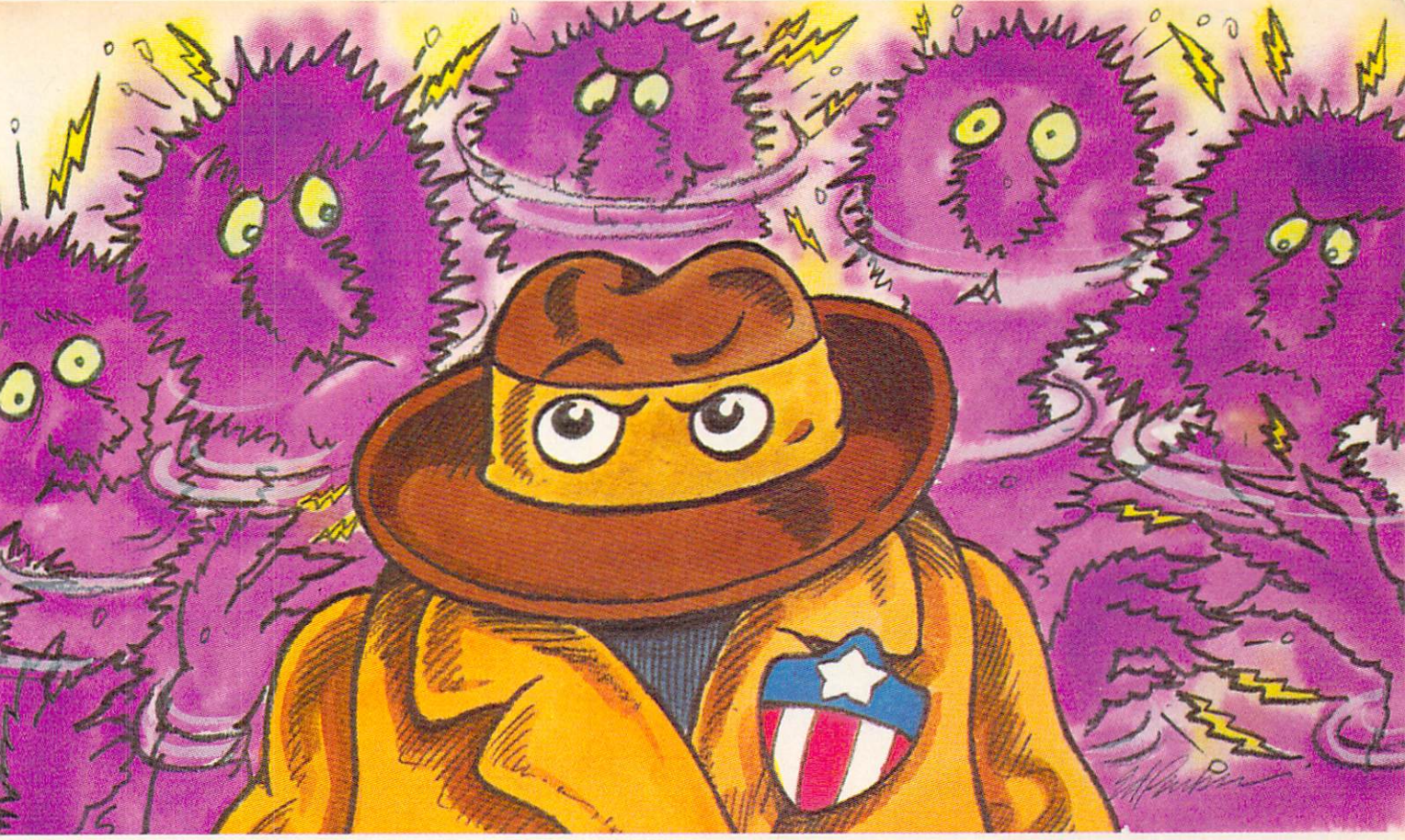
```
10 DIM C(5)
20 SB=1024
30 CB=55296
40 PRINT CHR$(147)
49 REM --SET BORDER AND BACKGROUND COLORS--
50 POKE 53280,12
60 POKE 53281,1
69 REM --READ FIRE COLORS INTO ARRAY C--
70 FOR X=0 TO 5
80 READ C(X)
90 NEXT X
99 REM --DRAW BROAD AREAS OF PICTURE--
100 FOR X=1 TO 10
110 READ KO,A,B,C,D
120 FOR RO=A TO B
130 FOR CO=C TO D
140 POKE SB+CO+40*RO,160
150 POKE CB+CO+40*RO,KO
160 NEXT CO,RO,X
169 REM --DRAW DETAILS OF PICTURE--
170 FOR X=1 TO 21
180 READ CH,KO,CO,RO
190 POKE SB+CO+40*RO,CH
200 POKE CB+CO+40*RO,KO
210 NEXT X
219 REM --SET LOCATION AND LENGTH OF A FLAME--
220 CO=RND(0)*12
230 RO=RND(0)*(5+(3-CO)*(CO<3)+(CO-7)*(CO>7))
239 REM --COLOR AND DRAW THE FLAME--
240 FOR X=CO TO CO-RO*40 STEP -40
250 POKE CB+894+X,C(RND(0)*6)
260 NEXT X
269 REM --COLOR AND DRAW CANDLE FLAMES--
270 POKE CB+330,RND(1)*2+7
280 POKE CB+349,RND(1)*2+7
290 GOTO 220
999 REM --FLAME COLOR DATA--
1000 DATA 2,2,7,7,8,10
1999 REM --DRAWING DATA--
2000 DATA 9,11,12,7,32,9,13,24,8,31,11,16,24,12,27
2010 DATA 13,9,10,10,10,13,9,10,29,29,12,2,8,13,26
2020 DATA 15,3,7,14,25,0,23,23,14,25,0,24,24,16,16
2030 DATA 0,24,24,23,23,160,0,13,22,160,0,26,22,42
2040 DATA 7,10,8,42,7,29,8,95,15,13,8,105,15,26,8
2050 DATA 233,15,13,2,223,15,26,2,8,2,15,4,15,5,16
2060 DATA 4,13,8,17,4,5,4,18,4,19,3,20,4,23,10,21
2070 DATA 4,5,5,22,4,5,2,23,4,20,7,24,4,8,5,18,6
2080 DATA 15,8,19,6,13,10,20,6,5,4,21,6
```

### IBM PC w/Color Graphics Adapter & IBM PC*jr*/*Fireplace*

```
10 CLS
20 KEY OFF
30 SCREEN 0,1
40 WIDTH 40
49 REM --DRAW FIREPLACE SCENE--
50 FOR X=1 TO 18
60 READ KO,A,B,C,D,CH
70 COLOR KO
80 FOR RO=A TO B
90 FOR CO=C TO D
100 LOCATE RO,CO,0
110 PRINT CHR$(CH);
120 NEXT CO
130 NEXT RO
140 NEXT X
149 REM --SET LOCATION AND LENGTH OF A FLAME--
150 CO=RND*7+18
160 RO=RND*(CO-16-(CO>21)*(43-2*CO))
169 REM --COLOR AND DRAW THE FLAME--
170 FOR X=21 TO 21-RO STEP -1
180 COLOR 4
190 IF RND>.3 THEN COLOR 14
200 IF RND>.6 THEN COLOR 6
210 LOCATE X,CO
220 PRINT CHR$(219);
230 NEXT X
239 REM --COLOR AND DRAW CANDLE FLAMES--
240 IF RND(0)>.5 THEN COLOR 14
250 LOCATE 8,12
260 PRINT CHR$(15);
270 IF RND(0)>.5 THEN COLOR 14
280 LOCATE 8,30
290 PRINT CHR$(15);
300 GOTO 150
1000 DATA 6,12,13,11,31,219,6,14,24,13,29,219,0,15
1010 DATA 23,15,27,219,4,22,22,17,25,176,4,23,23,16
1020 DATA 16,176,4,23,23,26,26,176,5,1,8,16,26,177
1030 DATA 1,2,7,17,25,219,14,9,11,12,12,177,14,9,11
1040 DATA 30,30,177,2,5,7,17,25,219,4,4,5,19,23,178
1050 DATA 0,4,4,18,18,219,0,3,3,19,23,219,0,4,4,24
1060 DATA 24,219,11,6,6,21,21,219,11,7,7,22,22,219
1070 DATA 6,5,5,21,21,219
```

### TI-99/4A/*Fireplace*

```
10 CALL CLEAR
20 RANDOMIZE
30 DIM KO(3)
39 REM --PUT FIRE CHARACTERS INTO ARRAY KO--
40 KO(1)=40
50 KO(2)=48
60 KO(3)=56
69 REM --SET COLORS OF CHARACTERS FOR DRAWING--
70 FOR X=2 TO 14
80 READ R,B
90 CALL COLOR(X,R,B)
100 NEXT X
109 REM --DEFINE A SET OF BLOCK CHARACTERS--
110 A$="FFFFFFFFFFFFFFFF"
120 FOR X=1 TO 9
130 READ CH
140 CALL CHAR(CH,A$)
150 NEXT X
160 CALL SCREEN(16)
169 REM --DRAW BROAD AREAS OF PICTURE--
170 FOR X=1 TO 8
180 READ A,B,CO,REP,CH
190 FOR RO=A TO B
200 CALL HCHAR(RO,CO,CH,REP)
210 NEXT RO
220 NEXT X
229 REM --DRAW DETAILS OF PICTURE--
230 FOR X=1 TO 17
240 READ RO,CO,CH
250 CALL HCHAR(RO,CO,CH)
260 NEXT X
269 REM --SET LOCATION AND LENGTH OF A FLAME--
270 CO=INT(RND*10)+12
280 RO=INT(RND*(6+(17-CO)*(CO<17)+(CO-17)*(CO>18)))
289 REM --COLOR AND DRAW THE FLAME--
290 FOR X=22 TO 22-RO STEP -1
300 CALL HCHAR(X,CO,KO(INT(RND*3)+1))
310 NEXT X
319 REM --COLOR AND DRAW CANDLE FLAMES--
320 CALL HCHAR(8,8,INT(RND*2)+42)
330 CALL HCHAR(8,25,INT(RND*2)+42)
340 GOTO 270
999 REM --COLOR AND CHARACTER DATA--
1000 DATA 12,1,9,9,10,10,14,1,3,1,6,1
1010 DATA 8,8,7,7,15,15,2,2,8,8,12,12,16,16
1999 REM --THESE CHARACTERS ARE REDEFINED BLOCKS--
2000 DATA 40,48,56,96,104,112,120,128,136
2999 REM --DRAWING DATA--
3000 DATA 12,13,5,24,96,14,24,6,22,96
3010 DATA 16,24,10,14,104,23,23,12,10,112
3020 DATA 9,11,8,1,120,9,11,25,1,120
3030 DATA 2,10,11,12,128,3,9,12,10,136
3040 DATA 22,11,112,24,13,112,22,22,112
3050 DATA 24,20,112,4,13,72,4,14,79
3060 DATA 4,15,77,4,16,69,6,15,83
3070 DATA 6,16,87,6,17,69,6,18,69
3080 DATA 6,19,84,8,17,72,8,18,79
3090 DATA 8,19,77,8,20,69
```



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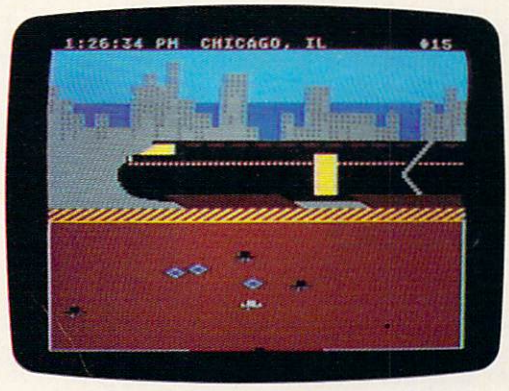


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```
10 DIM D(5)
20 LET D$="9,10,3,28,138,11,21,4,27,128,13,21,8,23,"
30 LET D$=D$+"0,6,8,6,6,128,6,8,25,25,128,1,7,9,22,"
40 LET D$=D$+"8,2,6,10,21,0,20,20,10,21,128,19,19,"
50 LET D$=D$+"9,9,128,19,19,22,22,128,21,21,13,13,"
60 LET D$=D$+"128,21,21,18,18,128,"
70 LET P1=1
80 LET P2=2
89 REM --DRAW FIREPLACE SCENE--
90 FOR X=1 TO 12
100 FOR Y=1 TO 5
110 GOSUB 1000
120 NEXT Y
130 FOR R=D(1) TO D(2)
140 FOR C=D(3) TO D(4)
150 PRINT AT R,C;CHR$ D(5)
160 NEXT C
170 NEXT R
180 NEXT X
190 PRINT AT 3,11;"HOME SWEET";AT 5,13;"*HOME*"
199 REM --SET LOCATION AND LENGTH OF A FLAME--
200 LET CO=RND*11+10
210 LET RO=RND*(5-(CO<13)*(13-CO)-(CO>17)*(CO-17))
219 REM --DRAW THE FLAME--
220 FOR X=19 TO 19-RO STEP -1
230 PRINT AT X,CO;CHR$ (RND*3+136)
240 NEXT X
249 REM --DRAW CANDLE FLAMES--
250 PRINT AT 5,6;CHR$ (21+2*(RND>0.5))
260 PRINT AT 5,25;CHR$ (21+2*(RND>0.5))
270 GOTO 200
999 REM --SIMULATED "READ" SUBROUTINE--
1000 IF D$(P2)="," THEN GOTO 1030
1010 LET P2=P2+1
1020 GOTO 1000
1030 LET D(Y)=VAL D$(P1 TO P2-1)
1040 LET P2=P2+1
1050 LET P1=P2
1060 RETURN
```

### TRS-80 Color Computer/*Fireplace*

```
10 DIM C(5)
20 CLS(0)
29 REM --READ CODES OF FIRE CHARACTERS INTO ARRAY C--
30 FOR X=0 TO 5
40 READ C(X)
50 NEXT X
59 REM --DRAW BROAD AREAS OF PICTURE--
60 FOR X=1 TO 7
70 READ CH,A,B,C,D
80 FOR RO=A TO B
90 FOR CO=C TO D
100 PRINT@CO+32*RO,CHR$(CH);
110 NEXT CO,RO,X
119 REM --DRAW DETAILS OF PICTURE--
120 FOR X=1 TO 31
130 READ CH,RO,CO
140 PRINT@CO+32*RO,CHR$(CH);
150 NEXT X
159 REM --SET LOCATION AND LENGTH OF A FLAME--
160 CO=RND(10)
170 RO=RND(2+(3-CO)*(CO<3)+(CO-8)*(CO>8))
179 REM --COLOR AND DRAW THE FLAME--
180 FOR X=CO TO CO-32*RO STEP -32
190 PRINT@458+X,CHR$(143+C(RND(5)));
200 NEXT X
209 REM --COLOR AND DRAW CANDLE FLAMES--
210 PRINT@135,CHR$(140+C(RND(2)));
220 PRINT@152,CHR$(140+C(RND(2)));
230 GOTO 160
999 REM --CODES FOR FIRE-COLORED CHARACTERS--
1000 DATA 48,112,16,48,112,16
1999 REM --DRAWING DATA--
2000 DATA 239,7,8,5,26,239,9,10,6,25,239,11,15,6
2010 DATA 25,207,11,15,10,21,195,15,15,11,20,207
2020 DATA 1,5,9,22,143,2,4,10,21,199,1,9,203,1,22
2030 DATA 205,5,9,206,5,22,223,5,7,223,5,24,206,5
2040 DATA 22,223,5,7,199,15,21,203,15,10,223,6,7
2050 DATA 223,6,24,206,14,10,205,14,21,128,15,12
2060 DATA 128,15,19,72,2,11,79,2,12,77,2,13,69,2
2070 DATA 14,83,2,16,87,2,17,69,2,18,69,2,19,84
2080 DATA 2,20,42,4,12,72,4,14,79,4,15,77,4,16
2090 DATA 69,4,17,42,4,19
```

### TRS-80 Model III/*Fireplace*

```
10 CLS
19 REM --DRAW FIREPLACE SCENE--
20 FOR X=1 TO 12
30 READ CH,A,B,C,D
40 FOR RO=A TO B
50 FOR CO=C TO D
60 PRINT@CO+64*RO,CHR$(CH);
70 NEXT CO,RO,X
80 PRINT@215,"HOME  SWEET  HOME";
89 REM --SET LOCATION AND LENGTH OF A FLAME--
90 CO=RND(18)
100 RO=RND(4+(5-CO)*(CO<5)+(CO-14)*(CO>14))
109 REM --DRAW THE FLAME--
110 FOR X=0 TO RO
120 PRINT@918+CO-X*64,CHR$(RND(64)+127);
130 NEXT X
139 REM --FLICKER THE CANDLE FLAMES--
140 PRINT@273,CHR$(RND(2)+41);
150 PRINT@302,CHR$(RND(2)+41);
160 GOTO 90
1000 DATA 191,7,7,12,51,191,8,15,14,49,128,9,15,21
1010 DATA 42,131,15,15,23,40,191,1,5,21,42,128,2,4
1020 DATA 22,41,176,14,14,22,22,176,14,14,41,41,191
1030 DATA 15,15,26,26,191,15,15,37,37,191,5,6,17,17
1040 DATA 191,5,6,46,46
```

### VIC-20/*Fireplace*

```
10 PRINT CHR$(147)
19 REM --SET BORDER AND BACKGROUND COLORS--
20 POKE 36879,24
29 REM --DRAW BROAD AREAS OF PICTURE--
30 FOR X=1 TO 10
40 READ KO,A,B,C,D
50 FOR RO=A TO B
60 FOR CO=C TO D
70 POKE 7680+CO+22*RO,160+58*(X<4)
80 POKE 38400+CO+22*RO,KO
90 NEXT CO,RO,X
99 REM --DRAW DETAILS OF PICTURE--
100 FOR X=1 TO 21
110 READ CH,KO,CO,RO
120 POKE 7680+CO+22*RO,CH
130 POKE 38400+CO+22*RO,KO
140 NEXT X
149 REM --PICK LOCATION AND LENGTH OF A FLAME--
150 CO=RND(1)*8
160 RO=RND(1)*(5+(3-CO)*(CO<3)+(CO-4)*(CO>4))
169 REM --COLOR AND DRAW THE FLAME--
170 FOR X=0 TO RO
180 POKE 7680+447+CO-X*22,160
190 POKE 38400+447+CO-X*22,2-5*(RND(1)<0.5)
200 NEXT X
209 REM --COLOR AND DRAW CANDLE FLAMES--
210 POKE 38400+136,2-5*(RND(1)<0.5)
220 POKE 38400+149,2-5*(RND(1)<0.5)
230 GOTO 150
1000 DATA 2,10,11,2,19,2,12,22,3,18,0,14,22,6
1010 DATA 15,6,1,7,6,15,1,2,6,7,14,3,7,9,4,4,3
1020 DATA 7,9,17,17,0,22,22,8,8,0,22,22,13,13
1030 DATA 0,21,21,7,14,160,0,6,20,160,0,15,20
1040 DATA 8,3,8,3,15,2,9,3,13,7,10,3,5,6,11,3
1050 DATA 19,4,9,4,23,6,10,4,5,3,11,4,5,2,12
1060 DATA 4,20,7,13,4,8,4,10,5,15,7,11,5,13,6
1070 DATA 12,5,5,2,13,5,95,6,6,7,105,6,15,7,233
1080 DATA 6,6,1,223,6,15,1,42,7,4,6,42,7,17,6
```

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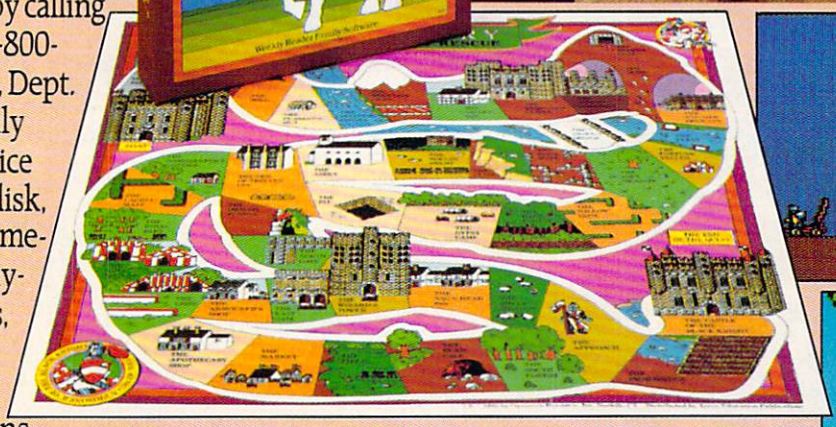
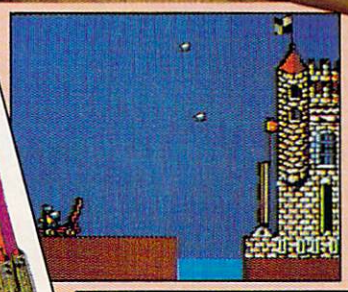
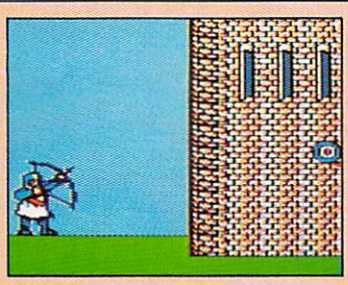
Developed by Optimum Resource, Inc. Designed by Richard Hefter and Janie and Steve Worthington.

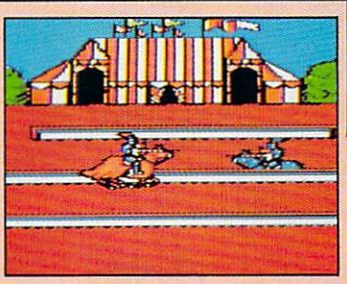
For the Apple® computer.

Look for Chivalry in finer computer stores everywhere. Or order by calling toll free 1-800-852-5000, Dept. AM-4. Only $49.95. Price includes disk, poster, gameboard, playing pieces, storage case and instructions.









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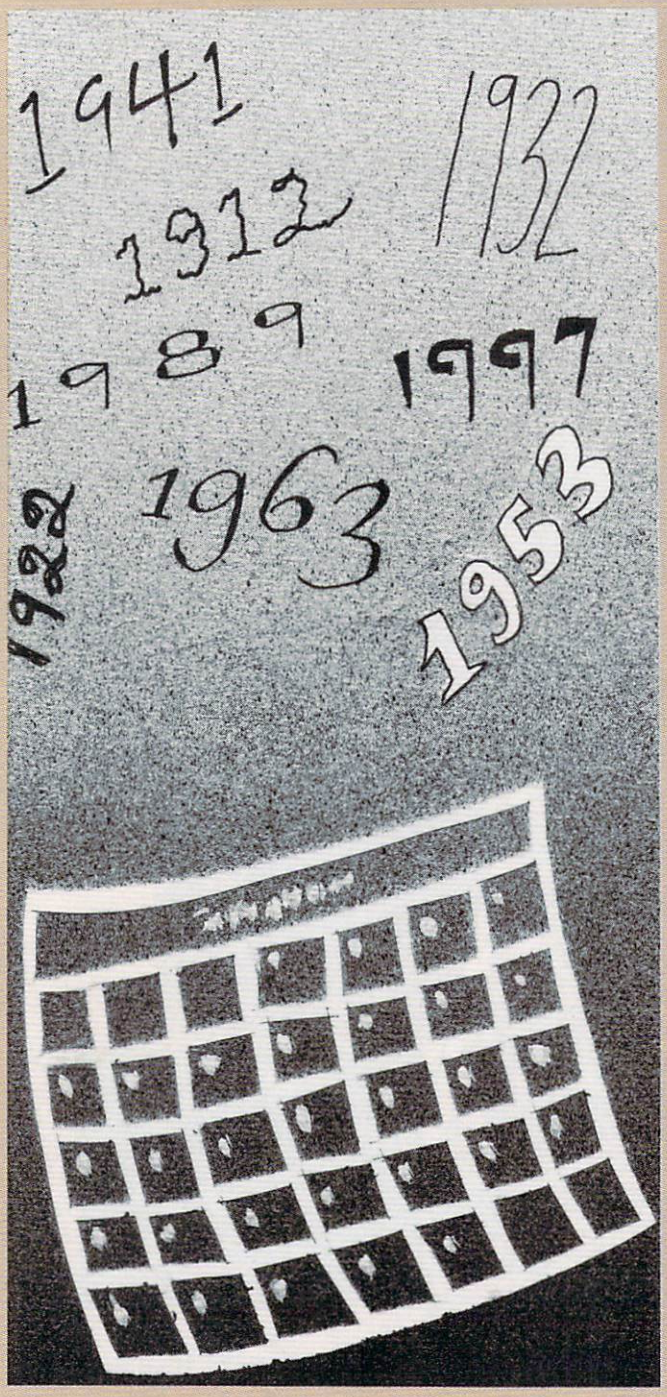
# Chivalry™ is alive!

# PERPETUAL CALENDAR




Was Dec. 7, 1941, a Sunday? What? You don't have a 1941 calendar handy? Don't worry—*Perpetual Calendar* can pinpoint the day of the week for dates from Jan. 1, 1801, to Dec. 31, 2399!

When you RUN the program, the computer will prompt you to enter a date in the following format: MONTH,DAY,YEAR. Use only digits, and enter all four digits of the year instead of the usual two (for example, you would enter Dec. 31, 1984, as 12,31,1984—*not* 12,31,84).

Not only will the computer tell you on what day of the week that date fell, it'll also show you the calendar for that whole month!

Oh . . . by the way, on what day of the week were you born? Type in *Perpetual Calendar* and find out!

**ADAM/*Perpetual Calendar***

```
10 DIM dw$(7),mo$(12),ld(12)
19 REM --INITIALIZE VARIABLES AND ARRAYS--
20 bl$ = ""
30 FOR i = 1 TO 7
40 READ dw$(i)
50 bl$ = bl$+"  "
60 NEXT i
70 FOR i = 1 TO 12
80 READ mo$(i),ld(i)
90 NEXT i
100 dy$ = " 1 2 3 4 5 6 7 8 9101112131415161718192021222232425262728293031"
109 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
110 HOME
120 PRINT TAB(6);"PERPETUAL CALENDAR"
130 PRINT
140 PRINT "Type in a date in any year"
150 PRINT "after 1800 and before 2400;"
160 PRINT "then press <RETURN>."
170 PRINT "Use this format:"
180 PRINT
190 PRINT "1,31,1985"
200 PRINT
210 INPUT "Date? ";m,d,y
220 ld(2) = 28+((y = INT(y/4)*4 AND y <> INT(y/100)*100) OR y = 2000)
230 IF m < 1 OR m > 12 THEN 170
240 IF d < 1 OR d > ld(m) OR y < 1801 OR y > 2399 THEN 170
249 REM --COMPUTE WHAT DAY THE DATE FALLS ON (dow)--
250 IF m < 3 THEN y = y-1:m = m+12
260 fom = INT(y*1.25)+(y < 1900)+(y > 2000)*INT((y-2000)/100)+INT((m-2)*2.59)
270 dow = fom+d-INT((fom+d-1)/7)*7
279 REM --fom IS DAY THAT FIRST OF MONTH m FALLS ON--
280 fom = fom-INT(fom/7)*7+1
290 IF m > 12 THEN m = m-12:y = y+1
299 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
300 HOME
310 PRINT mo$(m);" ";d;", ";y;", is a"
320 PRINT dw$(dow);"."
330 PRINT TAB(107-LEN(mo$(m))/2);mo$(m);" ";y
340 PRINT
350 PRINT TAB(3);
360 FOR i = 1 TO 7
370 PRINT LEFT$(dw$(i),3);" ";
380 NEXT i
390 PRINT
400 PRINT
409 REM --PRINT BODY OF CALENDAR--
410 dy$ = bl$+LEFT$(dy$,2*ld(m))+bl$+bl$
420 FOR i = 1 TO 6
430 PRINT TAB(3);
440 FOR j = 1 TO 7
450 pt = i*7+j-fom-6
459 REM --PRINT SELECTED DAY IN INVERSE--
460 IF pt = d AND d < 10 THEN PRINT " ";
470 IF pt = d THEN INVERSE:PRINT d;:NORMAL:GOTO 490
480 PRINT MID$(dy$,2*pt+13,2);
490 PRINT "  ";
500 NEXT j
510 PRINT
520 PRINT
530 NEXT i
540 PRINT
549 REM --DO ANOTHER DATE OR STOP--
550 PRINT "Press <Q> to quit or any other"
560 PRINT "key to try another date.";
570 GET k$
580 IF k$ <> "Q" AND k$ <> CHR$(113) THEN 100
590 END
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA January,31,February,28,March,31
2010 DATA April,30,May,31,June,30
```

→

ILLUSTRATION BY JOSH GOSFIELD

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```
2020 DATA July,31,August,31,September,30
2030 DATA October,31,November,30,December,31
```

### Apple/*Perpetual Calendar*

```
10 DIM DW$(7),MO$(12),LD(12)
19 REM --INITIALIZE VARIABLES AND ARRAYS--
20 BL$ = ""
30 FOR I = 1 TO 7
40 READ DW$(I)
50 BL$ = BL$+"  "
60 NEXT I
70 FOR I = 1 TO 12
80 READ MO$(I),LD(I)
90 NEXT I
100 DY$ = " 1 2 3 4 5 6 7 8 9101112131415161718192021222324252627282930 31"
109 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
110 HOME
120 PRINT TAB(12);"PERPETUAL CALENDAR"
130 PRINT
140 PRINT "TYPE IN A DATE IN ANY YEAR AFTER 1800"
150 PRINT "AND BEFORE 2400; THEN PRESS <RETURN>."
160 PRINT "USE THIS FORMAT:"
170 PRINT
180 PRINT "1,31,1985"
190 PRINT
200 INPUT "DATE? ";M,D,Y
210 LD(2) = 28+((Y = INT(Y/4)*4 AND Y <> INT(Y/100)*100) OR Y = 2000)
220 IF M < 1 OR M > 12 THEN 160
230 IF D < 1 OR D > LD(M) OR Y < 1801 OR Y > 2399 THEN 160
239 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
240 IF M < 3 THEN Y = Y-1:M = M+12
250 FOM = INT(Y*1.25)+(Y < 1900)+(Y > 2000)*INT((Y-2000)/100)+INT((M-2)*2.59)
260 DOW = FOM+D-INT((FOM+D-1)/7)*7
269 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
270 FOM = FOM-INT(FOM/7)*7+1
280 IF M > 12 THEN M = M-12:Y = Y+1
289 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
290 HOME
300 PRINT MO$(M);" ";D;", ";Y;", IS A ";DW$(DOW);"."
310 PRINT TAB((195-LEN(MO$(M)))/2);MO$(M);" ";Y
320 PRINT
330 FOR I = 1 TO 7
340 PRINT LEFT$(DW$(I),3);SPC(3);
350 NEXT I
355 PRINT
369 REM --PRINT BODY OF CALENDAR--
370 DY$ = BL$+LEFT$(DY$,2*LD(M))+BL$+BL$
380 FOR I = 1 TO 6
390 FOR J = 1 TO 7
400 PT = I*7+J-FOM-6
409 REM --PRINT SELECTED DAY IN INVERSE--
410 IF PT = D AND D < 10 THEN PRINT " ";
420 IF PT = D THEN INVERSE:PRINT D;:NORMAL:GOTO 440
430 PRINT MID$(DY$,2*PT+13,2);
440 PRINT SPC(4);
450 NEXT J
460 PRINT
470 NEXT I
480 PRINT
489 REM --DO ANOTHER DATE OR STOP--
490 PRINT "PRESS <Q> TO QUIT OR ANY OTHER KEY TO"
500 PRINT "TRY ANOTHER DATE.";
510 GET K$
520 IF K$ <> "Q" AND K$ <> CHR$(113) THEN 100
530 END
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA JANUARY,31,FEBRUARY,28,MARCH,31
2010 DATA APRIL,30,MAY,31,JUNE,30
2020 DATA JULY,31,AUGUST,31,SEPTEMBER,30
2030 DATA OCTOBER,31,NOVEMBER,30,DECEMBER,31
```

### Atari/*Perpetual Calendar*

```
10 DIM DW$(50),MO$(74),T$(30),DW(7,2),MO(12,2),LD(12)
20 OPEN #1,4,0,"K:"
29 REM --INITIALIZE VARIABLES AND ARRAYS--
30 FOR I=1 TO 7
40 READ T$
50 DW(I,1)=LEN(DW$)+1
60 DW$(LEN(DW$)+1)=T$
70 DW(I,2)=LEN(DW$)
80 NEXT I
90 FOR I=1 TO 12
100 READ T$,T
110 MO(I,1)=LEN(MO$)+1
120 MO$(LEN(MO$)+1)=T$
130 MO(I,2)=LEN(MO$)
140 LD(I)=T
150 NEXT I
159 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
160 GRAPHICS 0
170 POSITION 11,0:PRINT "PERPETUAL CALENDAR"
180 POSITION 2,2:PRINT "TYPE IN A DATE IN ANY YEAR AFTER 1800"
190 PRINT "AND BEFORE 2400; THEN PRESS <RETURN>."
200 PRINT "USE THIS FORMAT:"
210 PRINT
220 PRINT "1,31,1985"
230 PRINT
240 PRINT "DATE";
250 TRAP 200
260 INPUT M,D,Y
270 LD(2)=28+((Y=INT(Y/4)*4 AND Y<>INT(Y/100)*100) OR Y=2000)
280 IF M<1 OR M>12 OR D<1 OR D>LD(M) OR Y<1801 OR Y>2399 THEN 200
289 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
290 IF M<3 THEN Y=Y-1:M=M+12
300 FOM=INT(Y*1.25)+(Y<1900)+(Y>2000)*INT((Y-2000)/100)+INT((M-2)*2.59)
310 DOW=FOM+D-INT((FOM+D-1)/7)*7
319 REM --FOM IS DAY THAT FIRST OF MONTH FALLS ON--
320 FOM=FOM-INT(FOM/7)*7+1
330 IF M>12 THEN M=M-12:Y=Y+1
339 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
340 GRAPHICS 1
350 SETCOLOR 2,0,0
360 POKE 752,1
370 T$=MO$(MO(M,1),MO(M,2))
380 POKE 657,(24-LEN(T$)-DW(DOW,2)+DW(DOW,1)-(D>9))/2
390 PRINT T$;" ";D;", ";Y;", IS A ";DW$(DW(DOW,1),DW(DOW,2));"."
400 POSITION (15-LEN(T$))/2,0:PRINT #6;T$;" ";Y
410 PRINT #6
420 FOR I=1 TO 7
430 PRINT #6;DW$(DW(I,1),DW(I,1)+1);" ";
440 NEXT I
449 REM --PRINT BODY OF CALENDAR--
450 HP=(FOM-1)*3
460 VP=4
470 FOR I=1 TO LD(M)
480 POSITION HP+(I<10),VP
490 T$=STR$(I)
500 IF I<>D THEN 540
509 REM --PRINT SELECTED DAY IN RED--
510 FOR X=1 TO LEN(T$)
520 T$(X,X)=CHR$(ASC(T$(X,X))+96)
530 NEXT X
540 PRINT #6;T$
550 HP=HP+3
560 IF HP>20 THEN HP=0:VP=VP+3
570 NEXT I
580 PRINT
589 REM --DO ANOTHER DAY OR STOP--
590 PRINT "      PRESS <Q> TO QUIT OR ANY"
600 PRINT "    OTHER KEY TO TRY ANOTHER DATE.";
610 GET #1,K
620 IF K=ASC("Q") THEN GRAPHICS 0:END
```

```
630 GOTO 160
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA JANUARY,31,FEBRUARY,28,MARCH,31
2010 DATA APRIL,30,MAY,31,JUNE,30
2020 DATA JULY,31,AUGUST,31,SEPTEMBER,30
2030 DATA OCTOBER,31,NOVEMBER,30,DECEMBER,31
```

### Commodore 64/*Perpetual Calendar*

```
10 DIM DW$(7),MO$(12),LD(12)
19 REM --INITIALIZE VARIABLES AND ARRAYS--
20 BL$=""
30 FOR I=1 TO 7
40 READ DW$(I)
50 BL$=BL$+CHR$(32)+CHR$(32)
60 NEXT I
70 FOR I=1 TO 12
80 READ MO$(I),LD(I)
90 NEXT I
99 REM --SET SCREEN AND BORDER COLOR--
100 POKE 53280,1
110 POKE 53281,1
120 DY$=" 1 2 3 4 5 6 7 8 9101112131415161718192021222
32425262728293031"
129 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
130 PRINT CHR$(147);CHR$(31);
140 PRINT TAB(12);"PERPETUAL CALENDAR"
150 PRINT
160 PRINT "TYPE IN A DATE IN ANY YEAR AFTER 1800"
170 PRINT "AND BEFORE 2400; THEN PRESS <RETURN>."
180 PRINT "USE THIS FORMAT:"
190 PRINT
200 PRINT "1,31,1985"
210 PRINT
220 INPUT "DATE";M,D,Y
230 LD(2)=28-((Y=INT(Y/4)*4 AND Y<>INT(Y/100)*100) OR
Y=2000)
240 IF M<1 OR M>12 THEN 180
250 IF D<1 OR D>LD(M) OR Y<1801 OR Y>2399 THEN 180
259 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
260 IF M<3 THEN Y=Y-1:M=M+12
270 FOM=INT(Y*1.25)-(Y<1900)-(Y>2000)*INT((Y-2000)/100
)+INT((M-2)*2.59)
280 DOW=FOM+D-INT((FOM+D-1)/7)*7
289 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
290 FOM=FOM-INT(FOM/7)*7+1
300 IF M>12 THEN M=M-12:Y=Y+1
309 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
310 PRINT CHR$(147);
320 PRINT MO$(M);STR$(D);",";
330 PRINT STR$(Y);", IS A ";DW$(DOW);"."
340 PRINT TAB((194-LEN(MO$(M)))/2);MO$(M);Y
350 PRINT
360 FOR I=1 TO 7
370 PRINT LEFT$(DW$(I),3);SPC(3);
380 NEXT I
390 PRINT
399 REM --PRINT BODY OF CALENDAR--
400 DY$=BL$+LEFT$(DY$,2*LD(M))+BL$+BL$
410 FOR I=1 TO 6
420 FOR J=1 TO 7
430 PT=I*7+J-FOM-6
439 REM --PRINT SELECTED DAY IN INVERSE--
440 IF PT=D AND D<10 THEN PRINT CHR$(32);
450 IF PT=D THEN PRINT CHR$(18);MID$(STR$(D),2);CHR$(1
46);:GOTO 470
460 PRINT MID$(DY$,2*PT+13,2);
470 PRINT SPC(4);
480 NEXT J
490 PRINT
500 NEXT I
510 PRINT
519 REM --DO ANOTHER DATE OR STOP--
520 PRINT "PRESS <Q> TO QUIT OR ANY OTHER KEY TO"
530 PRINT "TRY ANOTHER DATE."
540 GET K$
550 IF K$="" THEN 540
560 IF K$<>"Q" AND K$<>CHR$(113) THEN 120
570 END
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA JANUARY,31,FEBRUARY,28,MARCH,31
2010 DATA APRIL,30,MAY,31,JUNE,30
2020 DATA JULY,31,AUGUST,31,SEPTEMBER,30
2030 DATA OCTOBER,31,NOVEMBER,30,DECEMBER,31
```

### IBM PCs/*Perpetual Calendar*

```
10 KEY OFF
20 LOCATE ,,0
30 SCREEN 0
40 WIDTH 40
50 COLOR 2
60 DIM DW$(7),MO$(12),LD(12)
69 REM --INITIALIZE VARIABLES AND ARRAYS--
70 BL$=STRING$(14,32)
80 MK$=CHR$(143)
90 FOR I=1 TO 7
100 READ DW$(I)
110 NEXT I
120 FOR I=1 TO 12
130 READ MO$(I),LD(I)
140 NEXT I
150 DY$=" 1 2 3 4 5 6 7 8 9101112131415161718192021222
32425262728293031"
159 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
160 CLS
170 PRINT TAB(11);"PERPETUAL CALENDAR"
180 PRINT
190 PRINT "Type in a date in any year after 1800"
200 PRINT "and before 2400; then press <ENTER>."
210 PRINT "Use this format:"
220 PRINT
230 PRINT "1,31,1985"
240 PRINT
250 INPUT "Date";M,D,Y
260 LD(2)=28-((Y=INT(Y/4)*4 AND Y<>INT(Y/100)*100) OR
Y=2000)
270 IF M<1 OR M>12 THEN 210
280 IF D<1 OR D>LD(M) OR Y<1801 OR Y>2399 THEN 210
289 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
290 IF M<3 THEN Y=Y-1:M=M+12
300 FOM=INT(Y*1.25)-(Y<1900)-(Y>2000)*INT((Y-2000)/100
)+INT((M-2)*2.59)
310 DOW=FOM+D-INT((FOM+D-1)/7)*7
319 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
320 FOM=FOM-INT(FOM/7)*7+1
330 IF M>12 THEN M=M-12:Y=Y+1
339 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
340 CLS
350 PRINT MO$(M);STR$(D);",";STR$(Y);", is a ";DW$(DOW
);"."
360 LOCATE 4,(36-LEN(MO$(M)))/2:PRINT MO$(M);Y
370 PRINT
380 FOR I=1 TO 7
390 PRINT LEFT$(DW$(I),3);SPC(3);
400 NEXT I
410 PRINT
419 REM --PRINT BODY OF CALENDAR--
420 DY$=BL$+LEFT$(DY$,2*LD(M))+BL$+BL$
430 FOR I=1 TO 6
440 FOR J=1 TO 7
450 PT=I*7+J-FOM-6
459 REM --HIGHLIGHT SELECTED DAY--
460 IF PT=D AND D<10 THEN PRINT " ";
470 IF PT=D THEN COLOR 9:PRINT MID$(STR$(D),2);:COLOR
2:GOTO 490
480 PRINT MID$(DY$,2*PT+13,2);
```

```
490 PRINT SPC(4);
500 NEXT J
510 PRINT
520 NEXT I
530 PRINT
539 REM --DO ANOTHER DATE OR STOP--
540 PRINT "Press <Q> to quit or any other key to"
550 PRINT "try another date.";
560 K$=INKEY$
570 IF K$="" THEN 560
580 IF K$<>"Q" AND K$<>CHR$(113) THEN 150 ELSE END
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA January,31,February,28,March,31
2010 DATA April,30,May,31,June,30
2020 DATA July,31,August,31,September,30
2030 DATA October,31,November,30,December,31
```

### TI-99/4A/*Perpetual Calendar*

```
10 DIM DW$(7),MO$(12),LD(12)
19 REM --INITIALIZE VARIABLES AND ARRAYS--
20 FOR I=1 TO 7
30 READ DW$(I)
40 NEXT I
50 FOR I=1 TO 12
60 READ MO$(I),LD(I)
70 NEXT I
79 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
80 CALL CLEAR
90 PRINT TAB(6);"PERPETUAL CALENDAR"
100 PRINT
110 PRINT "Type in a date in any year"
120 PRINT "after 1800 and before 2400;"
130 PRINT "then press <ENTER>."
140 PRINT "Use this format:"
150 PRINT
160 PRINT "1,31,1985"
170 PRINT
180 INPUT "Date? ":M,D,Y
190 LD(2)=28-SGN(((Y=INT(Y/4)*4)*(Y<>INT(Y/100)*100))+
(Y=2000))
200 IF (M<1)+(M>12)THEN 140
210 IF (D<1)+(D>LD(M))+(Y<1801)+(Y>2399)THEN 140
219 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
220 IF M>2 THEN 250
230 Y=Y-1
240 M=M+12
250 FOM=INT(Y*1.25)-(Y<1900)-(Y>2000)*INT((Y-2000)/100
)+INT((M-2)*2.59)
260 DOW=FOM+D-INT((FOM+D-1)/7)*7
269 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
270 FOM=FOM-INT(FOM/7)*7+1
280 IF M<13 THEN 310
290 M=M-12
300 Y=Y+1
309 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
310 CALL CLEAR
320 PRINT MO$(M);" ";STR$(D);", ";STR$(Y);", is a ";DW
$(DOW)&"."
330 PRINT
340 PRINT
350 PRINT
360 PRINT
369 REM --PRINT BODY OF CALENDAR--
370 PRINT TAB((24-LEN(MO$(M)))/2);MO$(M);Y
380 PRINT
390 FOR I=1 TO 7
400 PRINT " ";SEG$(DW$(I),1,3);
410 NEXT I
420 PRINT
430 PRINT
440 PRINT TAB(4*FOM-3);
450 FOR I=1 TO LD(M)
460 IF I>9 THEN 480
470 PRINT " ";
480 IF I<>D THEN 510
489 REM  --POINT TO SELECTED DAY--
490 PRINT ">";STR$(D);"<";
500 GOTO 520
510 PRINT I;
520 NEXT I
530 PRINT
540 PRINT
550 PRINT
559 REM --DO ANOTHER DATE OR STOP--
560 PRINT "Press <Q> to quit or any"
570 PRINT "other key to try another"
580 PRINT "date."
590 CALL KEY(3,K,S)
600 IF S=0 THEN 590
610 IF (K<>81)*(K<>113)THEN 80
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA January,31,February,28,March,31
2010 DATA April,30,May,31,June,30
2020 DATA July,31,August,31,September,31
2030 DATA October,31,November,30,December,31
```

### Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/*Perpetual Calendar*

```
10 FAST
20 DIM D$(7,10)
30 DIM M$(12,9)
40 DIM L(12)
49 REM --INITIALIZE VARIABLES AND ARRAYS--
50 LET P1=1
60 LET P2=7
70 LET I$="SUNDAY,MONDAY,TUESDAY,WEDNESDAY,"
80 LET I$=I$+"THURSDAY,FRIDAY,SATURDAY,"
90 LET I$=I$+"JANUARY,31,FEBRUARY,28,MARCH,31,"
100 LET I$=I$+"APRIL,30,MAY,31,JUNE,30,JULY,31,"
110 LET I$=I$+"AUGUST,31,SEPTEMBER,30,OCTOBER,31,"
120 LET I$=I$+"NOVEMBER,30,DECEMBER,31,"
130 FOR I=1 TO 7
140 GOSUB 1000
150 LET D$(I)=R$
160 LET D$(I,10)=CHR$ (LEN R$)
170 NEXT I
180 FOR I=1 TO 12
190 GOSUB 1000
200 LET M$(I)=R$
210 LET M$(I,9)=CHR$ (LEN R$)
220 GOSUB 1000
230 LET L(I)=VAL R$
240 NEXT I
249 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
250 SLOW
260 CLS
270 PRINT AT 0,7;"PERPETUAL CALENDAR"
280 PRINT AT 2,0;"TYPE IN A DATE IN ANY YEAR"
290 PRINT "AFTER 1800 AND BEFORE 2400;"
300 PRINT "THEN PRESS <ENTER>."
310 PRINT AT 5,0;"USE THIS FORMAT:"
320 PRINT AT 7,0;"1,31,1985"
330 PRINT AT 9,0;"DATE? ";
340 INPUT I$
350 PRINT I$
360 LET I$=I$+","
370 LET P1=1
380 LET P2=2
390 GOSUB 1000
400 LET M=VAL R$
410 IF M<1 OR M>12 THEN GOTO 260
420 GOSUB 1000
430 LET D=VAL R$
440 GOSUB 1000
450 LET Y=VAL R$
460 FAST
```

```
470 CLS
480 LET L(2)=28+((Y=INT (Y/4)*4 AND Y<>INT (Y/100)*100
) OR Y=2000)
490 IF D<1 OR D>L(M) OR Y<1801 OR Y>2399 THEN GOTO 250
499 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
500 IF M<3 THEN LET Y=Y-1
510 IF M<3 THEN LET M=M+12
520 LET FOM=INT (Y*1.25)+(Y<1900)+(Y>2000)*INT ((Y-200
0)/100)+INT ((M-2)*2.59)
530 LET DOW=FOM+D-INT ((FOM+D-1)/7)*7
539 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
540 LET FOM=FOM-INT (FOM/7)*7+1
550 IF M>12 THEN LET Y=Y+1
560 IF M>12 THEN LET M=M-12
569 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
570 PRINT M$(M,1 TO CODE M$(M,9));" ";D;", ";Y;", IS A
"
580 PRINT D$(DOW,1 TO CODE D$(DOW,10));"."
590 PRINT AT 4,(25-CODE M$(M,9))/2;M$(M,1 TO CODE M$(M
,9));" ";Y
600 PRINT AT 6,2;
610 FOR I=1 TO 7
620 PRINT D$(I,1 TO 3);" ";
630 NEXT I
640 PRINT
649 REM --PRINT BODY OF CALENDAR--
650 LET VP=8
660 LET HP=(FOM-1)*4+2
670 FOR I=1 TO L(M)
680 LET P$=STR$(I)
690 IF I<>D THEN GOTO 730
699 REM --PRINT SELECTED DAY IN INVERSE--
700 FOR J=1 TO LEN P$
710 LET P$(J)=CHR$ (CODE P$(J)+128)
720 NEXT J
730 PRINT AT VP,HP+(I<10);P$
740 LET HP=HP+4
750 IF HP>=30 THEN LET VP=VP+2
760 IF HP>=30 THEN LET HP=2
770 NEXT I
780 SLOW
789 REM --DO ANOTHER DATE OR STOP--
790 PRINT AT 20,3;"PRESS <Q> TO QUIT OR ANY";AT 21,0;"
OTHER KEY TO TRY ANOTHER DATE."
800 LET K$=INKEY$
810 IF K$="" THEN GOTO 800
820 IF K$<>"Q" THEN GOTO 260
830 STOP
1000 IF I$(P2)="," THEN GOTO 1030
1010 LET P2=P2+1
1020 GOTO 1000
1030 LET R$=I$(P1 TO P2-1)
1040 LET P2=P2+2
1050 LET P1=P2-1
1060 RETURN
```

### TRS-80 Color Computer/*Perpetual Calendar*

```
10 CLEAR 500
20 DIM DW$(7),MO$(12),LD(12)
29 REM --INITIALIZE VARIABLES AND ARRAYS--
30 BL$=STRING$(14,32)
40 FOR I=1 TO 7
50 READ DW$(I)
60 NEXT I
70 FOR I=1 TO 12
80 READ MO$(I),LD(I)
90 NEXT I
100 DY$=" 1 2 3 4 5 6 7 8 9101112131415161718192021222
32425262728293031"
109 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
110 CLS
120 PRINT TAB(7);"PERPETUAL CALENDAR"
130 PRINT
140 PRINT "TYPE IN A DATE IN ANY YEAR"
150 PRINT "AFTER 1800 AND BEFORE 2400;"
160 PRINT "THEN PRESS <ENTER>."
170 PRINT "USE THIS FORMAT:"
180 PRINT
190 PRINT "1,31,1985"
200 PRINT
210 INPUT "DATE";M,D,Y
220 LD(2)=28-((Y=INT(Y/4)*4 AND Y<>INT(Y/100)*100) OR
Y=2000)
230 IF M<1 OR M>12 THEN 170
240 IF D<1 OR D>LD(M) OR Y<1801 OR Y>2399 THEN 170
249 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
250 IF M<3 THEN Y=Y-1:M=M+12
260 FOM=INT(Y*1.25)-(Y<1900)-(Y>2000)*INT((Y-2000)/100
)+INT((M-2)*2.59)
270 DOW=FOM+D-INT((FOM+D-1)/7)*7
279 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
280 FOM=FOM-INT(FOM/7)*7+1
290 IF M>12 THEN M=M-12:Y=Y+1
299 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
300 CLS
310 PRINT MO$(M);STR$(D);",";STR$(Y);", IS A"
320 PRINT DW$(DOW);"."
330 PRINT
340 PRINT TAB((27-LEN(MO$(M)))/2);MO$(M);Y
350 PRINT
360 PRINT TAB(2);
370 FOR I=1 TO 7
380 PRINT LEFT$(DW$(I),3);" ";
390 NEXT I
400 PRINT
409 REM --PRINT BODY OF CALENDAR--
410 DY$=BL$+LEFT$(DY$,2*LD(M))+BL$+BL$
420 FOR I=1 TO 6
430 PRINT TAB(2);
440 FOR J=1 TO 7
450 PT=I*7+J-FOM-6
459 REM --POINT TO SELECTED DAY--
460 IF PT=D AND D<10 THEN PRINT " ";
470 IF PT=D THEN PRINT CHR$(8);">";MID$(STR$(D),2);"<"
;:GOTO 490
480 PRINT MID$(DY$,2*PT+13,2);" ";
490 PRINT " ";
500 NEXT J
510 PRINT
520 NEXT I
530 PRINT
539 REM --DO ANOTHER DATE OR STOP--
540 PRINT "PRESS <Q> TO QUIT OR ANY OTHER"
550 PRINT "KEY TO TRY ANOTHER DATE."
560 K$=INKEY$
570 IF K$="" THEN 560
580 IF K$<>"Q" AND K$<>CHR$(113) THEN 100 ELSE END
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA JANUARY,31,FEBRUARY,28,MARCH,31
2010 DATA APRIL,30,MAY,31,JUNE,30
2020 DATA JULY,31,AUGUST,31,SEPTEMBER,30
2030 DATA OCTOBER,31,NOVEMBER,30,DECEMBER,31
```

### TRS-80 Model III/*Perpetual Calendar*

```
10 CLEAR 500
20 DIM DW$(7),MO$(12),LD(12)
29 REM --INITIALIZE VARIABLES AND ARRAYS--
30 BL$=STRING$(14,32)
40 MK$=CHR$(143)
50 FOR I=1 TO 7
60 READ DW$(I)
70 NEXT I
80 FOR I=1 TO 12
90 READ MO$(I),LD(I)
100 NEXT I
```

```
110 DY$=" 1 2 3 4 5 6 7 8 9101112131415161718192021222
32425262728293031"
119 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
120 CLS
130 PRINT TAB(23);"PERPETUAL CALENDAR"
140 PRINT
150 PRINT "Type in a date in any year after 1800 and b
efore 2400; then"
160 PRINT "press <RETURN>."
170 PRINT "Use this format:"
180 PRINT
190 PRINT "1,31,1985"
200 PRINT
210 INPUT "Date";M,D,Y
220 LD(2)=28-((Y=INT(Y/4)*4 AND Y<>INT(Y/100)*100) OR
Y=2000)
230 IF M<1 OR M>12 THEN 170
240 IF D<1 OR D>LD(M) OR Y<1801 OR Y>2399 THEN 170
249 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
250 IF M<3 THEN Y=Y-1:M=M+12
260 FOM=INT(Y*1.25)-(Y<1900)-(Y>2000)*INT((Y-2000)/100
)+INT((M-2)*2.59)
270 DOW=FOM+D-INT((FOM+D-1)/7)*7
279 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
280 FOM=FOM-INT(FOM/7)*7+1
290 IF M>12 THEN M=M-12:Y=Y+1
299 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
300 CLS
310 T$=MO$(M)+STR$(D)+","+STR$(Y)+", is a "+DW$(DOW)+"
."
320 PRINT TAB((64-LEN(T$))/2);T$
330 PRINT@189+(64-LEN(MO$(M)))/2,MO$(M);Y
340 PRINT
350 PRINT TAB(12);
360 FOR I=1 TO 7
370 PRINT LEFT$(DW$(I),3);STRING$(3,32);
380 NEXT I
390 PRINT
399 REM --PRINT BODY OF CALENDAR--
400 DY$=BL$+LEFT$(DY$,2*LD(M))+BL$+BL$
410 FOR I=1 TO 6
420 PRINT TAB(12);
430 FOR J=1 TO 7
440 PT=I*7+J-FOM-6
449 REM --MARK SELECTED DAY--
450 IF PT=D AND D<10 THEN PRINT " ";
460 IF PT=D THEN PRINT CHR$(8);MK$;MID$(STR$(D),2);MK$
;:GOTO 480
470 PRINT MID$(DY$,2*PT+13,2);" ";
480 PRINT STRING$(3,32);
490 NEXT J
500 PRINT
510 NEXT I
520 PRINT
529 REM --DO ANOTHER DATE OR STOP--
530 PRINT TAB(4);"Press <Q> to quit or any other key t
o try another date.";
540 K$=INKEY$
550 IF K$="" THEN 540
560 IF K$<>"Q" AND K$<>CHR$(113) THEN 110 ELSE END
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA January,31,February,28,March,31
2010 DATA April,30,May,31,June,30
2020 DATA July,31,August,31,September,30
2030 DATA October,31,November,30,December,31
```

### VIC-20/*Perpetual Calendar*

```
10 DIM DW$(7),MO$(12),LD(12)
19 REM --INITIALIZE VARIABLES AND ARRAYS--
20 BL$=""
30 FOR I=1 TO 7
40 READ DW$(I)
50 BL$=BL$+CHR$(32)+CHR$(32)
60 NEXT I
70 FOR I=1 TO 12
80 READ MO$(I),LD(I)
90 NEXT I
99 REM --SET SCREEN AND BORDER COLOR--
100 POKE 36879,25
110 DY$=" 1 2 3 4 5 6 7 8 9101112131415161718192021222
32425262728293031"
119 REM --ASK FOR, ACCEPT, AND CHECK INPUT--
120 PRINT CHR$(147);
130 PRINT TAB(2);"PERPETUAL CALENDAR"
140 PRINT
150 PRINT "TYPE IN A DATE IN ANY"
160 PRINT "YEAR AFTER 1800 AND"
170 PRINT "BEFORE 2400; THEN"
180 PRINT "PRESS <RETURN>."
190 PRINT "USE THIS FORMAT:"
200 PRINT
210 PRINT "1,31,1985"
220 PRINT
230 INPUT "DATE";M,D,Y
240 LD(2)=28-((Y=INT(Y/4)*4 AND Y<>INT(Y/100)*100) OR
Y=2000)
250 IF M<1 OR M>12 THEN 190
260 IF D<1 OR D>LD(M) OR Y<1801 OR Y>2399 THEN 190
269 REM --COMPUTE WHAT DAY THE DATE FALLS ON (DOW)--
270 IF M<3 THEN Y=Y-1:M=M+12
280 FOM=INT(Y*1.25)-(Y<1900)-(Y>2000)*INT((Y-2000)/100
)+INT((M-2)*2.59)
290 DOW=FOM+D-INT((FOM+D-1)/7)*7
299 REM --FOM IS DAY THAT FIRST OF MONTH M FALLS ON--
300 FOM=FOM-INT(FOM/7)*7+1
310 IF M>12 THEN M=M-12:Y=Y+1
319 REM --PRINT DAY OF WEEK AND TOP OF CALENDAR PAGE--
320 PRINT CHR$(147);
330 PRINT MO$(M);STR$(D);",";
340 PRINT STR$(Y);", IS"
350 PRINT "A ";DW$(DOW);"."
360 PRINT TAB((60-LEN(MO$(M)))/2);MO$(M);Y
370 PRINT
380 FOR I=1 TO 7
390 PRINT LEFT$(DW$(I),2);CHR$(32);
400 NEXT I
410 PRINT
420 PRINT
429 REM --PRINT BODY OF CALENDAR--
430 DY$=BL$+LEFT$(DY$,2*LD(M))+BL$+BL$
440 FOR I=1 TO 6
450 FOR J=1 TO 7
460 PT=I*7+J-FOM-6
469 REM --PRINT SELECTED DAY IN INVERSE--
470 IF PT=D AND D<10 THEN PRINT CHR$(32);
480 IF PT=D THEN PRINT CHR$(18);MID$(STR$(D),2);CHR$(1
46);:GOTO 500
490 PRINT MID$(DY$,2*PT+13,2);
500 PRINT CHR$(32);
510 NEXT J
520 PRINT
530 PRINT
540 NEXT I
549 REM --DO ANOTHER DATE OR STOP--
550 PRINT "PRESS <Q> TO QUIT OR"
560 PRINT "ANY OTHER KEY TO TRY"
570 PRINT "ANOTHER DATE."
580 GET K$
590 IF K$="" THEN 580
600 IF K$<>"Q" AND K$<>CHR$(113) THEN 110
610 END
1000 DATA SUNDAY,MONDAY,TUESDAY,WEDNESDAY
1010 DATA THURSDAY,FRIDAY,SATURDAY
2000 DATA JANUARY,31,FEBRUARY,28,MARCH,31
2010 DATA APRIL,30,MAY,31,JUNE,30
2020 DATA JULY,31,AUGUST,31,SEPTEMBER,30
2030 DATA OCTOBER,31,NOVEMBER,30,DECEMBER,31
```

# *SUPERMARKET SWEETHEARTS*
# True Love at the Checkout Counter

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

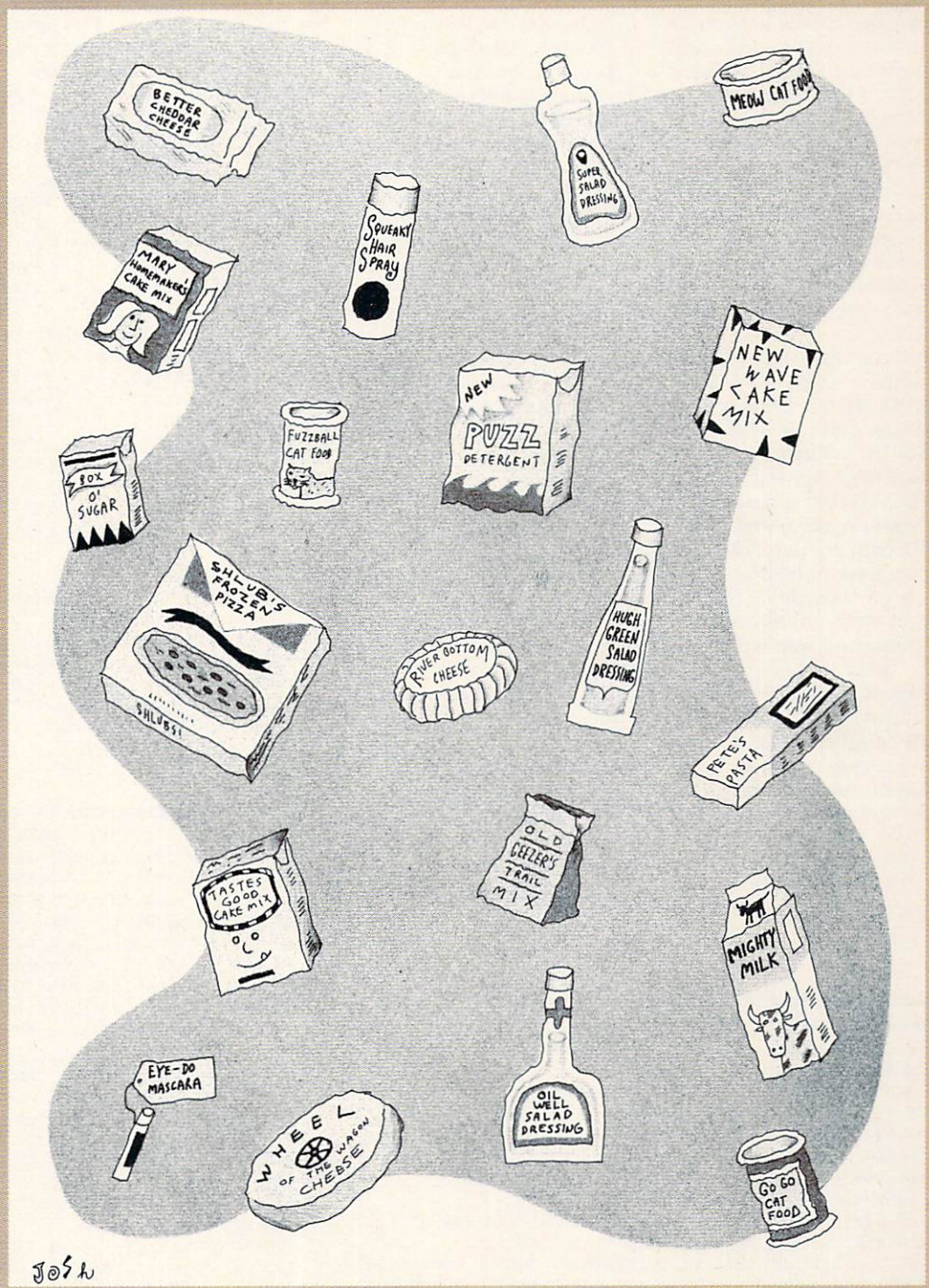


ILLUSTRATION BY JOSH GOSFIELD

It was the frozen brussels sprouts—or, to be precise, the lack of them—that first brought Linda and Bill together one snowy January afternoon nearly a year ago. The alert young assistant manager of Frozen Foods noted the look of pretty confusion on his customer's face as she peered through the icy haze in search of the delicacy. "Excuse me, Miss . . . ," he inquired gently. "Might I be of some assistance?"

"Brussels sprouts . . . ." she murmured coolly. Their eyes met. She caught her breath.

"Oh! Sorry, Miss," Bill muttered apologetically. "All out of sprouts today. More in on Friday, but . . ."—he warmed to the shyly smiling girl—" . . . have you tried our frozen cauliflower tips with creamy cheese sauce? Generic, you know. Package doesn't look like much, but it's quite good." Her smile broadened and, shyness melting, she laughed.

By spring, the earnest young grocer and the charming shopper were a hot item in the gossip aisle of the Grand Onion Superette. Linda would shop there most every day. On seeing her, Bill would contrive to shrug aside—for a few precious minutes—the icy machinations of the frozen-food business, and they would stroll through the aisles hand in hand—billing at the checkout counter and cooing in the poultry department. They were always playing romantic little jokes on one another. Linda delighted in writing notes to Bill, and taping them to the running lights of his scooter as it stood in the parking lot. Bill was fond of drawing up special coupons for free hugs and kisses, sneaking them into Linda's grocery bags when her attention was distracted. Linda loved finding these coupons. She saved them in a coupon holder with a big, cardboard heart pasted on top.

For the anniversary of their first date, Linda decided to prepare a special candlelit dinner for Bill—fettuccine Alfredo and

PETER FAVARO *and* SARAH KORTUM *are contributing editors and* STEVEN C.M. CHEN *is a contributing technical editor to* FAMILY COMPUTING.

homemade sugar cookies. He'd mentioned that they were his favorite foods and Linda wanted so much to please him. That morning, she arrived at the Superette with an extra-long shopping list. When she finally reached the checkout counter, Bill was there, smiling. She waved and blew him a kiss. Bill returned it, smiling wider as he recognized the ingredients for his favorite meal among her purchases—and as she passed through the line, Bill slipped what Linda assumed to be a new batch of romantic coupons into her shopping bag—one, two, three, four of them!

Linda excitedly read the coupons after leaving the store. To her dismay, she discovered that they were not the usual offerings, redeemable in pecks and cuddles, but a new kind, mysteriously banal, each offering 25 cents off the purchase of food in a particular category. Linda wondered anxiously if something was wrong. Had Bill confused her with someone else? Was there another shopper in his life? Fighting down a mounting sense of dread, Linda ran back to the Superette and searched the aisles for some meaning behind Bill's latest coupons. Did she find her answer? Was Love confirmed among the collard greens? Or did her fond hopes topple like an unbalanced stack of tomato-juice cans?

### HOW TO PLAY

Set your computer to all uppercase letters before playing *Supermarket Sweethearts*. From the moment you type RUN, you'll be in Linda's shoes—shopping for the items she needs for her romantic anniversary dinner. Stroll up and down the aisles of the Superette, using the illustration as a guide. Buy as many items as you please. To buy an item, type in its name at the prompt, and press RETURN or ENTER. When you've finished shopping (and hopefully collected all the coupons) type END, and again press RETURN or ENTER. Now, by referring to the illustration, study the different items mentioned on the coupons. If you've missed a coupon, you may have to do some more shopping by pressing "S".

If you think you've figured out what Bill is up to, type "G" to guess. To win the game, you'll have to choose one special item from among those pictured in the illustration. If you guess incorrectly, press "H" for a helpful hint, or "V" to study the coupons some more. The solution will appear in next month's issue.

### Base Version (TRS-80 Model III)/*Supermarket Sweethearts*

```
10 CLEAR 1000
20 DIM S$(12),FL(4)
30 DL=1600:TX=0:TRU=-1:WH=7:WL=64
40 FOR I=1 TO 4:FL(I)=0:NEXT I:C=1:FC=0
50 P$="PRESS <S> TO SHOP SOME MORE":Q$=CHR$(34)
90 FOR I=1 TO 12:T$="":READ K:FOR J=1 TO K:READ A$
100 V=ASC(LEFT$(A$,1))-64:FOR Z=2 TO LEN(A$)
110 N=ASC(MID$(A$,Z,1))-V
120 T$=T$+CHR$(N+TRU*26*(N<65)):NEXT Z:T$=T$+" "
130 NEXT J:S$(I)=LEFT$(T$,LEN(T$)-1):NEXT I
140 CLS:Z$="SUPERMARKET SWEETHEARTS":GOSUB 1000:PRINT
150 Z$="WHAT SHOULD LINDA BUY FOR DINNER?":GOSUB 1000
160 Z$="(ENTER "+Q$+"END"+Q$+" WHEN DONE.)":GOSUB 1000
:PRINT
170 PRINT "ITEM #";C;:T$="":INPUT T$:IF T$="" THEN 170
180 IF LEFT$(T$,3)="END" THEN 210
190 C=C+1:FOR I=1 TO 4:IF FL(I)=0 THEN GOSUB 3000
200 NEXT I:GOTO 170
210 CLS:IF FC<>0 THEN 230
220 Z$="YOU HAVE NO COUPONS.":GOSUB 1000:GOTO 270
230 Z$="YOU NOW HAVE COUPONS FOR ...":GOSUB 1000:PRINT
240 FOR M=1 TO FC
250 Z$="25 CENTS OFF ANY BRAND OF "+S$(M+4)
260 GOSUB 1000:NEXT M
270 GOSUB 4000:Z$=P$+" OR <G> TO GUESS.":GOSUB 1000
280 GOSUB 5000:IF K$="S" THEN CLS:GOTO 150
290 IF K$<>"G" THEN 280
300 CLS:Z$="AT DINNER, LINDA REPLIES TO BILL'S"
310 Z$=Z$+" MESSAGE BY GIVING HIM WHAT ITEM?"
320 GOSUB 1000:PRINT:T$="":INPUT T$:IF T$="" THEN 300
330 F=0:FOR I=9 TO 11:GOSUB 3000:NEXT I:IF F THEN 440
340 CLS:N$="WRONG!":GOSUB 2000:GOSUB 4000
350 Z$=P$+", <V> TO VIEW COUPONS, <G> TO GUESS,"
360 Z$=Z$+" OR <H> FOR A HINT.":GOSUB 1000
370 GOSUB 5000:IF K$="S" THEN CLS:GOTO 150
380 IF K$="G" THEN 300
390 IF K$="V" THEN 210
400 IF K$<>"H" THEN 370
410 CLS:Z$=S$(12)+".":GOSUB 1000:GOSUB 4000
420 Z$="PRESS ANY KEY TO CONTINUE.":GOSUB 1000
430 GOSUB 5000:GOTO 210
440 CLS:Z$="HARK! DO I HEAR WEDDING BELLS ... ?"
450 GOSUB 1000:FOR D=1 TO DL:NEXT D
460 END
1000 IF LEN(Z$)<=WL THEN N$=Z$:GOSUB 2000:RETURN
1010 J=WL+1:K=1:FOR I=J TO 2 STEP -1
1020 IF MID$(Z$,I,1)=" " THEN K=0:J=I:I=2
1030 NEXT I:N$=LEFT$(Z$,J-1):GOSUB 2000
1040 Z$=RIGHT$(Z$,LEN(Z$)-J+K):GOTO 1000
2000 IF LEN(N$)=WL THEN PRINT N$;:RETURN
2010 PRINT TAB((WL-LEN(N$))/2+TX);N$:RETURN
3000 K=LEN(S$(I)):FOR J=1 TO LEN(T$)-K+1
3010 IF MID$(T$,J,K)<>S$(I) THEN 3040
3020 IF I>8 THEN F=TRU:GOTO 3040
3030 FL(I)=1:FC=FC+1
3040 NEXT J:RETURN
4000 FOR I=1 TO WH:PRINT:NEXT I:RETURN
5000 K$=INKEY$:ON -(K$="") GOTO 5000:RETURN
7000 DATA 1,PIKWQH,1,KALDEL,1,ILQNNBN,1,READC
7010 DATA 1,RUZWWKW,2,WPXIXA,MQERFFVAT,2,PSQAU,NAWL
7020 DATA 2,KNLE,LRAAP,1,MZNFPNEN,2,WBVB,EIT
7030 DATA 1,NSMS!RC,7,PIKSSUII,IFRUU,LNQ
7040 DATA KESP,SIKHWNVM,JYP,KZMDPCGLETZY
```

### Atari/*Supermarket Sweethearts*

```
10 DIM S$(117),DP(12),T$(43),A$(12),Q$(1),CL$(1)
20 DIM SP$(20),PITCH(38),DUR(38),FL(4)
30 FOR I=1 TO 4:FL(I)=0:NEXT I:C=1:FC=0:CL$=CHR$(125)
40 SP$=" ":SP$(20)=SP$:SP$(2)=SP$:Q$=CHR$(34)
50 OPEN #1,4,0,"K:":POKE 82,0:POKE 752,1
60 FOR I=1 TO 38:READ A,B:PITCH(I)=A:DUR(I)=B:NEXT I
70 FOR I=1 TO 12:T$="":READ L:FOR J=1 TO L:READ A$
80 V=ASC(A$)-64:FOR Z=2 TO LEN(A$)
90 N=ASC(A$(Z))-V:T$(LEN(T$)+1)=CHR$(N+26*(N<65))
100 NEXT Z:T$(LEN(T$)+1)=" ":NEXT J
110 DP(I)=LEN(S$)+1:S$(DP(I))=T$(1,LEN(T$)-1):NEXT I
120 PRINT CL$;SP$(1,8);"SUPERMARKET SWEETHEARTS":PRINT
130 PRINT SP$(1,3);"WHAT SHOULD LINDA BUY FOR DINNER?"
140 PRINT SP$(1,8);"(ENTER ";Q$;"END";Q$;" WHEN DONE.)
":PRINT
150 PRINT "ITEM #";C;:GOSUB 1000:IF T$="" THEN 150
160 IF LEN(T$)>2 THEN IF T$(1,3)="END" THEN 190
170 C=C+1:FOR I=1 TO 4:IF FL(I)=0 THEN GOSUB 2000
180 NEXT I:GOTO 150
190 PRINT CL$;:IF FC<>0 THEN 210
200 PRINT SP$(1,10);"YOU HAVE NO COUPONS.":GOTO 250
210 PRINT SP$(1,6);"YOU NOW HAVE COUPONS FOR ...":PRIN
T
220 FOR M=1 TO FC
230 T$="25 CENTS OFF ANY BRAND OF ":T$(LEN(T$)+1)=S$(D
P(M+4),DP(M+5)-1)
240 POSITION (40-LEN(T$))/2,M+2:PRINT T$:NEXT M
250 POSITION 1,20:PRINT "PRESS <S> TO SHOP SOME MORE O
R <G> TO":PRINT SP$(1,17);"GUESS."
260 GET #1,K:IF K=83 THEN PRINT CL$;:GOTO 130
```

```
270 IF K<>71 THEN 260
280 PRINT CL$;SP$(1,3);"AT DINNER, LINDA REPLIES TO BI
LL'S"
290 PRINT SP$(1,4);"MESSAGE BY GIVING HIM WHAT ITEM?"
300 POSITION 0,3:GOSUB 1000:IF T$="" THEN 300
310 F=0:FOR I=9 TO 11:GOSUB 2000:NEXT I:IF F THEN 420
320 PRINT CL$;SP$(1,17);"WRONG!":POSITION 0,20
330 PRINT "PRESS <S> TO SHOP SOME MORE, <V> TO VIEW";
340 PRINT "  COUPONS, <G> TO GUESS, OR <H> FOR A";SP$(
1,20);"HINT."
350 GET #1,K:IF K=83 THEN PRINT CL$;:GOTO 130
360 IF K=71 THEN 280
370 IF K=86 THEN 190
380 IF K<>72 THEN 350
390 PRINT CL$;SP$(1,5);S$(DP(12),105);SP$(1,19);S$(107
,117);"."
400 POSITION 7,20:PRINT "PRESS ANY KEY TO CONTINUE."
410 GET #1,K:GOTO 190
420 PRINT CL$;SP$(1,2);"HARK! DO I HEAR WEDDING BELLS
... ?"
430 FOR D=1 TO 800:NEXT D
440 FOR I=1 TO 38:SOUND 0,PITCH(I),10,8
450 FOR D=1 TO DUR(I)*25:NEXT D:SOUND 0,0,0,0:NEXT I
460 POKE 752,0:END
1000 POKE 752,0:INPUT T$:POKE 752,1:RETURN
2000 K=DP(I+1)-DP(I):IF K>LEN(T$) THEN RETURN
2010 FOR J=1 TO LEN(T$)-K+1
2020 IF T$(J,J+K-1)<>S$(DP(I),DP(I+1)-1) THEN 2050
2030 IF I>8 THEN F=1:GOTO 2050
2040 FL(I)=1:FC=FC+1
2050 NEXT J:RETURN
3000 DATA 162,6,121,4,121,2,121,12,162,6,108,4,128,2
3010 DATA 121,12,162,6,121,4,91,2,91,6,96,4,108,2
3020 DATA 121,4,108,1,121,1,128,4,121,2,108,12
3030 DATA 162,6,121,4,121,2,121,12,162,6,108,4
3040 DATA 128,2,121,12,162,6,121,4,96,2,81,6
3050 DATA 96,4,121,2,144,6,108,4,128,2,121,12
4000 DATA 1,PIKWQH,1,KALDEL,1,ILQNNBN,1,READC
4010 DATA 1,RUZWWKW,2,WPXIXA,MQERFFVAT,2,PSQAU,NAWL
4020 DATA 2,KNLE,LRAAP,1,MZNFPNEN,2,WBVB,EIT
4030 DATA 1,NSMS!RC,7,PIKSSUII,IFRUU,LNQ
4040 DATA KESP,SIKHWNVM,JYP,KZMDPCGLETZY
```

**TI-99/4A/*Supermarket Sweethearts***

```
10 DIM S$(12),PITCH(38),DUR(38),FL(4)
20 FOR I=1 TO 4
30 FL(I)=0
40 NEXT I
50 C=1
60 FC=0
70 Q$=CHR$(34)&"END"&CHR$(34)
80 FOR I=1 TO 38
90 READ PITCH(I),DUR(I)
100 NEXT I
110 FOR I=1 TO 12
120 T$=""
130 READ K
140 FOR J=1 TO K
150 READ A$
160 V=ASC(SEG$(A$,1,1))-64
170 FOR Z=2 TO LEN(A$)
180 N=ASC(SEG$(A$,Z,1))-V
190 T$=T$&CHR$(N-26*(N<65))
200 NEXT Z
210 T$=T$&" "
220 NEXT J
230 S$(I)=SEG$(T$,1,LEN(T$)-1)
240 NEXT I
250 CALL CLEAR
260 PRINT TAB(3);"SUPERMARKET SWEETHEARTS"
270 PRINT
280 PRINT " WHAT SHOULD LINDA BUY FOR"
290 PRINT TAB(11);"DINNER?"
300 PRINT "  (ENTER ";Q$;" WHEN DONE.)"
```


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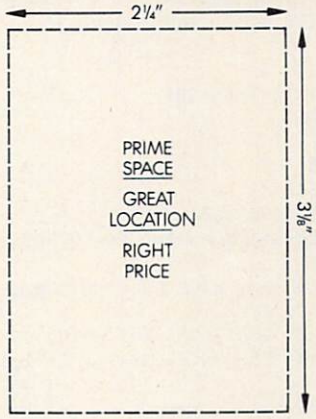


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```
310 PRINT
320 PRINT "ITEM #";C;
330 INPUT T$
340 IF T$="" THEN 320
350 IF SEG$(T$,1,3)="END" THEN 420
360 C=C+1
370 FOR I=1 TO 4
380 IF FL(I)<>0 THEN 400
390 GOSUB 1000
400 NEXT I
410 GOTO 320
420 CALL CLEAR
430 IF FC<>0 THEN 460
440 PRINT TAB(5);"YOU HAVE NO COUPONS."
450 GOTO 510
460 PRINT "YOU NOW HAVE COUPONS FOR ...  "
470 FOR M=1 TO FC
480 PRINT " 25 CENTS OFF ANY BRAND OF"
490 PRINT TAB((28-LEN(S$(M+4)))/2+1);S$(M+4)
500 NEXT M
510 GOSUB 2000
520 PRINT "PRESS <S> TO SHOP SOME MORE"
530 PRINT TAB(7);"OR <G> TO GUESS."
540 GOSUB 3000
550 IF (K<>71)*(K<>83)THEN 540
560 CALL CLEAR
570 IF K=83 THEN 280
580 PRINT "AT DINNER, LINDA REPLIES TO"
590 PRINT " BILL'S MESSAGE BY GIVING"
600 PRINT TAB(8);"HIM WHAT ITEM?"
610 PRINT
620 INPUT T$
630 IF T$="" THEN 560
640 F=0
650 FOR I=9 TO 11
660 GOSUB 1000
670 NEXT I
680 IF F THEN 870
690 CALL CLEAR
700 PRINT TAB(12);"WRONG!"
710 GOSUB 2000
720 PRINT "PRESS <S> TO SHOP SOME MORE,"
730 PRINT "<V> TO VIEW COUPONS, <G> TO"
740 PRINT " GUESS, OR <H> FOR A HINT."
750 GOSUB 3000
760 IF (K<>71)*(K<>72)*(K<>83)*(K<>86)THEN 750
770 CALL CLEAR
780 IF K=83 THEN 280
790 IF K=71 THEN 580
800 IF K=86 THEN 430
810 PRINT SEG$(S$(12),1,27)
820 PRINT TAB(7);SEG$(S$(12),29,43);"."
830 GOSUB 2000
840 PRINT " PRESS ANY KEY TO CONTINUE."
850 GOSUB 3000
860 GOTO 420
870 CALL CLEAR
880 PRINT "  HARK! DO I HEAR WEDDING"
890 PRINT TAB(9);"BELLS ... ?"
900 FOR D=1 TO 600
910 NEXT D
920 FOR I=1 TO 38
930 CALL SOUND(DUR(I)*120,PITCH(I),0)
940 NEXT I
950 END
1000 K=LEN(S$(I))
1010 FOR J=1 TO LEN(T$)-K+1
1020 IF SEG$(T$,J,K)<>S$(I)THEN 1080
1030 IF I<5 THEN 1060
1040 F=-1
1050 GOTO 1080
1060 FL(I)=1
1070 FC=FC+1
1080 NEXT J
1090 RETURN
2000 FOR I=1 TO 10
2010 PRINT
2020 NEXT I
2030 RETURN
3000 CALL KEY(3,K,S)
3010 IF S=0 THEN 3000
3020 RETURN
4000 DATA 196,6,262,4,262,2,262,12,196,6,294,4,247,2
4010 DATA 262,12,196,6,262,4,349,2,349,6,330,4,294,2
4020 DATA 262,4,294,1,262,1,247,4,262,2,294,12,196,6
4030 DATA 262,4,262,2,262,12,196,6,294,4,247,2,262
4040 DATA 12,196,6,262,4,330,2,392,6,330,4,262,2,220
4050 DATA 6,294,4,247,2,262,12
5000 DATA 1,PIKWQH,1,KALDEL,1,ILQNNBN,1,READC
5010 DATA 1,RUZWWKW,2,WPXIXA,MQERFFVAT,2,PSQAU,NAWL
5020 DATA 2,KNLE,LRAAP,1,MZNFPNEN,2,WBVB,EIT
5030 DATA 1,NSMS!RC,7,PIKSSUII,IFRUU,LNQ
5040 DATA KESP,SIKHWNVM,JYP,KZMDPCGLETZY
```

### Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/*Supermarket Sweethearts*

```
10 FAST
20 DIM P(13)
30 DIM F(4)
40 FOR I=1 TO 4
50 LET F(I)=0
60 NEXT I
70 LET P(1)=1
80 LET C=1
90 LET FC=0
100 LET DI=7
110 LET DJ=1
120 LET P$="111112221227"
130 LET T$=""
140 LET S$=""
150 LET Z$="PIKWQH,KALDEL,ILQNNBN,READC,RUZWWKW,WPXIXA
,MQERFFVAT,PSQAU,NAWL,KNLE,LRAAP,MZNFPNEN,WBVB,EIT,NSM
S,NRC,PIKSSUII,IFRUU,LNQ,KESP,SIKHWNVM,JYP,KZMDPCGLETZ
Y"
160 FOR I=1 TO 12
170 FOR J=1 TO VAL P$(I)
180 GOSUB 2000
190 LET S$=S$+" "
200 LET P(I+1)=LEN S$+1
210 NEXT J
220 NEXT I
230 LET S$(83)="-"
240 SLOW
250 PRINT TAB 4;"SUPERMARKET SWEETHEARTS"
260 PRINT
270 PRINT TAB 3;"WHAT SHOULD LINDA BUY FOR"
280 PRINT "DINNER? (ENTER ";CHR$ 11;"END";CHR$ 11;" WH
EN DONE.)"
290 PRINT
300 PRINT "ITEM ";C;": ";
310 INPUT T$
320 PRINT T$
330 IF T$="" THEN GOTO 300
340 IF LEN T$<3 THEN GOTO 390
350 IF T$( TO 3)="END" THEN GOTO 410
360 FOR I=1 TO 4
370 IF F(I)=0 THEN GOSUB 1000
380 NEXT I
390 LET C=C+1
400 GOTO 300
410 CLS
420 IF FC<>0 THEN GOTO 450
430 PRINT TAB 6;"YOU HAVE NO COUPONS."
440 GOTO 520
450 PRINT TAB 2;"YOU NOW HAVE COUPONS FOR ..."
460 PRINT
470 FOR M=1 TO FC
480 PRINT TAB 4;"25 CENTS OFF ANY BRAND OF"
490 LET T$=S$(P(M+4) TO P(M+5)-2)
500 PRINT TAB (32-LEN T$)/2;T$
510 NEXT M
520 PRINT AT 20,1;"PRESS <S> TO SHOP SOME MORE OR"
```

→

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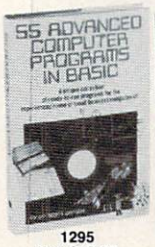

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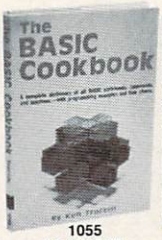

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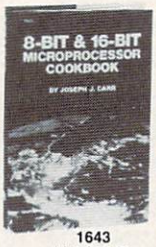

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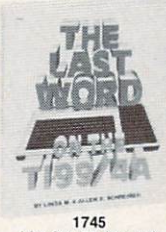

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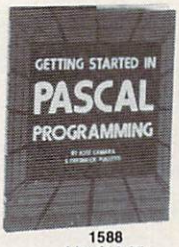

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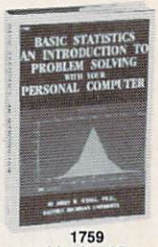

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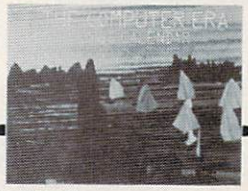

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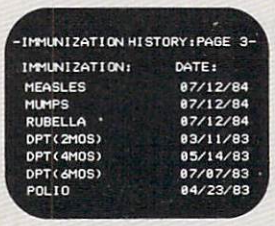


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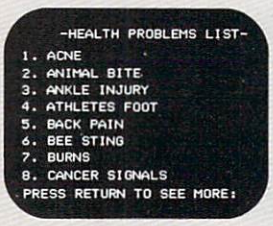


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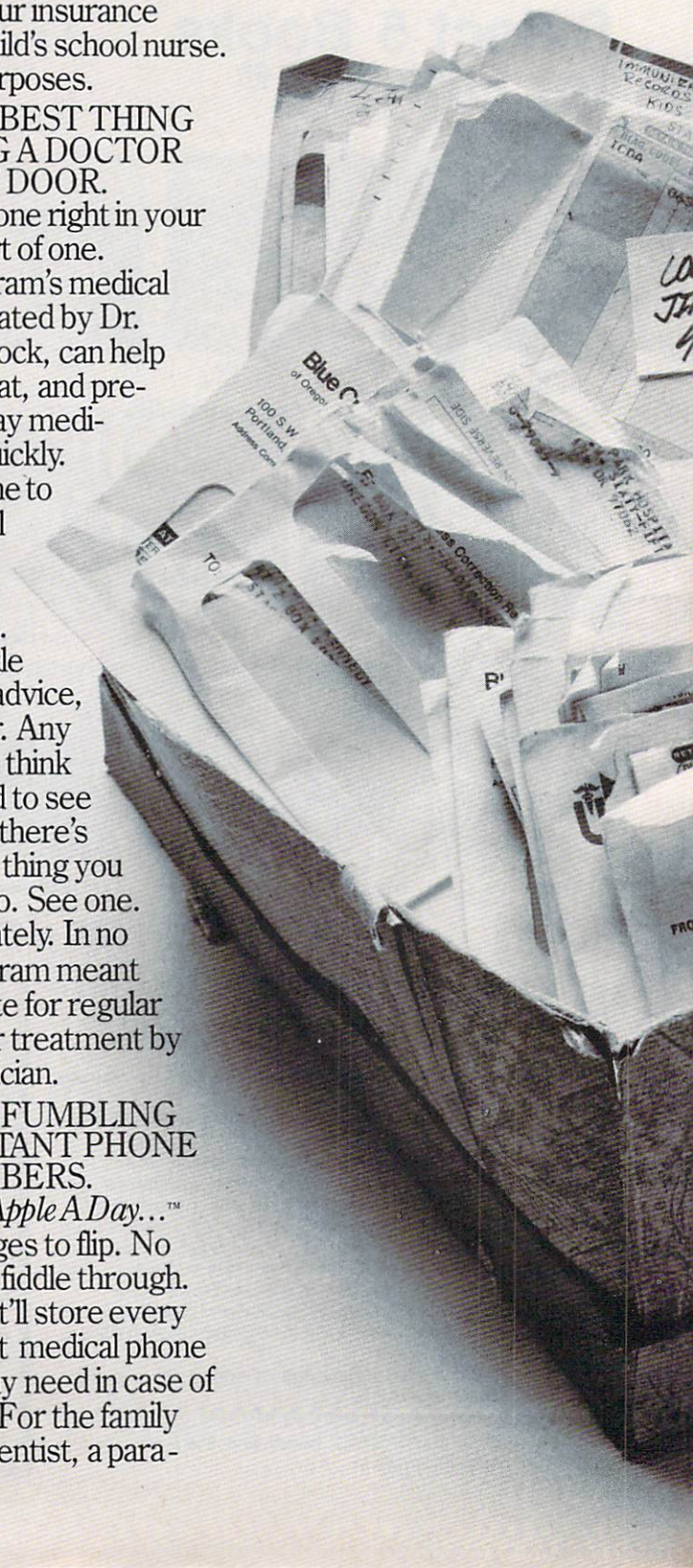

# don't know when they see one.

medic service, the poison control center and your health insurance agent.

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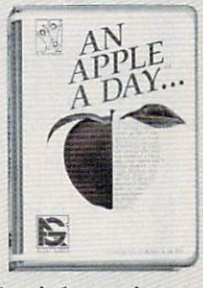


And if they don't have it, ask them to order it for you. Right away. Because medical problems are better off solved.

Than left to pile up.

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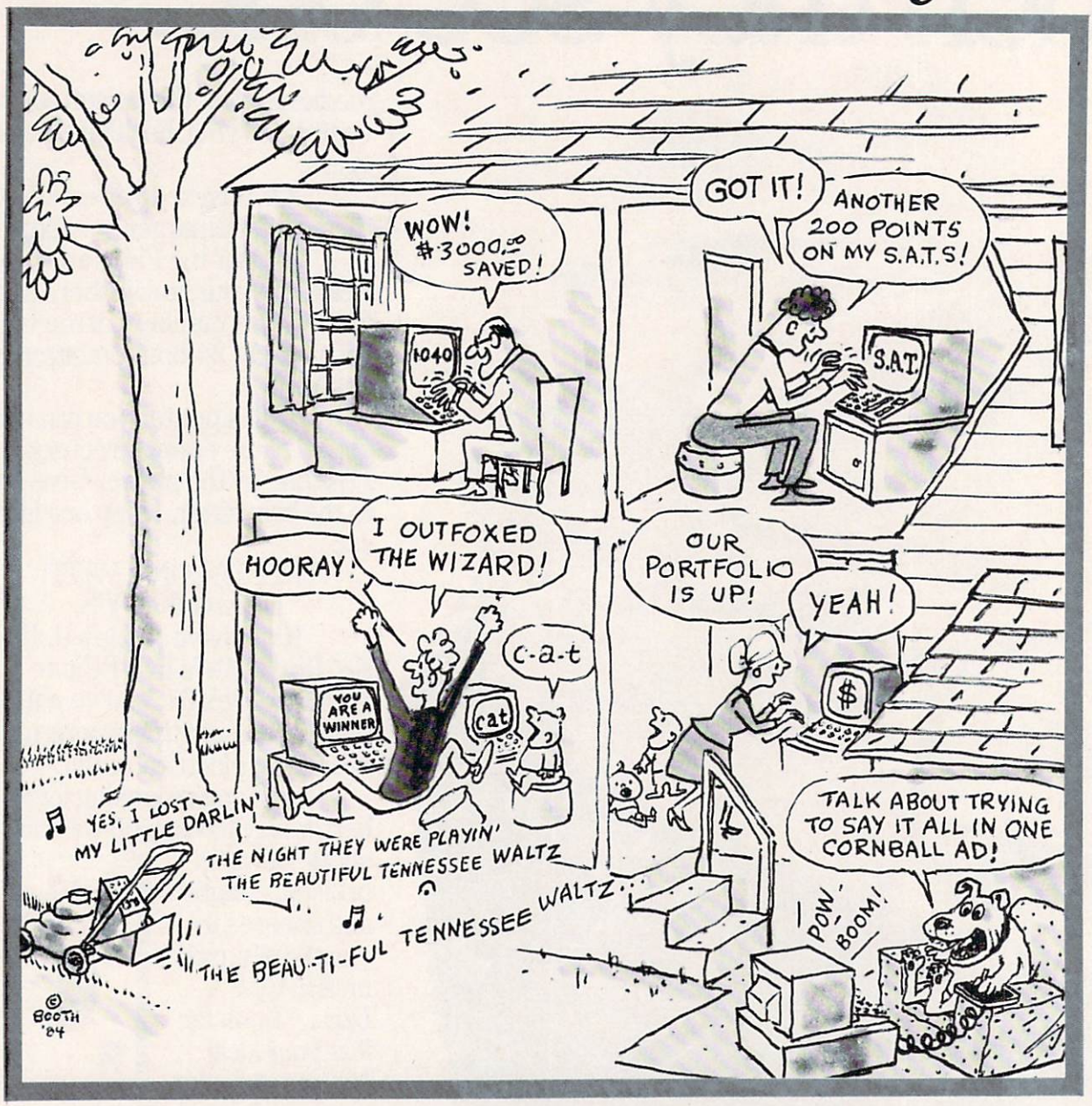


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Play with it! *Get* work with it!

## Take a computer home today... and count the whys.

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```
530 PRINT TAB 9;"<G> TO GUESS."
540 LET K$=INKEY$
550 IF K$<>"S" AND K$<>"G" THEN GOTO 540
560 CLS
570 IF K$="S" THEN GOTO 270
580 PRINT "AT DINNER, LINDA GIVES BILL WHAT"
590 PRINT " ITEM TO REPLY TO HIS MESSAGE?"
600 INPUT T$
610 IF T$="" THEN GOTO 560
620 PRINT AT 3,0;T$
630 LET FS=0
640 FOR I=9 TO 11
650 GOSUB 1000
660 NEXT I
670 CLS
680 IF FS THEN GOTO 850
690 PRINT TAB 13;"WRONG."
700 PRINT AT 19,0;"PRESS <S> TO SHOP SOME MORE, <V>"
710 PRINT " TO VIEW COUPONS, <G> TO GUESS,"
720 PRINT TAB 7;"OR <H> FOR A HINT."
730 LET K$=INKEY$
740 IF K$<>"S" THEN GOTO 770
750 CLS
760 GOTO 270
770 IF K$="G" THEN GOTO 560
780 IF K$="V" THEN GOTO 410
790 IF K$<>"H" THEN GOTO 730
800 CLS
810 PRINT S$(P(12) TO 116);TAB 10;S$(118 TO 128);"."
820 PRINT AT 20,3;"PRESS ANY KEY TO CONTINUE."
830 IF INKEY$="" THEN GOTO 830
840 GOTO 410
850 PRINT " HARK, DO I HEAR WEDDING BELLS?"
860 PAUSE 900
870 STOP
1000 LET K=P(I+1)-P(I)-1
1010 IF K>LEN T$ THEN RETURN
1020 FOR J=1 TO LEN T$-K+1
1030 IF T$(J TO J+K-1)<>S$(P(I) TO P(I+1)-2) THEN GOTO
 1090
1040 IF I<8 THEN GOTO 1070
1050 LET FS=1
1060 GOTO 1090
1070 LET F(I)=1
1080 LET FC=FC+1
1090 NEXT J
1100 RETURN
2000 IF Z$(DI)="," THEN GOTO 2040
2010 LET DI=DI+1
2020 IF DI>LEN Z$ THEN GOTO 2040
2030 GOTO 2000
2040 LET X$=Z$(DJ TO DI-1)
2050 LET DJ=DI+1
2060 LET DI=DJ+1
2070 LET V=CODE X$(1)-37
2080 FOR Z=2 TO LEN X$
2090 LET N=CODE X$(Z)-V
2100 LET N=N+26*(N<38)
2110 LET S$=S$+CHR$ N
2120 NEXT Z
2130 RETURN
```

## MODIFICATIONS FOR OTHER COMPUTERS

### ADAM/*Supermarket Sweethearts*

Use the base version, with the following alterations. Add lines 60, 70, 470–490, and 6000–6100:

```
60 r=28000:FOR i=r TO r+5:READ a:POKE i,a:NEXT i
70 FOR i=1 TO 38:READ hi(i),lo(i),dur(i):NEXT i
470 POKE r+6,lo(i):CALL 28000:POKE r+6,144:CALL 28000
480 FOR d=1 TO dur(i)*100:NEXT d
490 POKE r+6,159:CALL 28000:NEXT i:END
6000 DATA 58,102,109,211,255,201
6010 DATA 141,35,6,141,26,4,141,26,2,141,26,12
6020 DATA 141,35,6,142,23,4,135,28,2,141,26,12
6030 DATA 141,35,6,141,26,4,129,20,2,129,20,6
```


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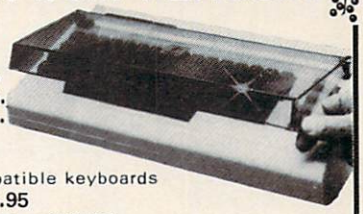

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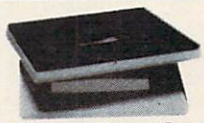

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```
6040 DATA 133,21,4,142,23,2,141,26,4,142,23,1
6050 DATA 141,26,1,135,28,4,141,26,2,142,23,12
6060 DATA 141,35,6,141,26,4,141,26,2,141,26,12
6070 DATA 141,35,6,142,23,4,135,28,2,141,26,12
6080 DATA 141,35,6,141,26,4,133,21,2,142,17,6
6090 DATA 133,21,4,141,26,2,142,31,6,142,23,4
6100 DATA 135,28,2,141,26,12
```

Change CLS to HOME in lines 140, 210, 280, 300, 340, 370, 410, and 440. Finally, change lines 10–30, 460, and 5000 to read as follows:

```
10 LOMEM: 29000
20 DIM s$(12),hi(38),lo(38),dur(38),fl(4)
30 dl=1200:tx=1:tru=1:wh=9:wl=31
460 FOR i=1 TO 38:POKE 28006,hi(i):CALL 28000
5000 GET k$:RETURN
```

### Apple/*Supermarket Sweethearts*

Use the base version, with the following alterations. Delete line 10. Add lines 60, 70, 470, and 6000–6080:

```
60 FOR I=768 TO 796:READ A:POKE I,A:NEXT I
70 FOR I=1 TO 38:READ PITCH(I),DUR(I):NEXT I
470 POKE 8,PITCH(I):CALL 768:NEXT I:END
6000 DATA 165,8,74,133,10,164,8,173,48,192,136
6010 DATA 234,234,208,251,165,7,56,229,10,133
6020 DATA 7,176,237,198,6,208,233,96
6030 DATA 162,6,121,4,121,2,121,12,162,6,108,4,128,2
6040 DATA 121,12,162,6,121,4,91,2,91,6,96,4,108,2
6050 DATA 121,4,108,1,121,1,128,4,121,2,108,12
6060 DATA 162,6,121,4,121,2,121,12,162,6,108,4
6070 DATA 128,2,121,12,162,6,121,4,96,2,81,6
6080 DATA 96,4,121,2,144,6,108,4,128,2,121,12
```

Change CLS to HOME in lines 140, 210, 280, 300, 340, 370, 410, and 440. Finally, change lines 20, 30, 460, and 5000 to read as follows:

```
20 DIM S$(12),PITCH(38),DUR(38),FL(4)
30 DL=800:TX=1:TRU=1:WH=14:WL=40
460 FOR I=1 TO 38:POKE 6,DUR(I)*20
5000 GET K$:RETURN
```

### Commodore 64/*Supermarket Sweethearts*

Use the base version, with the following alterations. Delete line 10. Add lines 60–80, 470–490, and 6000–6090:

```
60 FOR I=54272 TO 54296:POKE I,0:NEXT I
70 FOR I=1 TO 38:READ HI(I),LO(I),DUR(I):NEXT I
80 POKE 54277,100:POKE 54278,100
470 POKE 54273,HI(I):POKE 54272,LO(I):POKE 54276,17
480 FOR D=1 TO DUR(I)*60:NEXT D
490 POKE 54272,0:NEXT I:POKE 54296,0:END
6000 DATA 12,142,6,16,194,4,16,194,2,16,194,12
6010 DATA 12,142,6,18,208,4,15,210,2,16,194,12
6020 DATA 12,142,6,16,194,4,22,96,2,22,96,6
6030 DATA 21,30,4,18,208,2,16,194,4,18,208,1
6040 DATA 16,194,1,15,210,4,16,194,2,18,208,12
6050 DATA 12,142,6,16,194,4,16,194,2,16,194,12
6060 DATA 12,142,6,18,208,4,15,210,2,16,194,12
6070 DATA 12,142,6,16,194,4,21,30,2,25,30,6
6080 DATA 21,30,4,16,196,2,14,24,6,18,208,4,15
6090 DATA 210,2,16,194,12
```

Change CLS to PRINT CLS; in lines 140, 210, 280, 300, 340, 370, 410, and 440. Finally, change lines 20, 30, 460, 2010, and 5000 to read as follows:

```
20 DIM S$(12),HI(38),LO(38),DUR(38),FL(4)
30 DL=800:TRU=-1:WH=14:WL=40:CL$=CHR$(147)
460 POKE 54296,15:FOR I=1 TO 38
2010 PRINT SPC((WL-LEN(N$))/2);N$:RETURN
5000 GET K$:ON -(K$="") GOTO 5000:RETURN
```

### IBM PC & IBM PC*jr*/*Supermarket Sweethearts*

Use the base version, with the following alterations. Add lines 70, 470, and 6000–6050:

```
70 FOR I=1 TO 38:READ PITCH(I),DUR(I):NEXT I
470 NEXT I:END
6000 DATA 392,6,523,4,523,2,523,12,392,6,587,4,494,2
6010 DATA 523,12,392,6,523,4,698,2,698,6,659,4,587,2
6020 DATA 523,4,587,1,523,1,494,4,523,2,587,12,392,6
6030 DATA 523,4,523,2,523,12,392,6,587,4,494,2,523,12
6040 DATA 395,6,523,4,659,2,784,6,659,4,523,2,440,6
6050 DATA 587,4,494,2,523,12
```

Change lines 10, 20, and 460 to read as follows:

```
10 KEY OFF:LOCATE ,,0
20 DIM S$(12),PITCH(38),DUR(38),FL(4)
460 FOR I=1 TO 38:SOUND PITCH(I),DUR(I)*2.5
```

Finally, if you have an IBM PC, change line 30 to read

```
30 DL=1100:TX=0:TRU=-1:WH=14:WL=80:WIDTH WL
```

If you have an IBM PC*jr*, change line 30 to read

```
30 DL=1200:TX=0:TRU=-1:WH=14:WL=40:WIDTH WL
```

### TRS-80 Color Computer/*Supermarket Sweethearts*

Use the base version, with the following alterations. Add lines 70 and 6000–6040:

```
70 FOR I=1 TO 38:READ PITCH(I),DUR(I):NEXT I
6000 DATA 32,6,89,4,89,2,89,12,32,6,108,4,78,2,89,12
6010 DATA 32,6,89,4,133,2,132,6,125,4,108,2,89,4,108,1
6020 DATA 89,1,78,4,89,2,108,12,32,6,89,4,89,2,89,12
6030 DATA 32,6,108,4,78,2,89,12,32,6,89,4,125,2,147,6
6040 DATA 125,4,89,2,58,6,108,4,78,2,89,12
```

Also, change lines 20, 30, and 460 to read as follows:

```
20 DIM S$(12),PITCH(38),DUR(38),FL(4)
30 DL=800:TX=0:TRU=-1:WH=4:WL=32
460 FOR I=1 TO 38:SOUND PITCH(I),DUR(I)*2:NEXT I:END
```

### TRS-80 Model 4/*Supermarket Sweethearts*

Use the base version, with the following alterations. Delete line 10. Also, change lines 30 and 460 to read as follows:

```
30 DL=1600:TX=0:TRU=-1:WH=14:WL=80:PRINT CHR$(15)
460 PRINT CHR$(14):END
```

### VIC-20/*Supermarket Sweethearts*

Use the base version, with the following alterations. Delete line 10. Add lines 70, 470, and 6000–6050:

```
70 FOR I=1 TO 38:READ PITCH(I),DUR(I):NEXT I
470 FOR D=1 TO DUR(I)*75:NEXT D:POKE 36876:NEXT I:END
6000 DATA 215,6,225,4,225,2,225,12,215,6,228,4,223,2
6010 DATA 225,12,215,6,225,4,232,2,232,6,231,4,228,2
6020 DATA 225,4,228,1,225,1,223,4,225,2,228,12,215,6
6030 DATA 225,4,225,2,225,12,215,6,228,4,223,2,225,12
6040 DATA 215,6,225,4,231,2,235,6,231,4,225,2,219,6
6050 DATA 228,4,223,2,225,12
```

Change CLS to PRINT CLS; in lines 140, 210, 280, 300, 340, 370, 410, and 440. Finally, change lines 20, 30, 460, 2010, and 5000 to read as follows:

```
20 DIM S$(12),PITCH(38),DUR(38),FL(4)
30 DL=800:TRU=-1:WH=8:WL=22:CL$=CHR$(147)
460 POKE 36878,15:FOR I=1 TO 38:POKE 36876,PITCH(I)
2010 PRINT SPC((WL-LEN(N$))/2);N$:RETURN
5000 GET K$:ON -(K$="") GOTO 5000:RETURN
```

### SOLUTION TO LAST MONTH'S PUZZLE

*Each line (1–9) in the party directions is coded by moving the top alphabet a certain number of letters to the left (backward) or right (forward) and matching it, letter-for-letter, against the bottom alphabet. Each of the nine houses in the illustration is associated with one line of the directions—you know which line each refers to by its house number. (For example, 1 Buttercup Lane refers to the first line of directions.) The number of miles each house stands from the starting point (determined by the map scale) indicates how many letters the top alphabet shifted to code the associated line of directions. For example, 1 Buttercup Lane is 6 miles from the starting point, so the first line of directions was coded using a shift of six letters. To determine whether the alphabet has been shifted to the left or right for a particular line, you look at the first letter of the associated street address, always either "B" (for backward) or "F" (for forward).*

*The decoded directions to the party read:* FIND SIGN/BY POND/TURN WEST/UNTIL WOODS/GO NORTH/UNTIL CLEARING/ENTER HOUSE/ACROSS FROM/BIG ROCK. *If you follow these directions, you will arrive at Calthrop Manor, where we hope you have a wonderful time!*

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Who's eligible? Any family that uses its computer in especially efficient, rewarding, or creative ways! You could enter your family, your neighbor, your best friend, your teacher, or even your Little League coach! Write and tell us who you nominate for our "Computing Family of the Year."

All you have to do is follow the contest rules and answer the questions below:

**1.** Describe the most efficient, rewarding, and/or creative ways the family uses its computer. If software is used, tell us which kinds.

**2.** Explain the ways each family member uses the computer. List their names and ages.

**3.** Does the family ever use the computer together? To do what?

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**4.** When and why did the family decide to buy a computer? What kind of computer did the family buy?

**5.** Has the computer lived up to its original expectations? Has its use evolved with time?

**6.** In what ways has the computer most benefited the family?

**7.** Do the children use a computer in school? Is the computer at home used for educational purposes? If so, how?

Also, we'd love to see a family photo—computing, of course. (A casual snapshot will do.)

**CONTEST RULES:**

**1.** You must submit at least 1,000 words, but not more than 2,000. Send typed manuscripts or computer printouts, if possible.

**2.** Scholastic Inc. employees and advisory-board members, and members of their families, are not eligible.

**3.** All entries and photographs become the property of Scholastic Inc., which reserves the right to use them in publications and promotions. Unfortunately, Scholastic Inc. will not be able to acknowledge your entries. Entries and photographs will not be returned.

**4.** You must include your address and phone number (and if you are nominating another family, you must also include its address and phone number).

**5.** A maximum of four family members are eligible for the Club Med vacation.

**6.** No cash substitutions for prizes.

**HOW TO ENTER:**

Nominating letters should be mailed to Suzette Harvey, "Computing Family of the Year Contest," FAMILY COMPUTING, Scholastic Inc., 730 Broadway, New York, NY 10003.
**Judges:** All entries will be judged by a panel of Scholastic employees. **Deadline:** All entries must be postmarked by March 15, 1985. **Winners:** The winners will be announced in the September 1985 issue of FAMILY COMPUTING.

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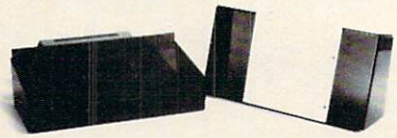

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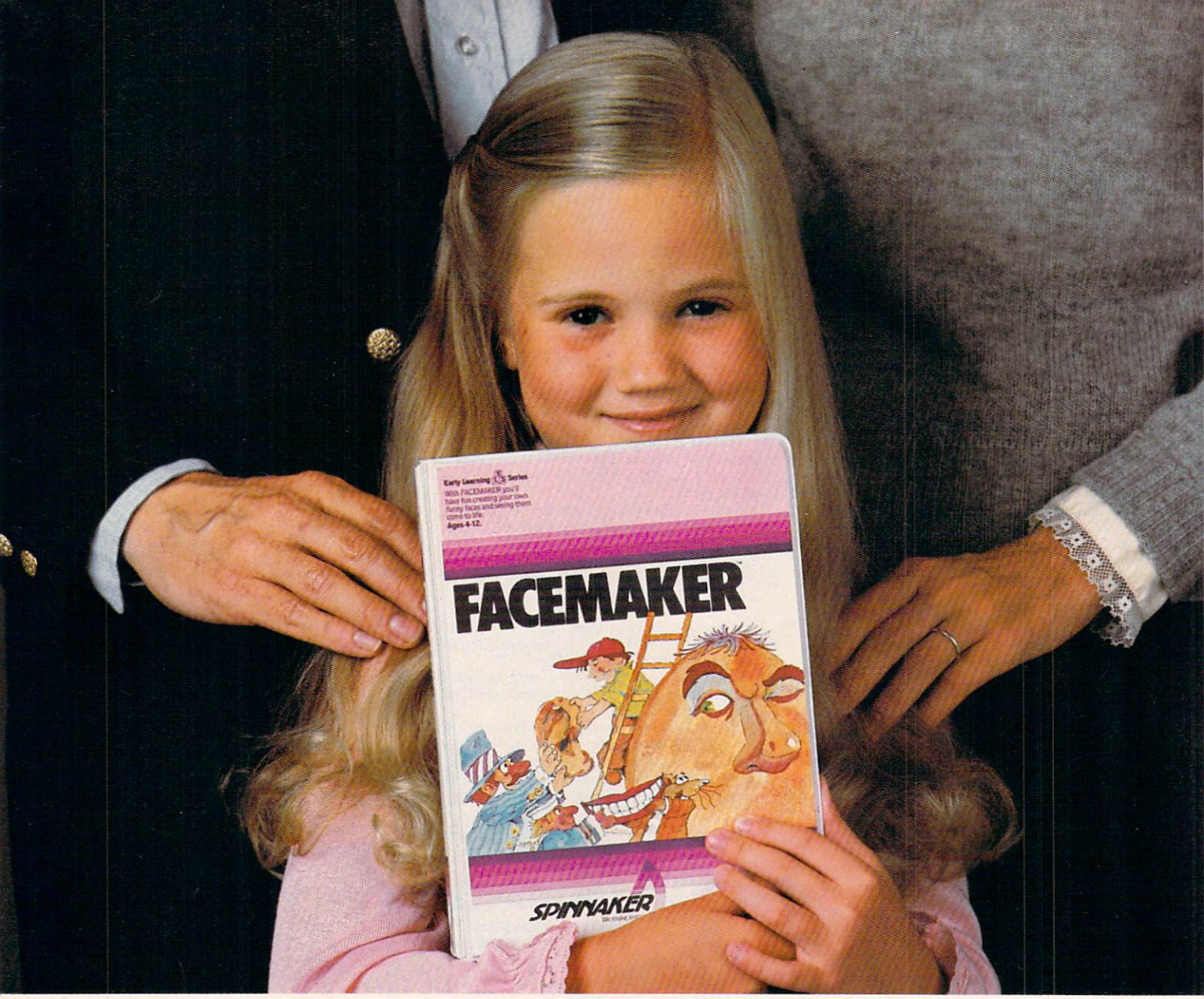


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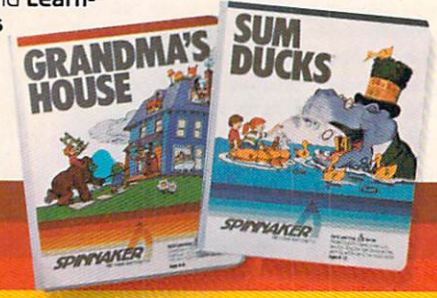


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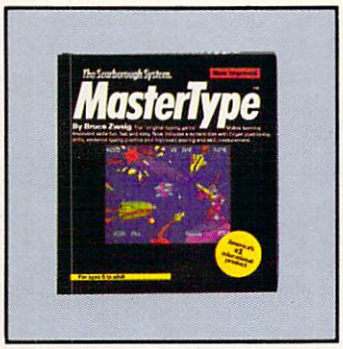

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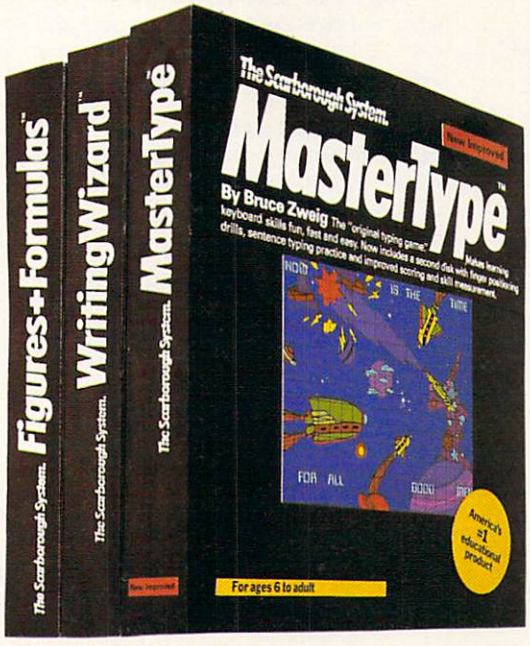


America's #1 educational software program now has the elements of a traditional touch-typing course in addition to being the most entertaining way ever to learn to type. New Improved MasterType now includes a second diskette of finger positioning drills and games to increase your typing speed and accuracy.

You'll become an expert typist faster than ever as you master the keyboard. Then you'll be ready to try two new programs in the MasterType Family.

**MasterType's Writing Wizard.**™ The easiest, friendliest full-function word processing program you'll ever find. And Writing Wizard will help you write effectively too. Color highlighting for easy editing, dual windows, a handy database with mail merge capability and multiple typefaces make it easy for you and your children to express yourselves clearly and creatively.

**MasterType's Figures & Formulas.**™ The "computing encyclopedia" of weights and measures for kids and adults. From centimeters to light years, you can calculate, convert and compare. Figures & Formulas will even allow you to create customized quizzes for your kids.

The MasterType Family of programs makes learning more fun and easier than ever for both you and your children. Look for these programs at your dealer's now.

Availability:

| | |
|---|---|
| New Improved MasterType: | Apple IIe/IIc,® IBM– PC/XT/PCjr,® Atari,® Commodore 64.® All with 2 disks, only 1 disk drive necessary. Macintosh disk. Atari and Commodore cartridges. |
| MasterType's Writing Wizard: | Apple IIe (128k)/IIc, Commodore 64. Both with 2 disks, only 1 disk drive necessary. |
| MasterType's Figures & Formulas: | Apple IIe/IIc, Commodore 64. |

# The Scarborough System.

*You'll grow with us.*

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## HOW TO GET THE BEST OUT OF YOUR HOME COMPUTER

No matter if your family owns an Apple®, Atari®, Commodore 64™, IBM® PC or IBM® Pcjr., CBS Software offers you the best in educational, entertainment and enrichment programs.

**The Best Way To Begin**
Early learning programs from CBS Software stimulate curiosity and encourage learning through discovery. Programs like Sesame Street™ Letter-Go-Round™ were created by the "fun in learning" professionals at Children's Television Workshop and feature CBS Software's exclusive EasyKey™ keyboard overlay. It makes it faster and easier than ever for little hands to use a computer.

**The Best Way To Grow**
CBS Software's computer activities involve kids in the creative process. Dinosaur Dig™ is an exciting educational adventure into the lost world of dinosaurs. It also features the exclusive EasyKey, as does America Coast-to-Coast™. In the Argos Expedition™, players *share* information in order to succeed on intergalactic quests. Coco-Notes™ lets kids create and experiment with music of their own making. And the entire family can get involved with Dream House™, in which you design and decorate homes of your own, from layout to landscape!

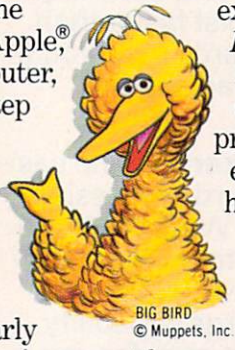
**The Best Way To Do Better**
CBS Software's at-home education and test-preparation programs are more than mere "electronic books." The Success With Math™ series provides the kind of individualized attention you've come to expect only from costly private

# How to get from Sesame St.

You can't go by train. Or plane, or bus—or even walk. There's only one way to get to the Land of the Big Bird, the Land of the Big Board, or anywhere in between—CBS Software.

CBS Software can help your whole family go faster and further on the road to success. Whether you have an Apple,® Atari,® Commodore 64™ or IBM® computer, we design software to help you every step of the way—created by leaders in their fields. Making it easy and fun for all members of the family to move ahead and become the best they can be.

Our early learning programs are created by people like Children's Television Workshop, developers of Sesame Street, The Electric Company, and 3-2-1 Contact. And many are designed with our exclusive *EasyKey*™ keyboard overlay, so kids can enjoy these programs without any prior computer experience. Or even the faintest idea how to type.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We make fun-with-music programs from the award-winning Dovetail Group. Elementary education programs for learning at home, created by some of the country's leading educators. College-prep programs developed by groups like the National Association of Secondary School Principals.

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tutors. Mastering the SAT and Mastering the GRE are comprehensive programs that help students master what they need to know to earn the high scores necessary for admission into today's best schools. Keys To Responsible Driving™ was developed in cooperation with leading insurance companies to help your kids succeed in becoming safe, responsible and licensed drivers.

**The Best Way to Succeed**
CBS Software offers unique programs designed for personal improvement and development. Managing for Success™ is a multi-faceted series that helps improve leadership abilities, reduce stress and keep you in control of your time. MicroSpeedRead™ helps you increase comprehension as you become a more dynamic reader.

**The Best Way To Play**
CBS Software's entertaining leisure programs challenge your family and tickle the mind. In Pathwords™ you search for hidden words in an ever-changing letter grid. And with Mystery Master™ computer mysteries you can sharpen your deductive reasoning skills as you follow a twisted trail of confounding clues to find out whodunit!

**Making You The Best**
All CBS Software programs are designed to make you and your family the best in whatever you reach for. After all, to get the best out of your home computer you have to put the best into it.
For your free catalog of the entire CBS Software line, clip and send in the coupon at the beginning of this section or write to: CBS Software, One Fawcett Place, Greenwich, CT 06836.

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# to Wall St.

For those of you who are really driven, we even have a program to help you master your driver's test—developed in conjunction with national safety organizations and major insurance companies.

But making children and young adults the best that they can be isn't all we're about. Grown-ups can improve themselves, too, with programs like our *Managing For Success*™ series, created by Thoughtware,® leaders in computer-based management training.

And when it comes to getting your whole family involved with your computer, CBS Software puts you on Easy Street. There's a program that lets you create and experience your own adventure game, word games that will challenge everyone in your family, and even a program that shows you how to design and decorate the home of your dreams.

You'll find that all CBS Software programs inspire both children and adults to advance as fast as they want. And that's just the way we planned it. Because we believe there should be no speed limits between Sesame Street and Wall Street.

Some of over 40 programs available for the Apple® II + /IIe/IIc/Macintosh,™ Atari® Commodore 64,™ and IBM® PC and PCjr Computers.

CBS SOFTWARE
Making you the best.

## HOW TO BUY THE RIGHT EDUCATIONAL SOFTWARE.

These days, parents buying educational software for their children are faced with a bewildering number of choices.

Currently there are hundreds of companies selling software designed to teach young people everything from basic math skills to costume design.

So how are you supposed to decide which are the right products for your child?

**Buying Guidelines.**

First, there are a few general rules to follow:

1. Don't expect a game that looks dull at the software store to be anything else when you get it home. Children can't learn from games they won't play, and they won't play games they don't enjoy.
2. Check the packaging for specific information about how the game works and what your child can learn from it. If possible, see a demonstration of the product before you buy.
3. Make sure that any learning game you buy can respond to your child's learning progress with more challenging concepts. Children lose interest quickly in games that become too easy for them.
4. Don't buy a game that responds to your child's answer with only "right" or "wrong". Truly effective educational software leads children to the correct answer with hints, providing several chances to respond to each question.
5. Look for learning games whose effectiveness is guaranteed. With prices now running from twenty to one-hundred dollars for each program, buying educational software that doesn't work can be an expensive mistake.

**A Proven Alternative.**

With an eye toward what both children and parents need from educational software, one company markets a complete line of fun and educational software that's guaranteed to work.

The company is Springboard, and it offers its selection of educational software in four color-coded categories, making the task of choosing the right program easier for parents.

**Effectiveness You Can Count On.**

Springboard gives you 30 days after the date of purchase to decide whether its learning games are working for your children.

If you decide your child isn't learning from Springboard, you can return the software for a full refund, no questions asked.


# Your child will get something out of this.

At Springboard we stand behind our learning games.

Not just with empty assurances, but with this unprecedented guarantee: If, within 30 days of purchasing Springboard educational software, you decide it's not helping your child learn, we'll give you your money back. Just return the package, its contents and your sales receipt to Springboard for a full refund. No questions asked.

Springboard can offer this outstanding guarantee because we offer an outstanding product: Educational software

**Reacting to Your Child's Progress.**

Springboard educational software features multiple skill levels. This means that Springboard can respond to your child's progress with more difficult concepts when he is ready, permitting extended use of Springboard products.

So don't be surprised to find a broad age range on a Springboard package. Because the program itself is a base that your child builds upon.

**Showing Children The Way.**

When a child is stumped by a question, most software simply ways "wrong." But Springboard provides up to five hints for each question.

These audio and visual cues become more and more helpful before the computer provides the correct response, giving children a chance to understand why their answers are right or wrong.

So Springboard doesn't just quiz children. It teaches them. Because it takes advantage of the computer's unique communicating abilities.

**A Growing Number of Choices.**

Springboard software comes in four series, each with its own color-coded packaging.

The yellow Early Games Series introduces children to important things like numbers, the alphabet, music, problem solving and visual discrimination.

Your child's imagination is set free with the blue Creative Paths Series, which allows him to draw, color, design costumes and solve puzzles.

The red Skill Builders Series develops the full range of basic math skills and teaches fractions.

And the black Family Series features Quizagon, an intriguing family trivia game with over 6,000 questions in a variety of interesting categories.

**A Hit with Teachers, Parents and Children.**

Recently, in a nationwide survey conducted by TEACHING AND COMPUTERS magazine, teachers themselves rated all of Springboard's learning games among the most effective available.

And every Springboard program has been on the software bestseller lists for over two years, so Springboard is obviously a favorite with parents.

But the real test of any educational software program is whether children like it. After all, if children don't like a piece of software, they won't use it and learn from it.

Since Springboard programs are selling so well, it's logical to conclude that children are using them, enjoying them, and asking their parents to buy them.

That's why Springboard accomplishes what educational software is supposed to accomplish: It helps children learn.

So Springboard programs appeal to children because they are fun. And they appeal to teachers and parents for another reason.

They work.

# Or you'll get something out of this.

that's truly fun and educational. Look for Springboard wherever you buy learning games.

Even in the remote possibility that your child *doesn't* get something out of it, you can.

## The guaranteed educational software.

ADVERTISEMENT

Many parents are buying home computers to enhance their children's education. After purchasing the computer and educational software, however, they find their children struggle to learn the computer keyboard.

**The Keyboard**

According to Dr. David Thornburg, a leading educator and proponent of computers in education, "Standard computer keyboards are baffling to a developing child. The order of the keys and the symbols are confusing. Young children need a tool which enables them to interact naturally and directly with the lessons in the software." Until recently, no such product existed.

**Muppet Learning Keys: A Kid's Computer Keyboard**

Muppet Learning Keys was designed by Koala Technologies, Henson Associates—creators of the Muppets, and Sunburst Communications, and is the first computer keyboard especially for kids. The design incorporates the recommendations of experts in the field of early childhood education.

A sturdy, "childproof" device, Muppet Learning Keys bypasses the regular computer keyboard altogether and provides children ages three and up with a friendly "teacher" for learning letters, numbers and colors.

For the child, the product looks like all the familiar elements of a toy chest or school desk. There's a wooden ruler with numbers in sequence, a paintbox set with a variety of colors, and a chalkboard with all the letters of the alphabet in their correct order. By grouping the letter, number and color keys in a simple format with the Muppet characters, the product provides the child with an entertaining and educational world where Kermit, Miss Piggy and friends help the child experience the fun of learning.

The colorful program uses the Muppet characters to introduce animated pictures that stimulate alphabet and number learning—with a generous dose of fun. Three separate modules concentrate on specific educational goals.

The child is encouraged to explore. Something happens every time a key is pressed. This is important because it puts the child in control and there is the freedom to discover and learn at an individual pace. It is not necessary for the parent to sit with the child reading or prompting at every turn. A parent control option does, however, allow a parent to customize the activities of the program to fit the child's needs.

Muppet Learning Keys is available for the Apple IIe and IIc, Atari, and Commodore 64 computers. It requires 64K of memory and a disk drive. You can find it at your nearest computer dealer. If not, call Koala at 800-KOA-BEAR and they'll be happy to tell you the nearest store where you can find it.

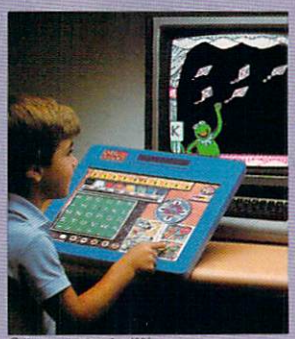
# Finally, a Computer Keyboard Kids Can Use

A computer can help your child learn, but the keyboard often gets in the way. It's a jumble of keys that's confusing and hard for little fingers to operate. And it's not much fun.

**Introducing Muppet Learning Keys™ from Koala Technologies™**

It's the first computer keyboard made especially for young children. All the letters and numbers are in order. So a child can find A-B-C and 1-2-3 without hunting all over the keyboard.

Muppet Learning Keys was created by education specialists to make learning exciting for your child. It's the first computer keyboard with Kermit, Miss Piggy and the whole Muppet gang right on it, ready to introduce your children to the magic of letters, numbers and colors.



© Henson Associates, Inc. 1984

Muppet Learning Keys has things that every child knows and loves:

- A paint box with eight touchable colors
- A blackboard with the ABC's in order
- A ruler with the numbers where they're supposed to be
- And keys the right size for small fingers

Muppet Learning Keys–for a child's hands, a child's mind and a child's heart.

**Muppet Learning Keys. The Hands-on Keyboard for Kids.**

Jim Henson's Muppet Learning Keys™

For the Apple® IIe and IIc, Atari® and Commodore 64™ computers. In-Box software by Sunburst Communications. Muppet Learning Keys works with software that is designed or adapted for it.

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## HOW TO GET YOUR CHILD EXCITED ABOUT LEARNING. INTRODUCING SPROUT SOFTWARE.

**Tell them stories.**
Children love stories and the warm, loveable characters they meet in them. That's why they'll love Sprout software and enjoy learning with Tink! Tonk! characters.

Sprout software is a new line of educational, entertaining software for children 4 to 8 years old. Sprout software uses clorful, animated stories and games to teach children early learning skills. And its disk based, so Sprout software offers much more program than cartridge software.

**Get them involved.**
Sprout software is interactive and lets a child become involved in the outcome of each story or game.

All Sprout software can also be played on many different levels. So children remain interested as they become more skilled. Our games don't wear out after a few hours, they grow up right along with the child.

**Use your computer as a learning tool.**
Sprout software runs on most home computers like Commodore, Apple and Atari, and soon IBM. You will need a disk drive, and in some cases you'll need a joystick. So, read the package before you buy. Our package will also tell you more about what each software program teaches.

**Introduce your child to the Tink! Tonk! characters.**
Mercer Mayer, world famous author of more than 80 children's books, created them especially for the computer screen. They live in Tink! Tonk! land and children can meet them in these Sprout programs:

**—Tonk in the Land of Buddy-Bots** - develops pattern recognition, concentration and memory skills as children collect and assemble pieces of the Buddy-Bots.

**—Tuk Goes to Town** - helps children learn to spell and build their vocabulary while travelling with Tuk.

**—Tink's Adventure** - children learn ABC order and their way around the computer keyboard as they help Tink search for treasure.

**—Tinka's Mazes** - teaches counting and basic math as children help Tinka through the maze.

**Join the Sprout Club**
The Sprout Club is an added benefit for Sprout software fans. This special computer club for children ages 4 to 8 offers a monthly newsletter with software previews, puzzles and crafts, and an exciting membership kit including club card, certificate, Tink! Tonk! stickers and more.

The Sprout Club will keep kids excited about Sprout software, and the software will keep kids excited about learning.

**Send for our free catalog.**
To find out more about Sprout software and our other software lines, send for our free catalog. Write to Mindscape, Inc. 3444 Dundee Road, Northbrook, Illinois 60062. Or use the coupon at the front of this section.

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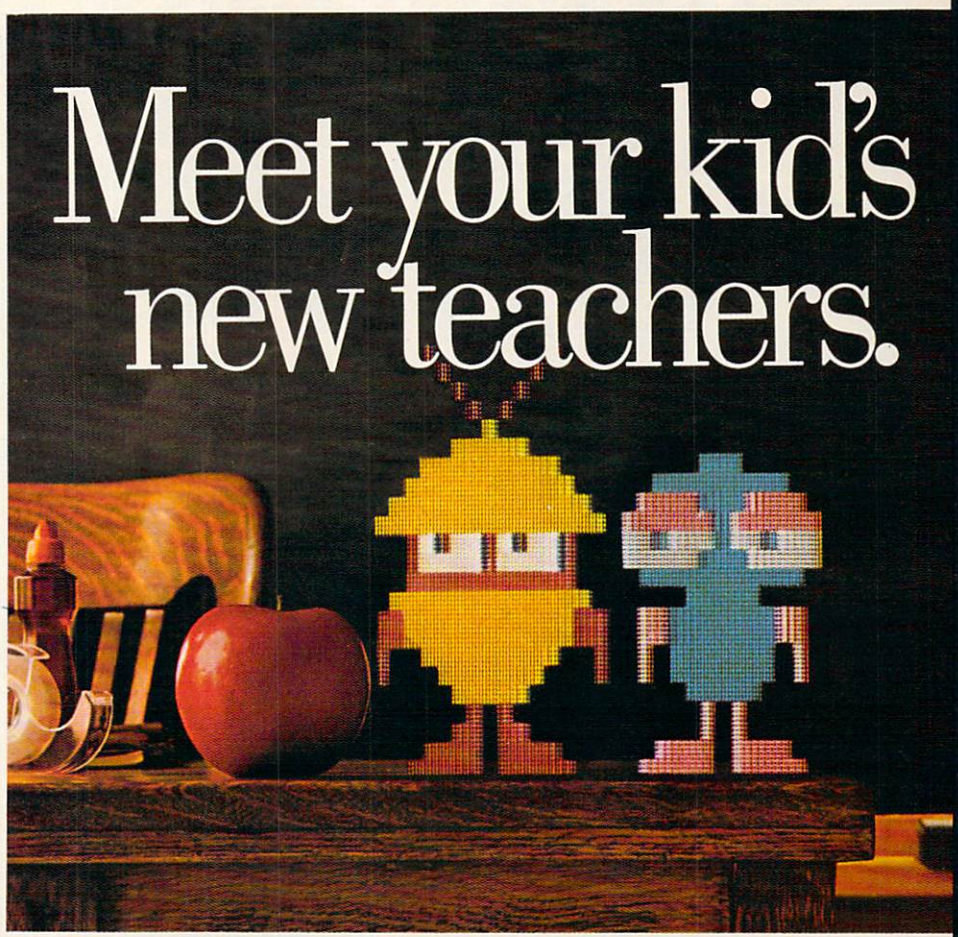
# Meet your kid's new teachers.



At first glance, they look like funny creatures right out of a computer game shoot 'em up. But underneath the funny surface, they represent one of the most serious approaches to home education you've ever heard of.
INTRODUCING SPROUT™ SOFTWARE. GAMES THAT TEACH.

These amazing teachers are called Tink and Tonk. They come from Sprout. Software for kids 4 to 8.

The beauty of Sprout is how we balance entertainment with a healthy dose of education.

While kids are having fun at home, they're reinforcing what they've learned at school. Things like the alphabet, spelling, vocabulary, counting, adding, and pattern recognition.

You'll also like how Sprout prevents boredom. Our games grow up, instead of wear out. As kids get older, the game gets harder—with many variations and many decisions to make.

Sprout didn't learn how to do all this overnight. You see, we've got a hundred years of experience to lean on. (Our parent company is SFN, the country's #1 textbook publisher for elementary and high schools.)

We've also got the experience of Mercer Mayer, who has written or illustrated 80 children's books. He dazzles kids with ideas and pictures that keep them coming back for more.

So let TINK!TONK!™ software teach your kids. And when they play at the computer, they won't be playing around. They'll be learning something.

sprout
Games that grow up. Instead of wear out.

Compatible with Atari,® Commodore,® Apple® and IBM.®

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# INTRODUCING COMPUTER ACTIVITY TOYS™...

# ...BECAUSE BUILDING YOUR CHILD'S IMAGINATION IS NOT A GAME.

We all know that you can't kid a kid. And younger kids are growing tired of arcade-type computer games that don't hold their interest, while learning programs frequently don't generate any interest at all.

Now, EPYX introduces *Computer Activity Toys,* featuring Barbie,™ Hot Wheels™ and G.I. Joe.® The perfect way for children ages 4–10 to engage in imaginative, non-structured, non-competitive play patterns either individually or with a friend.

Now on your computer screen, your little girl can dress a Barbie™ Doll and change her clothes and her hair styles. Your boy can move a Hot Wheels car around a Hot Wheels™ garage, after actually designing the car on the computer screen. He can engage in a make-believe battlefield scenario with G.I. Joe® pitted against Cobra.™

The hours of time tested, imaginative free play generated by these well-known toys and dolls can now have added dimensions of control, versatility and realism through the magic of the home computer. They are disc-based products so you can be sure there are enough activities to keep your child occupied and entertained hour after hour.

EPYX
COMPUTER SOFTWARE

***Computer Activity Toys...***
***Because building a child's imagination is not a game.***

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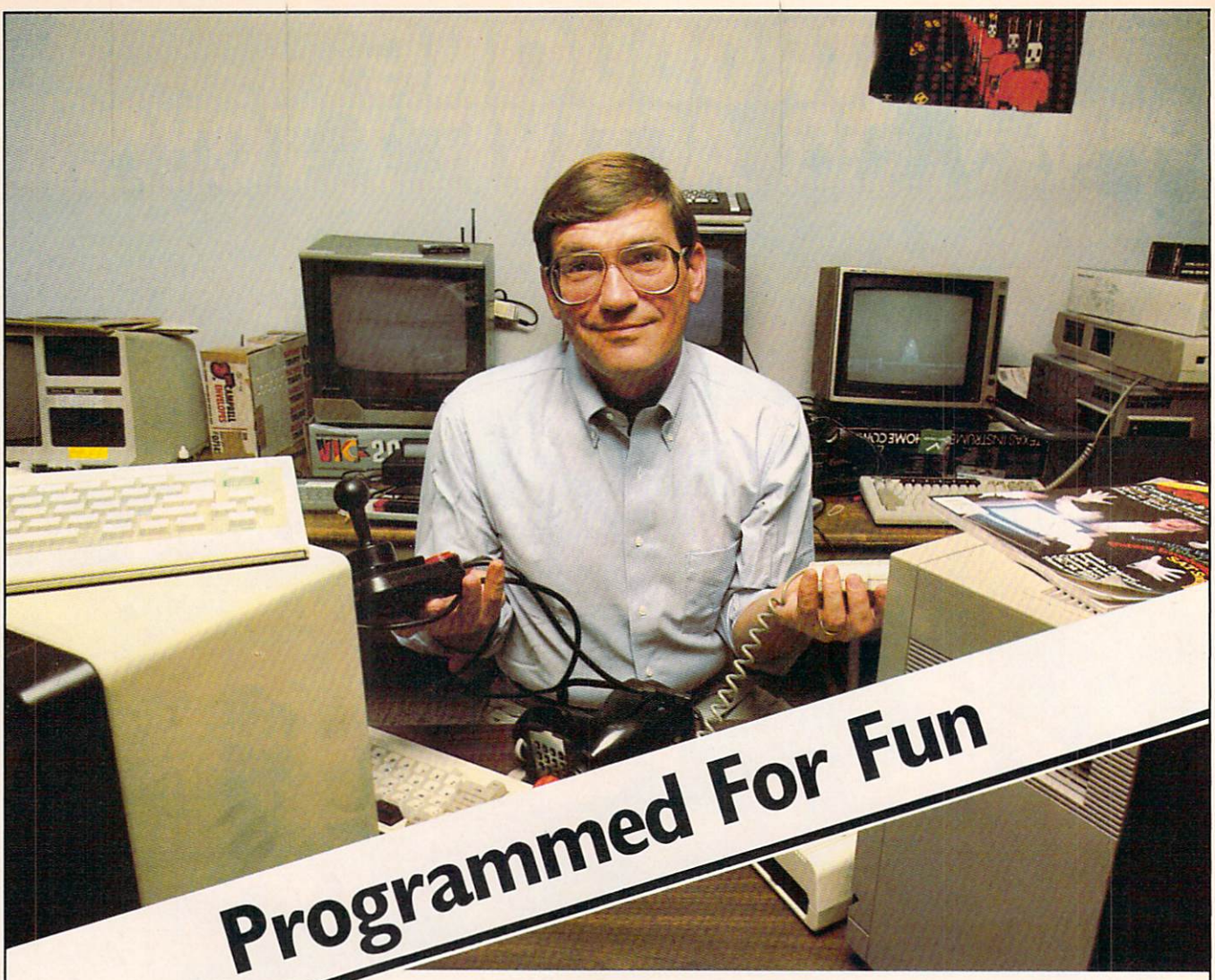

# Programmed For Fun

Focusing on people, not machines, "Family Computing" on the Lifetime Cable Television Network makes the growing computer technology simple, easy...and fun...for everyone. Host Larry Sturholm shows how you can make computers work for you—with experts, games, humor, computer art and lots of entertainment.

**Check your local television listings for time and channel.**

## FAMILY COMPUTING™

A Scholastic Productions presentation in association with A. H. Perlmutter, Inc.

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**DR. KURSOR'S KLINIC,** page 103
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Edited by Anne Krueger

# POWER

FOR THE COMPUTER GENERATION

Hall of Fame CONTEST! P.108 Win Free Software!!

# Calling All Ghostbusters!

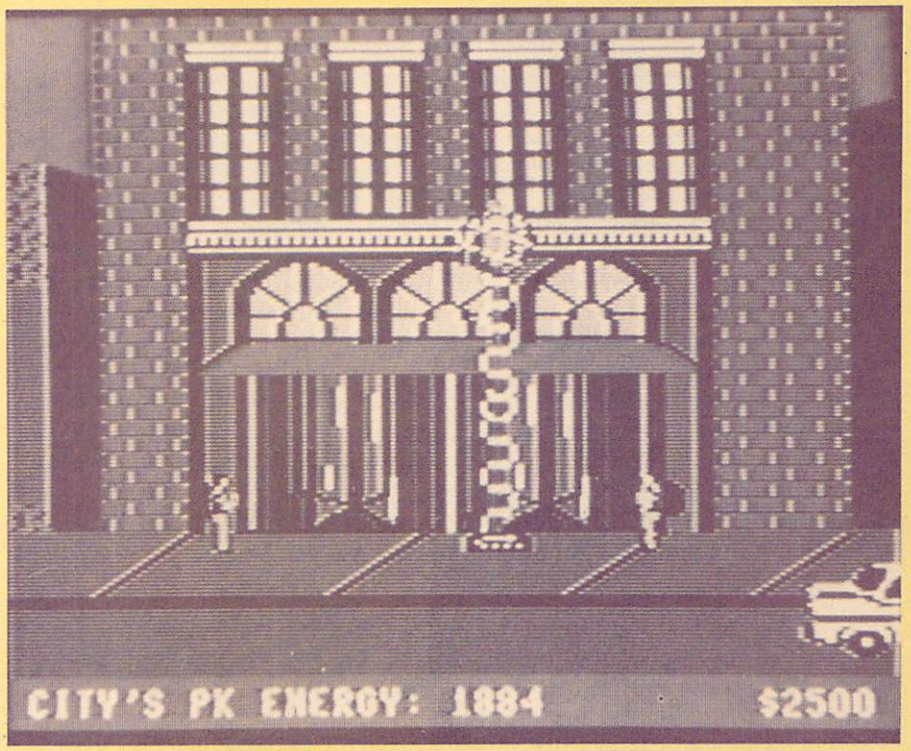
No matter how many times you've seen the hit movie *Ghostbusters*, Activision designer David Crane probably has you beat! David saw the movie and loved it, but then the *Ghostbusters* game project came along and it was his *job* to see the movie again and again (real rough, right?).

David had to work on *Ghostbusters* (for Commodore 64) in a hurry because he had an unusual deadline. He had only six weeks to finish the game last summer or he'd have missed his own wedding and honeymoon! He had plenty of help from other Activision *Ghostbusters* fans: Adam Bellin and Tim Shotter (programming), Hilary Mills (graphics), Garry Kitchen and the East Coast design crew (title screen and bouncing ball).

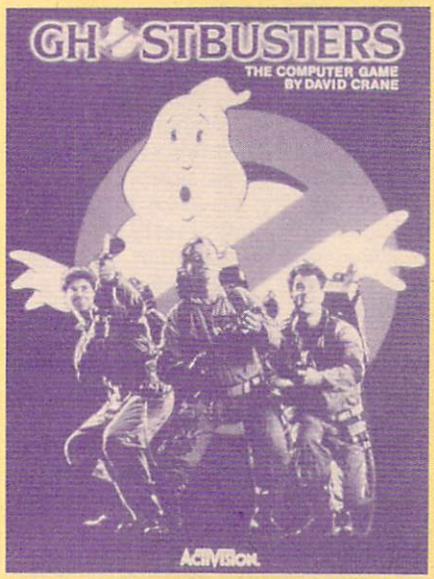
Although designing a computer game based on a movie theme was a new way of working for David, he says "it wasn't constraining. The *Ghostbusters* game isn't really based on the movie plot," he explains. "Although the movie really lent itself to being a video game."

The method, David says, was to "take the action elements from the movie and use my own game design. I strung all those elements from the movie together with no regard to the movie script."

But the gist of the movie remains. You get the great song "Ghostbusters" (*Who ya gonna call?*) during the game's opening screen. There are ample opportunities for you to nab ghosts with a variety of ghostbusting paraphernalia, or to "get slimed"—a highly unpleasant activity which may send you crawling back to GHQ (GHOST HEADQUARTERS). Your goal is to prevent the Gatekeeper and Keymaster from joining forces with the Temple of Zuul. To do that you must bust ghosts at a rapid pace.




**Busting ghosts is no picnic. Don't cross laser stream throwers!**




**Move over Bill Murray and Dan Aykroyd! It's time for computer users across the country to get "slimed!"**

In fact, "time is of the essence," David hints. While you're hanging around downtown busting ghosts, the slimers that get away are hiking the city's PK energy level—the higher that level, the sooner the Gatekeeper and Keymaster join forces (bad news for you). The trick, says David, is to "use the map screen to pick the most efficient route to a ghost-infested building and to immobilize as many 'roamer' ghosts on the way." Another David Crane hint: Don't leave GHQ without your ghost vacuum. It'll come in handy!

## Software Scoop

Those sadistic underworld fiends are at it again. Spy takes on spy in the latest from **First Star**. The same company that took you underground with Rockford in ***Boulder Dash*** takes you underworld with these two menaces. You and a friend (or the computer) make tracks around an embassy in search of the loot and top-secret briefcase you'll need to escape. Keep tabs on your foe's progress or pitfalls on a split screen. It takes strategy, a quick wrist, imagination, and a bit of a split personality to outwit your erstwhile opponent. Try out the tasty selection of barbaric booby traps, too. It's best with a friend. ***Spy vs. Spy*** is on disk for 48K Apples and Ataris, and for Commodore 64s. ($29.95–$34.95)

Adventurers prepare! The new year promises at least three disks guaranteed to satisfy the appetites of most stout-hearted voyagers.

Keep an eye out for the fourth ***Ultima*** scenario. It's designed, once again, by the infamous **Lord British**.

Also, with **Electronic Arts** new ***Adventure Construction Set***, you create your characters from scratch, as usual. But you also put together the scenarios, with all the obstacles, enemies, and evildoers you take on. (Available for Commodore 64.)

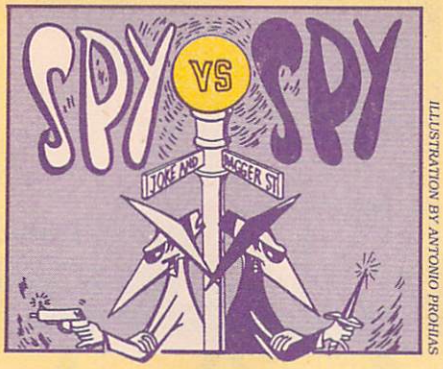



ILLUSTRATION BY ANTONIO PROHIAS

***Wizardry*** whizzes are in for the scenario to end all scenarios. This time, in **Robert Woodhead**'s and **Andrew Greenburg**'s fourth collaborative effort, you play the part of the demon—Werdna himself.

Confused? It goes like this: At the end of ***Wizardry I***, you thought you creamed Werdna, right? Wrong! You just stunned the monster, and in the fourth scenario, ***Wizardry: The Return of Werdna***, he awakens, at the bottom of a dungeon. Not to worry, however, because this time around, *you're* Werdna. Your aim? To climb up through the depths of the dungeon and into the castle, where you exact your revenge. The foes you meet are good guys, like the ones you used to be in the earlier scenarios. Your allies are the very mages you fought before. (Planned first for Apple.) —JOHN WALLACE

## Who Has K Power?

Jerry LeMaitre, 18, sure does! Jerry harnessed his Atari's 64K to make his part-time job in Collingwood, Canada, more fun. His job? Babysitting! Says Jerry, "Computers make kid-sitting a cinch!" He tutors his charges in BASIC after teaching them to load, run, and print. "It's kind of fun to see them trying to figure stuff out for themselves," Jerry says. "Besides, they learn so much more that way!" His tutoring has been such a hit with the kids he's been asked to use his computer power on their parents, too! Although adults have longer attention spans, "they think the computer is gonna blow up when they touch it!" Jerry says.

**Jerry: "Computers make kid-sitting a cinch!"**

# LOGON LETTERS

### WHAT'S WITH ATARI?

I recently took my Atari 800XL computer into a service center to get it repaired. The person at the center said he couldn't get parts for it because Atari is selling out. Is this true, or is it another thing like TI did?

KELBY THAYER
*Mason, Michigan*

*Dear Kelby,*

*Atari recently was bought by Jack Tramiel, the founder and former chief executive officer of Commodore, so a lot of changes are going on at the company. But Atari tells us it'll continue to support its computers with software, as will a lot of other software makers out there. You shouldn't have trouble (like TI people do) finding parts or software for your computer. Maybe you should try another dealer.*

THE EDITORS

### ADVICE FOR HACKERS

I don't know about you, but if I get an idea for a program, I'll go upstairs to my room, sit in front of my monitor, put my hands on my keyboard, and start typing away. I can (and will) do this for hours—nonstop—every day. It's great to do this, but not all the time! Pretty soon, your social life may vanish. It's great to be a hacker, but don't make it a full-time job!

JASON BOETTCHER
*Granger, Indiana*

### LOOKING FOR ADAM

I am 13 and I have been looking at the ADAM computer system. I would have bought it already except for one thing: I don't know where to purchase the educational software. If you know of any stores in mid-Michigan that sell the software, or if it can be purchased from the company through a catalog, would you please send me any and all information?

BRIAN AISTER
*Evart, Michigan*

*Dear Brian,*

*Your best bet is to contact Coleco Industries, Inc., 999 Quaker Lane S., West Hartford, CT 06110; (800) 842-1225. Coleco can send you an order form listing all current ADAM products and a list of retailers carrying those products. Coleco tells us most Toys "R" Us, Service Merchandise, Zayre, and Montgomery Wards stores carry Coleco products—so you might try those first if they're nearby.*

THE EDITORS

**Write to K-POWER!**
Send your letters to K-POWER, 730 Broadway, New York, NY 10003.

# DOCTOR KURSOR'S KLINIC

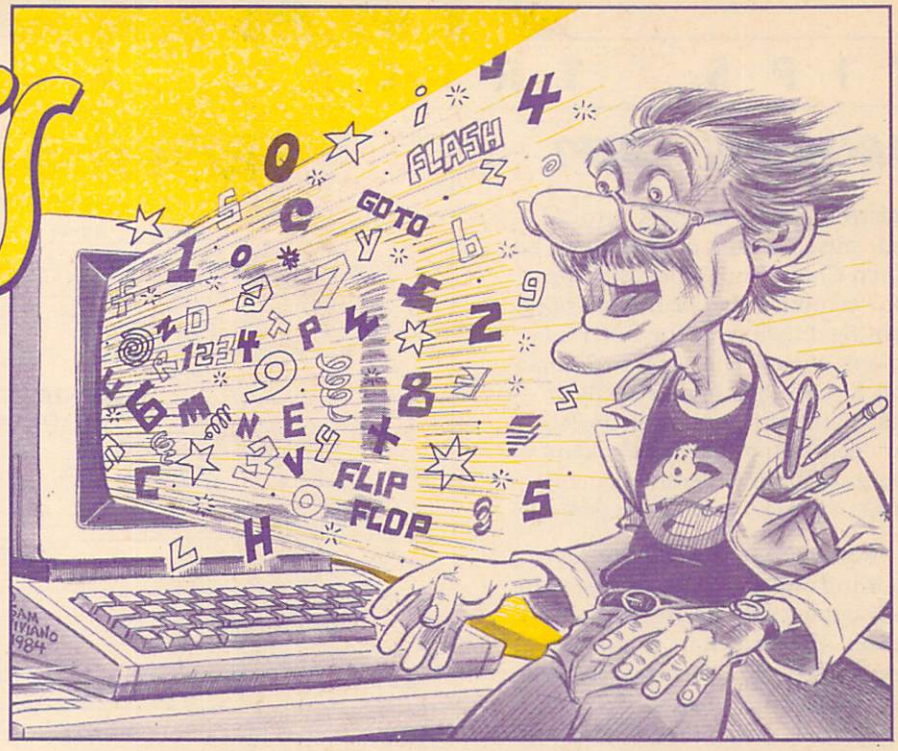



Illustration: Sam Viviano

**One day while I was fooling around with my Atari 800, I typed in this program:**

```
1 POKE 88,0
10 PRINT "RADICAL";
20 GOTO 10
```

**When I ran it, the screen flashed different colors and letters all over the place. What happened and why?**

**DR. KURSOR:** You're playing around with a powerhouse command. The POKE statement is a direct pipeline to the innermost workings of a personal computer. You can use it to change any value held in any byte of RAM.

Unless you know a few things about how your computer works, a POKE can destroy a program, make the computer write on your disk, or make your computer lock up entirely (forcing you to RESET it or even turn it off and on again to get back control).

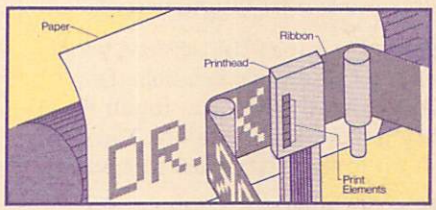
What's the POKE in line 1 of your program doing? It puts the value 0 into byte No. 88 in your Atari's memory. Byte 88 controls where in memory the computer puts what it wants to display on the screen. When you change the value of byte 88, the computer will put data in the wrong part of memory when it tries to display something. It so happens that one of the places in memory your program is putting data (in this case, the word RADICAL, line 10) is the very part that determines what you see on the screen and what graphics modes are used.

As a result, all sorts of wild stuff is being thrown onto your screen. In fact you are, in a sense, seeing "inside" your computer. You're watching various parts of your computer's memory interpreted in unexpected ways.

If you replace the word RADICAL with another word, *that* word will get put into the wrong part of memory and you'll get a different effect. Try it!

## What's a thermal-transfer printer?

**DR. KURSOR:** If you've ever used an iron-on transfer to put your favorite rock group's picture onto a T-shirt, you already know how the thermal-transfer process works! In a thermal-transfer printer, the print head heats up and "irons" the ribbon onto the paper. (Unfortunately, you can only use the ribbon once.)




The printer forms characters out of patterns of dots, just like a regular thermal printer or a conventional dot-matrix printer. The print head has between nine and 24 tiny printing elements. Each one heats up and cools down individually (and very fast) to place (or not place) a dot on the paper beneath it.

Apple and Okidata have given this process a really exciting twist! The Apple Scribe ($299 with accessory kit) and the Okimate 10 (for Atari and Commodore; $239 with accessory kit) will take three-color ribbons. These ribbons have a stretch of yellow, then a stretch of magenta (red), then a stretch of cyan (blue), then another stretch of yellow, etc. By printing the same line over twice with different colors or patterns, you can get many different shades and effects and can make full-color printouts of color pictures you've drawn on your screen!

IBM has just introduced an innovation in thermal-transfer technology called "resistive thermal transfer." It's used in some of the new line of "Selectric" System/2000 typewriters and printers.

In the Selectric Quietwriter series, it's the ribbon that heats up, not the print head. The printer actually runs an electric current through the ribbon to warm it and transfer the ink to the paper.

Instead of creating characters out of a series of dots, the Quietwriter print head's 40 print elements "paint" continuous lines of ink onto the page as the print head moves from left to right.

### Need an Answer to a Hi-Tech Question?

Send your questions to Dr. Kursor's Klinic, c/o K-POWER, 730 Broadway, New York, NY 10003.

Diagram: Pat Lyons

# STRATEGY

## TIPS, TRICKS, AND HINTS

## ARCHON II: ADEPT

Electronic Arts. Strategy/arcade. Your mission: In a great contest between Chaos and Order, subdue your computerized or human opponent by drawing on the different powers of your characters—Demons and Elementals. Invoke spells or fight hand-to-hand—your powers vary depending on which tokens you use in the four different elements. (Hints for Atari and Commodore 64.)

Success at *Archon II* requires cunning and the ability to measure your opponent's strengths and weaknesses. Here's a chart that should help you decide which pieces to deploy against the enemy.

The chart doesn't show who will win a fight between a Demon and an Elemental. Also, the chart only indicates which Demons the Elementals fight best against. Remember Demons win against Elementals most of the time.

To determine how your piece will fare, find the letter at the intersection of columns for each opposing character and the element they're fighting in, and use the following key:

A—probably beats C.
B—probably beats A.
C—probably beats B.
D—has a 50/50 chance against A, B, C, D, E.
E—probably will lose to A, B, C, D.
U means the piece is useful in fighting Adepts. It may take a couple of turns to beat it.
X means that, although it will probably lose, it's good for cutting down the opponent's strength.

—DAVID LANGENDOEN, *16, Brooklyn, New York*

### ICON STRENGTH TABLES

**DEMON STRENGTH**

| | | Void | Earth | Water | Air | Fire |
|---|---|---|---|---|---|---|
| DEMON | Juggernaut | A | A | A | A | A |
| | Gorgon | B | B/U | B | B | B |
| | Wraith | C/U | C/U | C/U | C/U | C/U |
| | Chimera | D | D | D | D | D |

**ELEMENTAL STRENGTH**

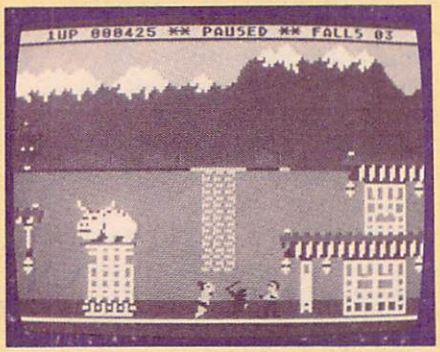
| | | CHAOS | | | | | Demons it is best against |
|---|---|---|---|---|---|---|---|
| ELEMENTAL | Behemoth | E | C | E | E | E | W |
| | Siren | E/X/U | D/X | D/X | D/X | E/X | J, G |
| | Ifrit | A | A | A | B | A | Ch, J |
| | Firebird | D | C | C | D | D | W |
| | **ORDER** | | | | | | |
| | Giant | E | C | E | E | E | W |
| | Kraken | C | C | A | C | C | W |
| | Thunderbird | A | A | A | B | A | Ch, J |
| | Salamander | A | A | A | A | B | Ch, J |

W = Wraith J = Juggernaut G = Gorgon Ch = Chimera

## BRUCE LEE

Datasoft. Climbing/karate. Your mission: As karate Master Bruce Lee, run climb, kick, and chop your way through booby traps and bad guys on your way through an evil wizard's castle. (Hints for Atari and Commodore 64.)

Get a friend to play the part of the chubby Green Yamo. He's supposed to be your enemy, but so what? Cheat a little and have him help you. This way you can have Yamo protect you from the nasty little ninja and his wimpy bokken sticks as you race around from screen to screen untouched.




**Climb up the vines at center screen, and jump on the ninja's head for a surprise!**

On one of the screens you'll see a set of orange symbols. Don't ignore them! When you touch them, they give you an extra life. You can get up to five extra lives this way.

Lure your enemies into following you over the fiery bushes. Just after you pass over one it bursts into flames, killing anyone above it instantly. You can also kick the Yamo or ninja into the flames.

On the very first screen, climb up the vines and wait until the ninja is beneath you. Then jump down on his head. Keep doing this and you'll soon notice something very interesting. This secret trick works on all other levels where you can jump on the ninja's head.—DL

## TRANSYLVANIA

Penguin Software. Graphic-adventure. Your mission: To rescue the King's daughter, Sabrina, from the clutches of an evil wizard. Avoid vicious creatures, vampires, werewolves, and others, and solve numerous puzzles. (Hints for Apple, Atari, Commodore 64, Macintosh.)

A famous vampire once said: "I never came across a cross I liked."

An insect in flight is an amphibian's delight.

Pick the cloak pocket to pocket the cloak-pocketed pick.

Leave no stone unturned.

Acid will get to the root of the matter.

Make the werewolf bite the bullet.

Mice are the cat's meow.

Read any good books lately?

When you gaze upon a star, a gift for you does not lie far.

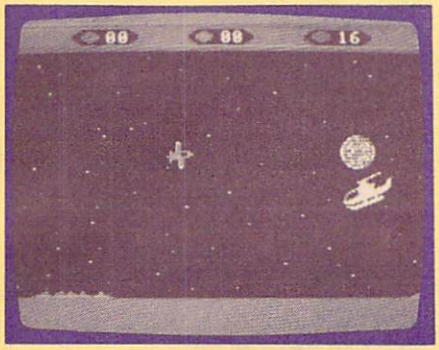
—ALLEN JARBOE, *14, Paxpon, Illinois.*

## CHOPLIFTER

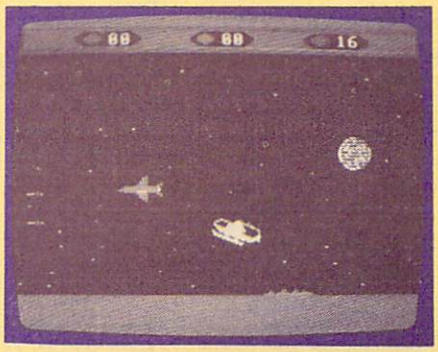
Broderbund Software/Creative Software. Shoot-'em-up/pick 'em-up. Your mission: As a pilot fly into enemy territory, blow holes in the walls of several prison barracks, pick up hostages, and make it back to an American base without getting shot down by the many tanks, jets, and homing devices along the way. (Hints for Apple, Commodore 64, VIC-20.)

The pictures here show an effective way to shoot down all those missile-firing jets that harass you throughout the game.

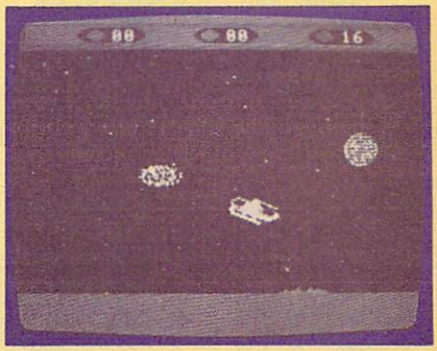
So, good luck, Captain. You've got 64 desperate hostages counting on you. Don't let them down. —DL



**STEP 1: Fly along, keeping the tail of your chopper midway up one side of the screen. A jet will soon head your way.**



**STEP 2: When a jet appears, let up on the joystick so your chopper slows down. The jet will turn right in front of you.**



**STEP 3: As the jet pauses and turns away from you, shoot it down. After a little practice, this will become very easy.**

# HINT HOTLINE

Hints and game tip-offs are pouring into the K-POWER office! Keep 'em coming. Here are some of the hottest hints we've checked out, plus a few from our very own Special Ks! (Note: the computer system listed in brackets indicates the computer version(s) the hint works for.)

**DEADLINE**, Infocom (all). Text-adventure. Your mission: To solve a murder mystery in 12 hours.

Try rubbing the pad with another object, then carefully examine it. —JUNIL AHN, *13, R.P.V., California*

Don't ignore the servants. Mrs. Rourke, in particular, is quite a gossip. —MARC WONTOREK, *15, Northford, Connecticut*; GREG EAST, *14, Porter, Texas*; JUNIL AHN, *13, R.P.V., California*

**SKYFOX**, Electronic Arts (Apple). Strategy/skill shoot-'em-up. Your mission: Use the super-modern jet fighter, *Skyfox*, to stop an invasion.

To access the 20th-century video game mentioned in the documentation, press CTL-G when you're at the computer located at home base. —RICHARD SMITH, *12, Honolulu, Hawaii*

**WIZARDRY**, Sir-tech (Apple). Fantasy role-playing adventure. Your mission: To organize a band of hardy adventurers and set off to slay the evil arch-mage, Werdna.

Have your bishop camp out in the dungeon and "I"dentify item No. 9 until he's successful. Then go to the Adventurer's Inn, where you'll be in for a surprise! —ALAN CRAWTHER, *15, Waverly, Pennsylvania*; CHRIS WEAKLY, *13, Fayateveille, North Carolina*; MARK LI, *16, Mercer Island, Washington*

**RAID ON BUNGELING BAY**, Broderbund (Commodore 64). Strategy/arcade game. Your mission: To destroy six enemy factories in the Bungeling empire.

A load of bombs lies in store at one of the enemy airports.

Go for the island with two factories first; then destroy the factories on islands with airports.

If one of your 'copters is about to blow up, aim it to crash into a factory. It'll do mucho damage. —THE SPECIAL KS

**SPARE CHANGE**, Broderbund (Apple). Humorous arcade game. Your mission: To amass a fortune and prevent the greedy Zerks from filling their piggy banks.

When you're playing the game, press ESC. That will freeze the screen. Type exactly: ISLE.DRIVER. Don't press RETURN; the disk will automatically go into motion. You won't be able to see what you're typing, so type carefully. A cheat menu appears that will let you see all the games' cartoons and boards, among other things. —ROB JOHNSTON, *14, Ft. Washington, Maryland*

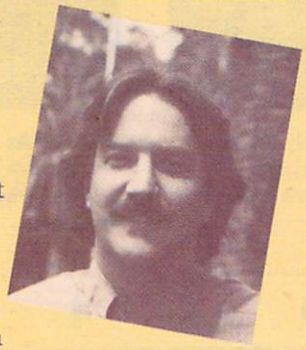
**LAST GLADIATOR**, Electronic Arts (Apple). Strategy/arcade game. Your mission: To use a variety of weapons to slay as many monsters as possible.

Don't always destroy the dragon and robot. Use the net to hold them in place and help kill other oncoming nasties. —THE SPECIAL KS

Special thanks to the Special Ks: David Langendoen, 16; Damon Osgood, 16; Alex Shakar, 16—all from Brooklyn, New York. Hintmasters should send their tips to Hint Hotline, c/o K-POWER, 730 Broadway, New York, NY. K-POWER will pay $10 for hints we haven't heard of.

# MUSIC PROGRAMS

## BY JOEY LATIMER



Most of you computer maestros out there have discovered that your computer can play some great music. But did you know it can *compose* music, too?! Well, it can. And this month's Microtones program, *Tune Generator*, turns your computer into a songwriting machine. The program works by randomly selecting from a table of chords and associated notes. The *Tune Generator* makes compositions that range from downright folksy to airy and heavenly. Enjoy!

## ADAM/*TUNE GENERATOR*

```
10 LOMEM: 29000
20 DIM chord(5,4),note(5,5,2)
30 HOME:PRINT TAB(9);"TUNE GENERATOR"
40 PRINT:PRINT "Please press <SPACE BAR> to"
50 PRINT "begin. Press <RETURN> to stop"
60 PRINT "the program."
70 IF PEEK(64885) <> 32 THEN 70
80 FOR x = 28000 TO 28005:READ a:POKE x,a:NEXT x
90 FOR x = 1 TO 5:READ chord(x,1),chord(x,2),chord(x,3
),chord(x,4)
100 FOR y = 1 TO 5:READ note(x,y,1),note(x,y,2)
110 NEXT y:NEXT x
120 FOR q = 144 TO 208 STEP 32:POKE 28006,q:CALL 28000
:NEXT q
130 t = INT(RND(1)*20)+20
140 FOR x = 1 TO t
150 r = INT(RND(1)*5)+1
160 IF x = 1 THEN r = 1
170 IF x = t THEN r = 4
180 FOR z = 1 TO 4
190 POKE 28006,chord(r,z):CALL 28000
200 NEXT z
210 FOR y = 1 TO 3:s = INT(RND(1)*5)+1
220 IF PEEK(64885) = 13 THEN FOR q = 159 TO 223 STEP 3
2:POKE 28006,q:CALL 28000:NEXT q:END
230 FOR z = 1 TO 2
240 POKE 28006,note(r,s,z):CALL 28000
250 NEXT z
260 FOR de = 1 TO 250:NEXT de:NEXT y:NEXT x
270 FOR q = 0 TO 15 STEP 0.1:FOR n = 144 TO 208 STEP 3
2
280 POKE 28006,n+q:CALL 28000
290 NEXT n:NEXT q
300 FOR q = 128 TO 192 STEP 32:POKE 28006,q:CALL 28000
310 POKE 28006,0:CALL 28000:NEXT q:GOTO 120
1000 DATA 58,102,109,211,255,201
2000 DATA 141,26,165,21,205,26,206,23,197,21,206,17
2010 DATA 205,26,129,20,175,15,193,20,206,17,207,15
2020 DATA 195,14,198,13,142,17,163,14,206,17,207,15
2030 DATA 195,14,198,13,207,11,143,15,166,13,207,15
2040 DATA 195,14,198,13,207,11,202,10,133,21,174,17
2050 DATA 206,17,197,21,195,14,202,10,207,8
```

## ATARI/*TUNE GENERATOR*

```
10 DIM V0(5),V1(5),V2(5),N(5,5)
20 PRINT CHR$(125),"    TUNE GENERATOR"
30 FOR X=1 TO 5:READ A,B,C
40 V0(X)=A:V1(X)=B:V2(X)=C
50 FOR Y=1 TO 5:READ NO
60 N(X,Y)=NO
70 NEXT Y:NEXT X
80 TI=INT(RND(1)*20)+10
90 FOR X=1 TO TI
100 R=INT(RND(1)*5)+1
110 IF X=1 THEN R=1
120 IF X=TI THEN R=3
130 SOUND 0,V0(R),10,4
140 SOUND 1,V1(R),14,4
150 SOUND 2,V2(R),10,4
160 FOR Y=1 TO 3:S=INT(RND(1)*5)+1
170 SOUND 3,N(R,S),10,4
180 FOR DE=1 TO 75:NEXT DE:NEXT Y:NEXT X
190 FOR Q=6 TO 0 STEP -0.15
200 SOUND 0,144,10,Q:SOUND 1,96,10,Q
210 SOUND 2,60,10,Q:SOUND 3,N(R,S),10,Q
220 NEXT Q:FOR DE=1 TO 120:NEXT DE:GOTO 80
1000 DATA 121,96,81,60,53,47,40,60
1010 DATA 91,72,60,45,81,72,64,121
1020 DATA 162,128,108,81,72,64,60,53
1030 DATA 144,96,60,72,64,60,53,47
1040 DATA 193,128,81,81,96,64,47,40
```

## COMMODORE 64/*TUNE GENERATOR*

```
10 DIM H1(5),L1(5),H2(5),L2(5),NH(5,5),NL(5,5)
20 PRINT CHR$(147);TAB(13);"TUNE GENERATOR"
30 S=54272:FOR I=S TO S+24:POKE I,0:NEXT I
40 FOR X=1 TO 5:READ H1(X),L1(X),H2(X),L2(X)
50 FOR Y=1 TO 5:READ NH(X,Y),NL(X,Y):NEXT Y,X
60 POKE S+5,34:POKE S+6,243:POKE S+4,17
70 POKE S+12,34:POKE S+13,243:POKE S+11,17
80 POKE S+19,34:POKE S+20,243:POKE S+18,17
90 T=INT(RND(1)*20)+20
100 FOR Q=0 TO 10:POKE S+24,Q:NEXT Q
```

```
110 FOR X=1 TO T
120 R=INT(RND(1)*5)+1
130 IF X=1 THEN R=1
140 IF X=T THEN R=4
150 POKE S+1,H1(R):POKE S,L1(R)
160 POKE S+8,H2(R):POKE S+7,L2(R)
170 FOR Y=1 TO 3:SC=INT(RND(1)*5)+1
180 POKE S+15,NH(R,SC):POKE S+14,NL(R,SC)
190 FOR DE=1 TO 100:NEXT DE:NEXT Y,X
200 FOR Q=10 TO 0 STEP -0.05:POKE S+24,Q:NEXT Q
210 FOR DE=1 TO 700:NEXT DE
220 FOR X=0 TO 1:POKE S+X,0:POKE S+7+X,0
230 POKE S+14+X,0:NEXT X:GOTO 90
1000 DATA 16,195,21,31,25,30,33,135,37,162,42,62,50,60
1010 DATA 22,96,28,49,25,30,28,49,31,165,33,135,44,193
1020 DATA 12,143,15,210,18,209,25,30,28,49,31,165,33
1030 DATA 135,14,24,16,195,28,49,31,165,33,135,37,162
1040 DATA 42,62,10,143,12,143,21,31,25,30,31,165,42
1050 DATA 62,50,60
```

## TI-99/4A/*TUNE GENERATOR*

```
10 DIM V1(5),V2(5),N(5,5)
20 RANDOMIZE
30 CALL CLEAR
40 PRINT TAB(7);"TUNE GENERATOR"
50 FOR X=1 TO 5
60 READ V1(X),V2(X)
70 FOR Y=1 TO 5
80 READ N(X,Y)
90 NEXT Y
100 NEXT X
110 TI=INT(RND*20)+10
120 FOR X=1 TO TI
130 R=INT(RND*5)+1
140 IF (X<>1)*(X<>R)THEN 160
150 R=1-2*(X=R)
160 FOR Y=1 TO 3
170 S=INT(RND*5)+1
180 CALL SOUND(500,V1(R),1,V2(R),1,N(R,S),1)
190 NEXT Y
200 NEXT X
210 FOR Q=1 TO 30 STEP 5
220 CALL SOUND(500,V1(4),Q,V2(4),Q,N(R,S),Q)
230 NEXT Q
240 FOR DE=1 TO 600
250 NEXT DE
260 GOTO 110
1000 DATA 262,330,392,523,587,659,784
1010 DATA 349,440,392,440,494,523,698
1020 DATA 196,247,294,392,440,494,523
1030 DATA 220,262,440,494,523,587,659
1040 DATA 165,196,330,392,494,659,784
```

## VIC-20/*TUNE GENERATOR*

```
10 DIM V1(5),N(5,5)
20 PRINT CHR$(147);TAB(4);"TUNE GENERATOR"
30 FOR X=1 TO 5:READ V1(X)
40 FOR Y=1 TO 5:READ N(X,Y)
50 NEXT Y,X
60 FOR X=1 TO 5:POKE 36878,X:NEXT X
70 T=INT(RND(1)*20)+10
80 FOR X=1 TO T
90 R=INT(RND(1)*5)+1
100 IF X=1 OR X=T THEN R=1
110 POKE 36874,V1(R)
120 FOR Y=1 TO 3
130 S=INT(RND(1)*5+(X=T))+1
150 POKE 36876,N(R,S)
160 FOR DE=1 TO 175:NEXT DE,Y:NEXT X
170 FOR Q=4.9 TO 0 STEP -0.05
180 POKE 36878,Q:NEXT Q
190 POKE 36874,0:POKE 36876,0
200 FOR DE=1 TO 1250:NEXT DE:GOTO 60
1000 DATA 225,215,225,228,231,235
1010 DATA 232,215,219,223,225,232
1020 DATA 235,215,219,223,225,228
1030 DATA 237,219,223,225,228,231
1040 DATA 231,207,215,223,231,235
```

# M I C R O N O T E S

Finally, a keyboard for musical dummies! Brought to you from **Waveform**, the **ColorTone Keyboard** is a touch-sensitive membrane keyboard with 25 piano-like keys, a touch strip that performs as a musical harp, and 14 function keys. Says Tom McCreery Jr., Waveform prez, "The ColorTone Keyboard intros non-musicians to useful musical concepts and lets them have an exciting, creative experience without having to spend long hours of practice." The ColorTone Keyboard retails for $79.95 and can be used alone or with Waveform's ***MusiCalc*** software. Waveform Corp., 1912 Bonita Way, Berkeley, CA 94704; (415) 841-9866.

**Waveform's ColorTone Keyboard.**

Ready to turn your computer into a home entertainment center? **Sequential Circuits, Inc. (SCI)** might have the product for you. It's called the **Model 206 Six Voice Soundboard**, and costs less than $300. Says SCI marketing manager Steve Salyer, it's aimed at that "giant market for an inexpensive module that can turn a personal computer into a personal orchestra." SCI, which makes the well-known **Prophet Synthesizer** used by the likes of the **Thompson Twins** and **Billy Joel**, claims the computer user with a Six Voice Soundboard can create trumpet, violin, organ, banjo, drum, bass, and electronic sound effects. For more info, contact Sequential Circuits, Inc., 3051 N. First St., San Jose, CA 95134; (408) 946-5240.

# COMPUCOPIA

## SHORT-SHORT PROGRAMS

### ADAM/*Bouncing Ball II*

```
10 DIM g(2),inc(2),x(2),xt(2),y(2),yt(2)
20 HGR2:HCOLOR= 3
30 HPLOT 0,0 TO 255,0 TO 255,191 TO 0,191 TO 0,0
40 FOR i = 1 TO 2:inc(i) = RND(1)*4+2:g(i) = 0:x(i) =
0:NEXT i
50 y(1) = RND(1)*40:y(2) = RND(1)*70+10:c = 0
60 FOR i = 1 TO 2
70 g(i) = g(i)+0.9:x(i) = x(i)+inc(i)
80 y(i) = y(i)+g(i):IF y(i) <= 190 THEN 100
90 y(i) = 190:g(i) = -g(i)/1.05
100 xt(i) = x(i)
110 IF x(i) > 254 THEN xt(i) = 254:h2 = x(i)-254:c = i
120 yt(i) = y(i):NEXT i
130 IF x(1) > 254 AND x(2) > 254 THEN FOR d = 1 TO 900
:NEXT d:GOTO 20
140 IF c = 0 OR y(1) = y(2) THEN 160
150 yt(c) = y(c)+(y(3-c)-y(c))*h2/ABS(x(1)-x(2))
160 HPLOT xt(1),yt(1) TO xt(2),yt(2):GOTO 60
```

### Apple/*Bouncing Ball II*

```
10 DIM G(2),INC(2),X(2),XT(2),Y(2),YT(2):HCOLOR= 3
20 HGR2:HPLOT 0,0 TO 279,0 TO 279,191 TO 0,191 TO 0,0
30 FOR I = 1 TO 2:INC(I) = RND(1)*4+2:G(I) = 0:X(I) =
0:NEXT I
40 Y(1) = RND(1)*40:Y(2) = RND(1)*70+10:C = 0
50 FOR I = 1 TO 2
60 G(I) = G(I)+0.9:X(I) = X(I)+INC(I)
70 Y(I) = Y(I)+G(I):IF Y(I) <= 191 THEN 100
80 Y(I) = 191:G(I) = -G(I)/1.05
90 FOR J = 0 TO 2+I*I:S = PEEK(-16336):NEXT J
100 XT(I) = X(I)
110 IF X(I) > 279 THEN XT(I) = 279:H2 = X(I)-279:C = I
120 YT(I) = Y(I):NEXT I
130 IF X(1) > 279 AND X(2) > 279 THEN FOR D = 1 TO 600
:NEXT D:GOTO 20
140 IF C = 0 OR Y(1) = Y(2) THEN 160
150 YT(C) = Y(C)+(Y(3-C)-Y(C))*H2/ABS(X(1)-X(2))
160 HPLOT XT(1),YT(1) TO XT(2),YT(2):GOTO 50
```

### TRS-80 Color Computer w/Extended Color BASIC/*Bouncing Ball II*

```
10 DIM G(2),INC(2),X(2),XT(2),Y(2),YT(2)
20 PMODE 3,1:SCREEN 1,0
30 PCLS 1:LINE (0,0)-(255,191),PSET,B
40 FOR I=1 TO 2:INC(I)=RND(4)+1:G(I)=0:X(I)=0:NEXT I
50 Y(1)=RND(40)-1:Y(2)=RND(70)+10:C=0
60 FOR I=1 TO 2
70 G(I)=G(I)+0.9:X(I)=X(I)+INC(I)
80 Y(I)=Y(I)+G(I):IF Y(I)<=191 THEN 110
90 Y(I)=191:G(I)=-G(I)/1.05
100 SOUND I*I*I*I,1
110 XT(I)=X(I)
120 IF X(I)>255 THEN XT(I)=255:H2=X(I)-255:C=I
130 YT(I)=Y(I):NEXT I
140 IF X(1)>255 AND X(2)>255 THEN FOR D=1 TO 200:NEXT
D:GOTO 30
150 IF C=0 OR Y(1)=Y(2) THEN 170
160 YT(C)=Y(C)+(Y(3-C)-Y(C))*H2/ABS(X(1)-X(2))
170 LINE (XT(1),YT(1))-(XT(2),YT(2)),PSET:GOTO 60
```

## HALL OF FAME CONTEST

When you think of movies, you think of Steven Spielberg. When you think of music, you think of Michael Jackson. But who (or what) pops into your head when you think of computers? Who/what are the superstars of the computer age?

K-POWER thinks it's time these "microstars" got the recognition they deserve. That's why we're starting the K-POWER Hall of Fame. It's up to you to do the voting.

Just fill in the name of who or what you think belongs in the K-POWER Hall of Fame, and tell us why they (or it) deserve(s) such an honor. Ten winning entries (picked randomly) will be published in a future K-POWER section. Lucky winners will receive a surprise software package!

Fill out and send your entry to: K-POWER Hall of Fame, c/o K-POWER, 730 Broadway, New York, NY 10003. All entries must be received by Jan. 31, 1985. Don't forget to tell us what kind of computer you use!

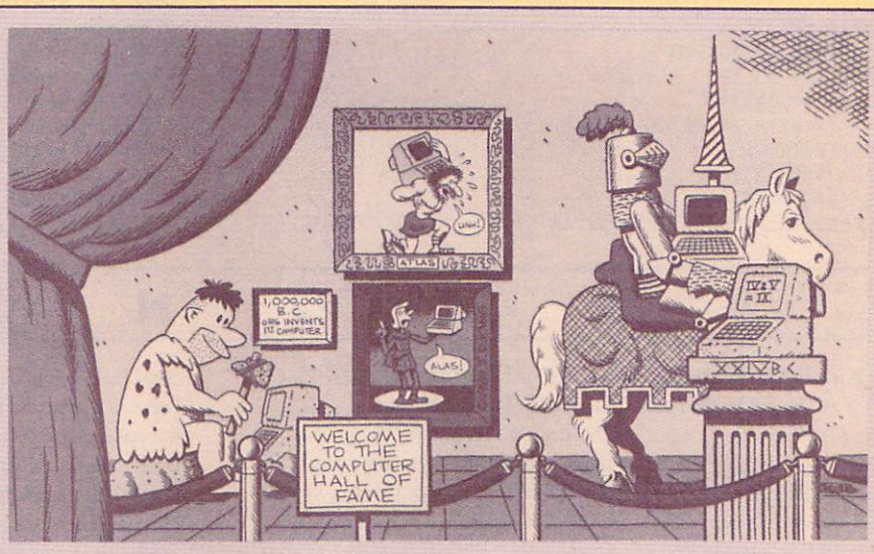



Illustration: J.D. King

I think _____

deserves to be in the K-POWER Hall of Fame because _____

_____

Name _____

Address _____

City _____ State _____

Zip _____ Telephone Number (____) _____

Age _____ Male _____ Female _____

Computer(s) I use: _____

# WHAT'S IN STORE

## NEW HARDWARE ANNOUNCEMENTS*

### COMPUTERS

#### Hewlett-Packard's The Portable

MANUFACTURER: Hewlett-Packard, 3000 Hanover St., Palo Alto, CA 94304; (800) FOR-HPPC
PRICE: $2,995

Hewlett Packard's 9-pound, battery-operated portable is about the size of a three-ring binder. The Portable has a full 75-key, typewriter-style keyboard, and a flip-up LCD screen that displays 16 80-character lines. The computer has 272K of user memory, which will store up to 50 pages of text even when the unit is turned off. The rechargeable batteries are good for one or two weeks of normal use.

What makes this HP machine particularly powerful and unusual is its built-in software. The *Lotus 1-2-3* spreadsheet and file-management program, and a word processor, are among the programs included in permanent (ROM) memory. And this software can be loaded much faster than disk-based software.

Other features of The Portable include a 300-baud, direct-connect modem. A real-time clock runs even while the unit is off, and can be used to provide a wake-up alarm or to activate the modem to transfer data.

Optional battery-powered peripherals for The Portable include a 710K, 3.5-inch disk drive and a printer.

**These products have been announced by manufacturers, but are not necessarily in the stores yet. Some products may still be under development, and others may be in test markets only. Call or write the manufacturer for expected date of delivery.*

#### Microsci's HAVAC

MANUFACTURER: Microsci Corp., 2158 S. Hathaway St., Santa Ana, CA 92705; (714) 241-5600
PRICE: $800

Next to IBM, the computer that most manufacturers would like to emulate is Apple, but that has been very difficult because of the company's patented operating system.

Microsci calls its computer HAVAC, an acronym for Home/Academic Very Affordable Computer. It is termed an Apple "work-alike," rather than Apple-compatible, and the manufacturer says more than 1,000 Apple programs have been successfully run on the machine.

The HAVAC computer has 64K RAM, 16-color capability, and a 40-column video output. It comes with a 164K single-sided disk drive and ports to add a second disk drive, joystick, or printer.

Included with the computer is a series of what the company calls "training software packages." They are designed to help people who are new to computers understand such software tools as spreadsheets, data bases, and word processors.

Microsci also offers an optional lifetime warranty for the HAVAC line.

### MISCELLANEOUS

#### Speed Key

MANUFACTURER: Koala Technologies Corp., 3100 Patrick Henry Drive, Santa Clara, CA 95052-8100; (408) 986-8866
PRICE: $199 (with software)

Many of the more useful business programs, such as *WordStar* or *VisiCalc*, use complicated and sometimes lengthy commands to perform certain functions. That's one reason the mouse and programmable function keys have become so popular. Koala offers a different approach, with a peripheral that acts as a special keyboard for each piece of software.

The Speed Key is a touch tablet with overlays and software for the nine most popular programs on the IBM PC and IBM PC-XT. With the Speed Key you can run these programs without having to learn their complex commands. It also has 25 blank overlays that can be used for customized programming needs. Each overlay has 36 squares. Each square can be set to give commands to the computer that otherwise might take as many as 80 keystrokes.

#### SuperCable (Apple IIc)

MANUFACTURER: Cord Ltd., 1548 Brookhollow Drive, Santa Ana, CA 92705; (714) 545-1643
PRICE: $39

The SuperCable is specifically designed to connect the Apple IIc computer to a number of popular printers, including Epson, Olympia, Brother, and Okidata.

Connectors are color-coded to identify which end plugs into the computer and which end is for the printer. Cord Ltd. makes a wide variety of cables for computers, printers, and video monitors.

#### Mitsubishi Video Printer

MANUFACTURER: Mitsubishi Electric Sales America, Inc., 3030 E. Victoria St., Rancho Dominguez, CA 90221; (800) 421-1140
PRICE: $390

The Mitsubishi P-50U Video Printer takes any composite TV or computer image and makes a thermal paper printout of it, giving you a good resolution black-and-white picture of your favorite soap star, or a copy of whatever was on your computer screen.

Each picture measures about 4 × 3¼ inches. Print contrast can be adjusted with dark, normal, and light settings.

The video printer could be used to make hard copies of home banking or shopping information. While you are on-line and want a copy of what's on the screen, you just have to press a button.

One feature that might be useful is a positive/negative switch, which allows the white letters against a dark background on a computer display to be reversed to black on white. FC

# WHAT'S IN STORE SOFTWARE GUIDE

## 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<br>Manufacturer<br>Price | Brief description | Hardware/ Equipment required | Backup policy | Ratings O | D | EH | GQ | EU | V |
|---|---|---|---|---|---|---|---|---|---|
| THE CONSULTANT<br>Batteries Included<br>17875 Sky Park N.,<br>Suite P<br>Irvine, CA 92714<br>(714) 979-0921<br>$99 ©1984 | Powerful electronic file system searches, sorts, subsorts, averages, prints out, and calculates data. Store up to 299 records of up to nine pages in length. —ODISIO | C 64 (d.). | 1-year warranty. | ★★★ | ★★★★ | ★★★ | N/A | D | ★★ |
| JANE<br>Arktronics<br>P.O. Box 4190<br>Ann Arbor, MI 48106<br>(313) 769-7253<br>$125 ©1983 | Word process, file lists, and calculate numerical data on small spreadsheet in three-in-one package. Extensive use of "icons," or pictures to help users, makes system best for beginners. —LINCOLN | Reviewed on Apple II series, 48K (d.). Mouse, KoalaPad, or joystick. | No warranty. | ★★ | ★★★★ | ★★ | ★★★ | E | ★★ |
| PFS: FILE<br>Software Publishing Corp.<br>1901 Landings Drive<br>Mountain View, CA 94043<br>(415) 962-8910<br>$79.95 ©1984 | File all kinds of records for home- and small business use. Sort through, retrieve, and print out information in package that is easy to set up and use.† —AKER | Reviewed on C 64 (d.). Also for Apple II series, 48K (d.). | 90-day warranty. | ★★★★ | ★★★★ | ★★ | N/A | E | ★★★★ |
| SYNCALC<br>Synapse Software<br>5221 Central Ave.<br>Richmond, CA 94804<br>(415) 527-7751<br>$69.95 ©1984 | An electronic spreadsheet simulating an accountant's ledger page. Home uses include financial planning and budgeting. Business uses include forecasting, planning, sales projections, etc.—McCARTNEY | Reviewed on Atari Home Computers, 48K (d.). Also for C 64 (d.). | 90-day warranty; $20 thereafter or for backup copy. | ★★★★ | ★★★★ | ★★ | N/A | A | ★★★★ |
| WORD JUGGLER IIe and LEXICHECK<br>Quark Inc.<br>2525 W. Evans,<br>Suite 220<br>Denver, CO 80219<br>(303) 934-2211<br>$189 ©1983 | Flexible, powerful package converts your Apple into a professional-level word-processor, complete with features that allow boldfacing underlining, footnotes, etc. Program includes 50,000-word spelling checker.† —LINCOLN | Apple IIe/IIc, 64K/128K (d.). | 90-day warranty. $10 fee thereafter or if user damaged. | ★★★★ | ★★★★ | ★★ | 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<br>Manufacturer<br>Price | Brief description | Hardware/ Equipment required | Backup policy | Ratings<br>O | D | EH | GQ | EU | V |
|---|---|---|---|---|---|---|---|---|---|
| ALGEBRA ARCADE<br>Wadsworth, Inc.<br>10 Davis Drive<br>Belmont, CA 94002<br>(415) 595-2350<br>$49.95 ©1983 | Write algebraic equations, which the computer then plots to create graphs to pass through as many "algebroids" as possible. Entertaining game includes play options.† —MORRIS | Reviewed on Apple II series 48K (d.). Also for C 64 (d.); Atari Home Computers, 32K (d.); IBM PC, 48K (d.). Version planned for IBM PC*jr*. | 30-day warranty; $10 fee thereafter or if user-damaged. | ★★★★ | ★★★ | ★★★★ | ★★ | A | ★★★ |
| COAST-TO-COAST AMERICA<br>CBS Software<br>One Fawcett Place<br>Greenwich, CT 06836<br>(203) 622-2500<br>$49.95 ©1984 | Roam around the country, then try your luck at a quiz. Travel from one state to the next in most direct route and identify the mystery state in series of activities that builds knowledge of U.S. map. —MORRIS | Reviewed on Apple II series, 48K (d.). Also for C 64 (d.); IBM PC, 64K (d.). | 90-day warranty; $5 fee thereafter. | ★★★ | ★★★ | ★★★ | ★★ | E | ★★ |
| COLORASAURUS<br>The Learning Company<br>545 Middlefield Road, Suite 120<br>Menlo Park, CA 94025<br>(415) 238-5410<br>$29.95 ©1984 | Preschoolers match colored dinos with same hues and paint a big dinosaur with different shades and primary colors. Games have progressive levels of difficulty. —VAN DE CARR | Reviewed on Atari Home Computers, 48K (d.). Also for C 64 (d.) Joystick, color monitor, or TV. | 90-day warranty; $10 fee thereafter or if user-damaged. | ★★★ | ★★★ | ★★★ | ★★★★ | E | ★★★ |
| DINOSAUR DIG<br>CBS Software<br>One Fawcett Place<br>Greenwich, CT 06836<br>(203) 622-2500<br>$49.95 ©1984 | Computerized, animated dino encyclopedia includes four games to test dinosaur knowledge. Best for serious students of prehistoric era.† —MORRIS | Reviewed on Apple II series 48K (d.). Also for C 64 (d.); IBM PC, 64K (d.). | 90-day warranty; $5 fee thereafter; user makes backup. | ★★★★ | ★★★ | ★★★★ | ★★★ | E | ★★★ |
| EXPLORING TABLES AND GRAPHS (LEVELS 1 & 2)<br>Weekly Reader Family Software<br>245 Long Hill Road<br>Middleton, CT 06457<br>(203) 347-7251<br>$34.95 ©1984 | Two packages aim to teach students ages 7–10, and ages 10+ about picture graphs, bar graphs, and pie charts. Topics introduced with overview and glossary, and reinforced with games. —MORRIS | Apple II series, 48K (d.). | 90-day warranty; $10 fee thereafter or if user-damaged. | ★★★ | ★★★ | ★★★ | ★★★ | E | ★★ |
| LETTERS AND FIRST WORDS<br>C & C Software<br>5713 Kentford Circle<br>Wichita, KS 67220<br>(316) 683-6056<br>$40 ©1984 | Three games help children recognize uppercase and lowercase letters and begin to spell easy words. Computer keeps track of child's progress, adjusting challenge accordingly. —BUMGARNER | Apple II series, 48K (d.). | 30-day warranty (includes user-damaged); 90-day warranty for defective disks; $10 fee thereafter. | ★★★ | ★★★★ | ★★★★ | ★★ | E | ★★★ |
| PEANUTS PICTURE PUZZLERS<br>Random House<br>201 E. 50th St.<br>New York, NY 10022<br>(800) 638-6460<br>$39.95 ©1984 | Piece together pictures of a puzzle featuring "Peanuts" characters. Preschool to 9-year-olds enjoy activity, building visual memory skills in the process. —BUMGARNER | Reviewed on Apple II series, 48K (d.). Also for C 64 (d.). | 90-day warranty; $5 fee for 9 months thereafter. | ★★★ | ★★★★ | ★★★★ | ★★★ | E | ★★★ |
| SNOOPY'S SKYWRITER SCRAMBLER<br>Random House<br>201 E. 50th St.<br>New York, NY 10022<br>(800) 638-6460<br>$39.95 ©1984 | How many words can you make out of a seven-letter word provided by the Flying Ace? Fun, challenging word game helps build vocabulary and includes feature to let you modify games.† —BUMGARNER | Reviewed on Apple II series, 48K (d.). Also for C 64 (d.). | 90-day warranty; $5 fee for 9 months thereafter. | ★★★★ | ★★★★ | ★★★★ | ★★★★ | E | ★★★★ |
| SPELLING, GRADES II–VIII<br>American Educational Computer<br>2450 Embarcadero Way<br>Palo Alto, CA 94303<br>(800) 222-2811<br>$39.95 each ©1984 | Seven packages, one each for grades 2–8, help kids master spelling of most commonly used words in their written vocabulary. Parental or adult assistance recommended for younger grades.† —BUMGARNER | Reviewed on Apple II series, 48K (d.). Also for Atari 800/XL series, 48K (d.); C 64 (d.); IBM PC/ PC*jr*, 128K (d.). | 90-day warranty; $15 fee thereafter or if user-damaged. | ★★★ | ★★★ | ★★★★ | ★★★ | D | ★★★ |
| TYPE 'N' WRITE<br>HesWare<br>150 N. Hill Drive<br>Brisbane, CA 94005<br>(415) 468-4111<br>$29.95 ©1983 | No-frills typing program helps novice or rusty typist improve speed and accuracy. Includes easy-to-use junior-level word processor for simple writing tasks. —BUMGARNER | C 64 (d.). Printer recommended. | 180-day warranty; $2 fee thereafter. | ★★★ | ★★★★ | ★★★★ | N/A | A | ★★★★ |

**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

# SOFTWARE GUIDE

**GAMES** REVIEWS BY JAMES DELSON

| Title<br>Manufacturer<br>Price | Brief description | Hardware/ Equipment required | Backup policy | Ratings<br>O | D | PS | GQ | EU | V |
|---|---|---|---|---|---|---|---|---|---|
| BARON<br>Blue Chip Software<br>6740 Eton Ave.<br>Canoga Park, CA 91303<br>(818) 346-0730<br>$39.95–$59.95 ©1984 | Complex simulation of real estate market. Solo player carefully builds empire. With close attention to market trends, creative investment, and some luck, anyone can be a land baron. For ages 14 +. | Reviewed on Apple II series, 48K (d.). Also for Macintosh (d.); Atari 800 (d.); C 64 (d.); IBM PC, 64K (d.). | 90-day warranty (includes user-damaged); $5 fee thereafter. | ★<br>★ | ★<br>★<br>★<br>★ | ★<br>★ | N/A | D | @ |
| DIMENSION X<br>Synapse Software<br>5221 Central Ave.<br>Richmond, CA 94804<br>(415) 527-7751<br>$34.95 ©1984 | Pilot your "cyclo-skimmer" across a scrolling desert landscape. Zap enemies before they get you. Fast-moving game features a variety of play levels for ages 10+. | Atari Home Computers, 48K (d.). | 90-day warranty; $20 fee thereafter or for backup copy. | ★<br>★<br>★ | ★<br>★ | ★<br>★<br>★ | ★<br>★<br>★ | A | ★<br>★<br>★ |
| GALACTIC GLADIATORS<br>Strategic Simulations<br>883 Stierlin Road,<br>Bldg A-200<br>Mountain View, CA 94043<br>(415) 964-1353<br>$19.98 ©1982 | First role-playing construction kit lets players create wide variety of human and alien creatures. Send combatants into preset arenas and rooms, or those you make yourself. A must for adventurers and strategists, 12+.† | Reviewed on Apple II series, 48K (d.). Also for Apple III, 48K (d.); IBM PC, 64K (d.). | 15-day warranty; 30-day exchange warranty; $10 fee thereafter or for backup. | ★<br>★<br>★<br>★ | ★<br>★<br>★<br>★ | ★<br>★<br>★<br>★ | ★<br>★ | A | ★<br>★<br>★<br>★ |
| GULF STRIKE<br>Avalon Hill Game Co.<br>4517 Harford Road<br>Baltimore, MD 21214<br>(301) 254-9200<br>$30 ©1984 | The most complex war game to date pits land, sea, and air units representing U.S., Iran, and western allies versus U.S.S.R. and Iraqi forces in a conventional war. Good for advanced players, 12+.† | Atari Home Computers, 48K (d.). | Unlimited warranty. | ★<br>★<br>★<br>★ | ★<br>★<br>★<br>★ | ★<br>★<br>★<br>★ | ★<br>★ | D | ★<br>★<br>★<br>★ |
| KING'S QUEST<br>Sierra, Inc.<br>P.O. Box 485<br>Coarsegold, CA 93614<br>(209) 683-6858<br>$49.95 ©1984 | Take on foes and enlist the aid of friends while recovering the King's prestige in semianimated text/graphic fantasy adventure, good for ages 12+. Use joystick to move character across scrolling landscape and smarts to solve puzzles.† | Reviewed on IBM PC with color graphics adapter /PC*jr*, 128K (d.) Also for Apple IIe/IIc, 128K (d.). Joystick. | 90-day warranty (includes user-damaged); $5 fee thereafter. | ★<br>★<br>★<br>★ | ★<br>★<br>★ | ★<br>★<br>★ | ★<br>★<br>★ | A | ★<br>★<br>★ |
| PQ: THE PARTY QUIZ GAME<br>Suncom, Inc.<br>260 Holbrook Drive<br>Wheeling, IL 60090<br>(800) 323-8341<br>$69.95 ©1984 | Answer multiple-choice questions in best computer trivia game played to date. For one to four players, ages 12+, using special hand controllers.† | Reviewed on C 64, (d.). Also for Apple II series, 48K (d.); Atari Home Computers, 48K (d.); IBM PC/PC*jr*, 64K (d.). | No warranty. | ★<br>★<br>★<br>★ | ★<br>★<br>★ | ★<br>★<br>★ | N/A | E | ★<br>★<br>★ |
| PENSATE<br>Penguin Software<br>P.O. Box 311<br>Geneva, IL 60134<br>(312) 232-1984<br>$39.95 (Macintosh)<br>$29.95 (all other) ©1983 | Move pieces across a chessboard, avoiding your opponent's (human or computerized) units. Your units increase in number with each round you survive. Good for ages 8+. May get dull for real chess fans. | Reviewed on Macintosh. Also for Apple II series, 48K (d.); Atari Home Computers, 32K (d.); IBM PC/PC*jr*, 64K (d.). | 60-day warranty; $5 fee thereafter or if user-damaged. | ★<br>★<br>★ | ★<br>★<br>★ | ★<br>★<br>★ | ★<br>★<br>★ | E | ★<br>★ |
| REALM OF IMPOSSIBILITY<br>Electronic Arts<br>2755 Campus Drive<br>San Mateo, CA 94403<br>(415) 571-7171<br>$40 ©1984 | Make your way through a series of mazes, avoiding obstacles and enemies, and gathering magic implements to fight off the monster hordes. Strategy/arcade game for one or two players; best for kids 10+. | Atari Home Computers, 48K (d.). Joystick. | 90-day warranty; $7.50 fee thereafter or if user-damaged. | ★<br>★ | ★ | ★<br>★<br>★ | ★<br>★ | E | ★<br>★ |
| TRIVIA 101/THE INTRODUCTORY COURSE<br>IBM<br>P.O. Box 1328-S<br>Boca Raton, FL 33432<br>(305) 272-2662<br>$30 ©1984 | Easy to learn, with a wide variety of question topics, this is an intelligent, exciting, and enjoyable trivia game for one to 14 players or teams, ages 12+.† | IBM PC/PC*jr*, 64K (d.). | $10-day warranty; user makes backup copy. | ★<br>★<br>★ | ★<br>★ | ★<br>★<br>★ | ★<br>★ | E | ★<br>★<br>★ |

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

# 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 110 for information such as backup policies and addresses of software manufacturers.

## HOME BUSINESS/ HOME MANAGEMENT

### pfs: file

HARDWARE REQUIREMENTS: Reviewed on Commodore 64 (disk). Also for Apple II series.
MANUFACTURER: Software Publishing
PRICE: $79.95

Many of us have had visions of the computer's organizational possibilities. The promise of speedy information storage, maintenance, and retrieval is tough to resist. Reality intrudes quickly, however, when we're faced with a thick manual, an empty screen, and all the headaches involved in setting up electronic filing systems. The *pfs* series of programs, particularly the filing program, *file*, for the Apple, has a well-deserved reputation for ease of use. *File*'s new Commodore 64 version lives up to that reputation beautifully.

Well-written documentation and a smooth-operating, well-designed program make for a breath of fresh air for anyone who's struggled to set up a data base. To create a file, you simply type the categories (also called fields) as you'd like them to appear on the screen. Each field name—LAST NAME, ADDRESS, ACCOUNTS DUE, etc.—ends in a colon, and the space from that colon to the beginning of the next category constitutes your field. This excellent arrangement allows for larger fields than many file managers can furnish. Each individual record can be up to four screens long.

*File*'s SEARCH feature is simple but thorough. In the appropriate field, type the information pertaining to the record or records you want retrieved. You can use criteria such as "less than" or "greater than," or ask the program to locate all the records that list a last name beginning with "W," for example. *File* will SEARCH through your data for records that satisfy more than one criterion at a time—all the records with last names beginning with "W" and owing more than $50 in accounts due, for instance. The sorting option works on only one field, however. (Alphabetically, numerically, by last name, or by amount owed, but not by any two simultaneously.)

Printing out your records is a similarly straightforward process. You can print in a variety of formats—lists, labels, etc.—and make multiples, if you desire (a feature not found in many filing programs).

Unfortunately, *file* can't treat fields as sums or calculations of other fields. You can't define one category as the total or average of a series of other categories. This makes it less appropriate as a file for data involving lots of numerical calculations.

Unless that capability's indispensible to you, consider *file* as the program to get you organized, at home or in the office, with a minimum of effort. (Scholastic Inc. and Software Publishing will be producing a special school version for Apple, IBM and C 64, complete with instructions and suggestions for special applications and curriculum-specific data.)

—SHARON AKER.

### Word Juggler IIe and Lexicheck

HARDWARE REQUIREMENTS: Apple IIe, 64K/IIc, 128K.
MANUFACTURER: Quark, Inc.
PRICE: $189

This is a program for anyone who has ever wished to transform an Apple into a professional word processor dedicated to serious text-processing jobs, but easy enough to use and learn for note-writing and other simple tasks.

With 19 special replacement keys inscribed with editing commands (such as DELETE WORD, INSERT, etc.) and a template that labels print-formatting commands for boldfacing, underlining, and more, you'll be able to master its capabilities in no time. Before you print out, you can preview your document on-screen, scrolling left or right should your work extend beyond 80 columns in width (as it might in some charts and presentations). Process form letters using data from the two popular systems, *Quick File II* or *pfs: file*. These features make for the program's easy yet professional feel.

You'll also be able to take care of tasks such as printing a name and address on an envelope. With many word-processing programs, this can be much more frustrating than you'd imagine. With *Word Juggler*, it's just a matter of a keystroke or two.

On top of all this, the program comes with its own 50,000-word spelling-checker disk, *Lexicheck*. Use its dictionary listing or add your own special terms or jargon to the program.

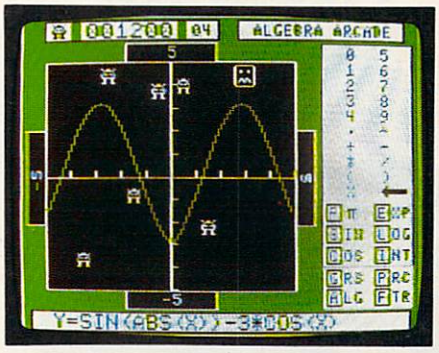
Power and flexibility—if that's what you're looking for in a word-processor—take a look at *Word Juggler IIe*.

—JOHN LINCOLN

## EDUCATION/ FUN LEARNING

### Algebra Arcade

HARDWARE REQUIREMENTS: Reviewed on Apple II series. Also for Atari Home Computers, Commodore 64, IBM PC.
MANUFACTURER: Wadsworth Electronic Publishing Co.
PRICE: $49.95




Algebraic equations and graphs—not a combination that many people find entertaining. *Algebra Arcade* puts the two together in a fun-learning game that is both educational and entertaining. Given a screen littered with 10 "algebroids," your task is to create graphs that will pass through as many of the creatures as possible. But watch out: Make a graph that touches a ghost lurking among the algebroids and you're in trouble.

You don't simply draw the graphs; you have to write algebraic equations, which the computer then plots. For example, the equation Y=X results in a straight line that passes diagonally from the screen's lower left through the center and on to the upper right. Kids soon begin to experiment with more complex equations for graphs that cover more territory—equations such as Y=SinX or Y=AX+B+Cos(CX).

Part of *Algebra Arcade*'s attraction is its wide range of play options. For

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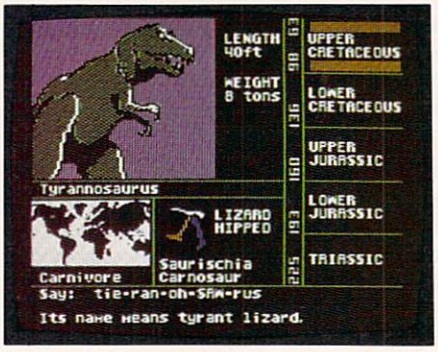
# SOFTWARE REVIEWS

example, if you want to try plotting some equations to see their graphs before using one in the game, you can transfer easily to a practice screen. You can choose to limit the graphs to a particular family of equations (parabolas, for instance), or limit the time you have to come up with an equation at each turn. If you must stop midgame, you can save what you've accomplished so far on disk and resume play later.

The outstanding documentation starts with a quick overview of the program, continues into more detailed instructions, and concludes with suggestions and strategy tips. The instructions don't introduce or review the basics of algebra, but they do include recommendations for a number of textbooks. All in all, *Algebra Arcade* is a finely crafted program. —TONY MORRIS

### Dinosaur Dig

HARDWARE REQUIREMENTS: Reviewed on Apple II series. Also for Commodore 64, IBM PC/PC*jr*.
MANUFACTURER: CBS Software
PRICE: $49.95




Which one of these dinosaurs weighed the most: Triceratops, brachiosaurus, or psittacosaurus? Did allosaurus and tyrannosaurus live in the same geological period?

If these kinds of questions intrigue you, then you'll go for *Dinosaur Dig*. The first disk and written manual provide general background information on almost three dozen dinosaurs. The second disk is a genuine gold mine of information in the form of a dinosaur encyclopedia and four dinosaur games. *Dino Discovery* contains detailed facts about more than 30 dinosaurs. In "Dino Flash" you identify a dinosaur displayed on the screen. "Who's Biggest" lists three dinosaurs and you choose the one that weighs the most. "Dino Encounters" names two dinosaurs and you decide whether they lived in the same geological period. Finally, "Dino Dig" lists a fact about an unnamed dinosaur; if you can't guess which dinosaur it is, a second fact is added, and so on, until, you've received nine clues.

The key to *Dinosaur Dig*'s success is its outstanding presentation. The full-color, hi-res illustrations, many of which are animated, are terrific. But it was the color-coded, flexible plastic keyboard overlay that stole the show at our house. Switch from one game to another; go forward or backward with a single keystroke. Each key represents one dinosaur, so you don't have to type any finger-twisting names such as struthiomimus or parasaurolophus! The written documentation is also good and includes excellent suggested readings and follow-up activities.

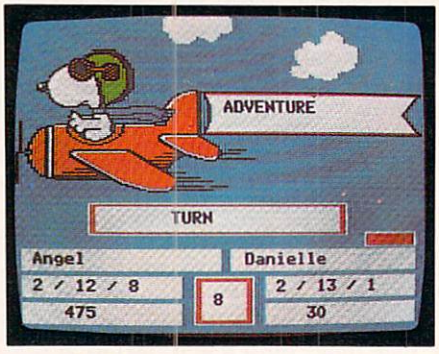
The drawbacks are few. Though it's targeted for ages 8 and up, I doubt many 8-year-olds could master all the detailed information provided. And regardless of age, *Dinosaur Dig* is most appropriate for someone seriously interested in learning more about the subject matter. Our kids, not extraordinarily fascinated with dinosaurs, found it "overwhelming and a little mind-boggling." But for the serious dino fan, *Dinosaur Dig* will serve as a great resource.

—TONY MORRIS

### Snoopy's Skywriter Scrambler

HARDWARE REQUIREMENTS: Apple II series.
MANUFACTURER: Random House Software
PRICE: $39.95

Snoopy and his Sopwith Camel make appealing hosts for this challenging word game. On several occasions the game seduced our whole family. The object is to make as many different words out of a single seven-letter word as you can within a specified time limit. You predict how many words you'll spell; your fi-



nal score reflects your estimate as well as your actual performance.

Play the game alone, or against an opponent. Our children found the time limit frustrating, and would have liked an option to turn it off. By compiling a list of the words we could make before signaling the start of play, however, we got around that problem to some extent. Our kids liked the Top-10 score roster, and typing their names onto the screen to show ownership of the disk. (This could be a problem if you have several children—there's only one owner per disk side.)

I enjoyed being able to see the word bank of 40 challenge words and the list of words that could be created from each one. There are lots of new words to be learned this way. (Have you ever heard of a ratel or a seta?) Space on the disk allows you to enter your own words, as well, further enhancing the value of the package. For families with school-age children, this game is definitely worth considering.

—MARLENE ANNE BUMGARNER

**Spelling (Grades II–VIII)**

HARDWARE REQUIREMENTS: Reviewed on Apple II series. Also for Atari 800/XL series, Commodore 64, IBM PC/PC*jr*.

MANUFACTURER: American Educational Computer

PRICE: $39.95 each (seven programs)

When my kids sit down to write stories or papers for school, their spelling is atrocious. This no-nonsense series, actually a computerized workbook, is intended to be used at home to help children master the most commonly misspelled words in their written vocabulary. Available for grades two through eight, it can be used in conjunction with an introductory spelling program, or independently as a curriculum in itself.

Each program features approximately 70 spelling generalizations or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# SOFTWARE REVIEWS

rules. Beginning with the easiest, the computer displays the rule and offers the option to view a list of approximately 10 words that illustrate it. A word flashes on the screen momentarily. A sentence follows, from which one word is omitted. The word appears briefly a second time and then the child must type it. Misspelled words are added to your child's LIST OF WORDS TO STUDY. If all words in a list are spelled correctly, your child can move on to the next list, which is a little harder than the previous one. Four or more words incorrectly spelled, and kids can access the WORD ACTIVITIES—study steps, games, and flash cards which reinforce proper spelling.

These packages don't provide much in the way of visual excitement or stimulation. You may find your kids purposely misspelling words to get to the activities, which have a bit more zest to them.

My fourth-grade son enjoyed the activities. I typed in words from his weekly school spelling list. Some real learning took place as he struggled to figure out which word in a list of five was misspelled. In the tests at the end of the activities, John's spelling was perfect. However, when his teacher read the words out loud to him the following Friday, he still couldn't spell some of them. John's excellent visual memory enabled him to master the words as the spelling program had presented them to him. He had no trouble reproducing the word after it flashed on the screen. But when it came to translating onto paper words he heard spoken out loud, he had trouble.

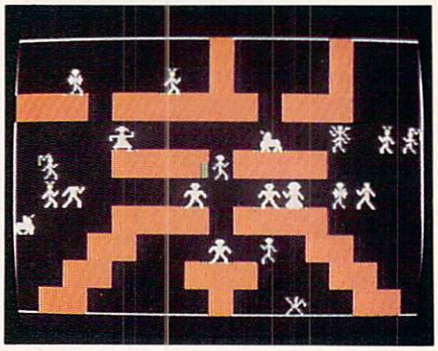
This flashing-word technique may be the program's one major limitation. A second-grader still decoding words one letter at a time could have trouble digesting a word that flashes on the screen for only a split-second. This doesn't negate the value of the program; it just demands that parents or tutors work very closely with their kids. For instance, you might try reading the words out loud to your kids as they appear on the screen.

All in all these packages cover 4,233 words that were found most frequently misspelled in students' writing. The second-grade package contains 68 word lists, the longest of which contains six words. The eighth-grade package contains 72 lists of 15 words per list. Unfortunately, the documentation includes neither the word lists, nor the spelling rules. These lists are provided with the school versions and may be requested from the publisher. Taking a look at them before buying the program will help you purchase the package most appropriate for your child. —MARLENE ANNE BUMGARNER

## GAMES

### Galactic Gladiators

HARDWARE REQUIREMENTS: Reviewed on Apple II series. Also for IBM PC.
MANUFACTURER: Strategic Simulations, Inc.
PRICE: $19.95



Here's the first role-playing construction kit. It is strategy/tactics game in which you create your own characters, arm them from a wide selection of weapons, then send them into fields, rooms, or arenas of your own or the computer's devising to fight against a team of characters created by the computer or other players.

You issue orders to your troops (up to 10 on each team), and control them in battle against another player's or the computer's creatures. Each piece may move, fire, dodge, load, launch a grenade or missile, or fire a heat-ray gun. Damage is measured by deducting hit points from the opponent's score, and heavily wounded or "dead" creatures are automatically removed from play at the end of each turn. Play ends when one side surrenders, completes a prescribed task, or eliminates the opposition. Surviving members of the winning team gain experience points and weapons proficiency for use in future contests.

Twenty-six races of characters and their weapons are described in outer-space terms. Still, it would be just as easy to imagine them in medieval, Napoleonic, or World War II periods.

A very flexible program offering a wide variety of game situations, *Galactic Gladiators* is way ahead of

its time. In addition to creating your own characters, you can set up different types of indoor and outdoor terrain in three kinds of battle: short, medium, and long-range. Everything you create can be saved on a separate disk, so friends can trade characters and battleboards across town or across the world.

Unfortunately, the game is a remaindered item. Don't let that scare you, however. While supplies last, you can purchase it for half price. This is an absolute must for adventure and strategy/tactics gamers. There's even a "sequel," which I'll be covering in a future issue.

**Gulf Strike**

HARDWARE REQUIREMENTS: Atari Home Computers.
MANUFACTURER: Avalon Hill
PRICE: $49.95

This "monster" war game, so-called because of its size and scope, and the number of pieces involved, is based on a hypothetical Soviet/Iraqi invasion of Iran, and the latter's defense by U.S., English, French, Saudi, United Arab Emirate, Kuwaiti, and Iranian units. Played as a conventional war, with no nuclear exchanges allowed, it permits many possibilities for the Allies' retaliatory action. Many paths are open to the Soviet/Iraqi invasion force, as well. The result is a major leap forward for the genre, and the best computer war game to date. It's also the first computerized war simulation to include "combined arms operations" effectively.

Combined arms capabilities allow players to coordinate different types of units in effective fighting groups. For example, infantry and tanks can take on an enemy simultaneously, with support from airplanes, field artillery, and naval guns from nearby battleships. At the same time, rangers or commandos dropped by parachute can attack the enemy from the rear.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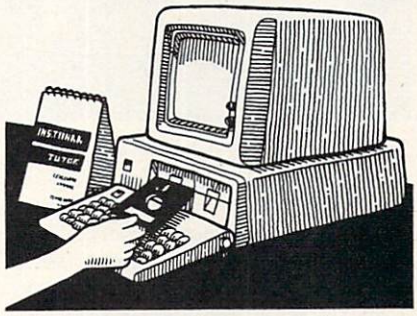


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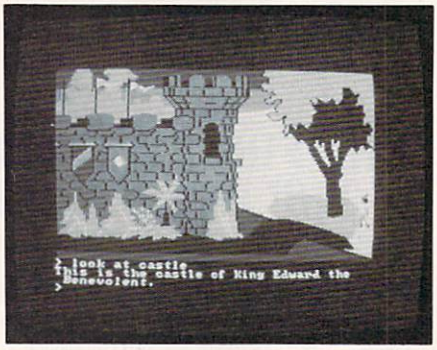
# SOFTWARE REVIEWS

In addition to combined arms, the game has many features not yet available in other programs I've seen. Ships, planes, and submarines can fight each other, and a wide variety of land units have different strengths and specialties.

Based on the excellent board war game of the same name, this program lacks only the means for keeping track of all units at a glance. Serious players should purchase a board and a set of counters from the board game, as they are exact duplicates of those in the computer game. This is not for beginners: As in all war games, it requires players to suspend their desire for quick action and settle down for many hours of concentrated tactical and strategic planning. Intermediate players, ages 12 and up, will struggle through, while advanced gamers will have the best time they've experienced at the keyboard.

### King's Quest

HARDWARE REQUIREMENTS: Reviewed on IBM PC/PC*jr*. Also for Apple IIe/IIc. Joystick.
MANUFACTURER: Sierra, Inc.
PRICE: $49.95




First there was the text adventure, such as the classic *Colossal Cave*, in which players interacted with the computer by reading descriptions and solving puzzles without the aid of visuals. Then a housewife named Roberta Williams invented the text/graphic adventure, adding pictures to the stories for a little more visual stimulation. But the pictures didn't move much and players frequently groaned about the lack of action.

Never one to rest on her laurels, Williams has planned and executed something new, a semianimated text/graphic adventure in which the lead character walks across the scrolling screen, jumping, climbing, crouching, and performing other tasks while traveling through uncharted country. Monsters and civilians abound, as do treasures and weapons, objects, and clues to solving the *King's Quest* on which you've been sent.

The system isn't perfected, yet, but where else can a character on screen move behind an object to hide? The pace is not always as fast as that of other contemporary action games. But this is the first of a new genre, and Roberta Williams is to be applauded for making such a giant leap forward while still retaining the charming, challenging techniques that characterize her other adventures.

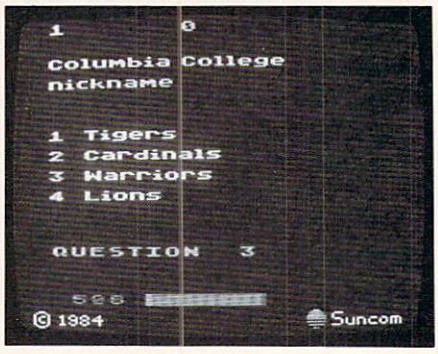
Not for every taste, text/graphic adventures require patience, puzzle-solving skills, and plenty of time (this game may take weeks of play to finish). But the feeling of accomplishment you get when you actually finish one of Williams's games is outstanding. Suitable for ages 12 and up, *King's Quest* is best played in a group situation where problems can be solved through discussion and deductive reasoning.

### PQ: The Party Quiz Game

HARDWARE REQUIREMENTS: Reviewed on Commodore 64. Also for Apple II series, Atari Home Computers, IBM PC/PC*jr*.
MANUFACTURER: Suncom
PRICE: $74.95

### Trivia 101/The Introductory Game

HARDWARE REQUIREMENTS: IBM PC/PC*jr*.
MANUFACTURER: IBM
PRICE: $30




Like mah-jongg in the 20s, or Twister in the 60s, Trivial Pursuit is this decade's game phenomenon. Two to six players or teams move tokens around a board, trying to answer questions on six different subjects. The player who correctly answers questions in each of the six categories, and a seventh bonus question, wins.

It wasn't long before computer gamemaking companies caught on to the trivia craze. This month my playtesters and I spent a weekend playing seven computerized Trivial Pursuit spinoffs. Most of them aren't really games at all, but simply timed countdown question-and-answer sessions. The worst of the lot only asked questions concerning "chic" subjects, and featured answers that were downright wrong. (Example: WHO WAS THE FIRST PRESIDENT TO GRADUATE FROM WEST POINT? Answer: ROBERT E. LEE.)

*PQ: The Party Quiz Game* is far and away the best of the computerized trivia games, but also the most expensive. Each of four players uses a special game controller (included in the package) to signal the answer to multiple-choice questions. Whoever answers correctly first, scores points. (You can also play a version in which all players who answer correctly score proportionally.) Bonus rounds help players even up the score, and a handicapping system makes for a little more balance between players of different skill levels.

An original, challenging game—the closest thing to being on College Bowl—this is the first that suitably converts trivia madness onto the computer. Good for ages 12 and up. The manufacturer plans to make additional question disks available in the future.

Of all the straightforward, timed question-and-answer programs, *Trivia 101*'s the best. Easy to learn, with a variety of topics from which to choose, this is an intelligent, exciting, intriguing, and enjoyable challenge. Designed for one to 14 players or teams, ages 12 and up, its only major drawback is the play system, which requires each player or team to press the space bar to stop the countdown timer. This can make it sort of crowded around the keyboard. An additional question disk is available.

There are a few things to keep in mind when sorting through the trivia programs on the market. 1) Can you purchase additional question disks? The questions in all the games we tested began to repeat themselves after a couple of hours of play. 2) Do you want a straightforward question-and-answer package or something with a play system all its own? 3) Are you interested in solo, individual, or team play?

—REVIEWS BY JAMES DELSON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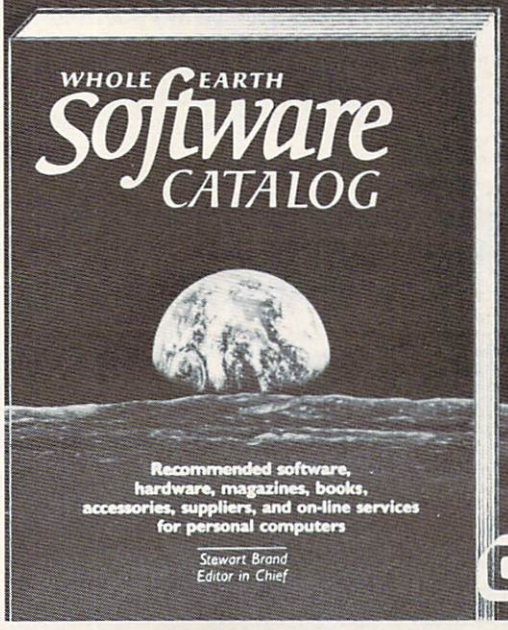


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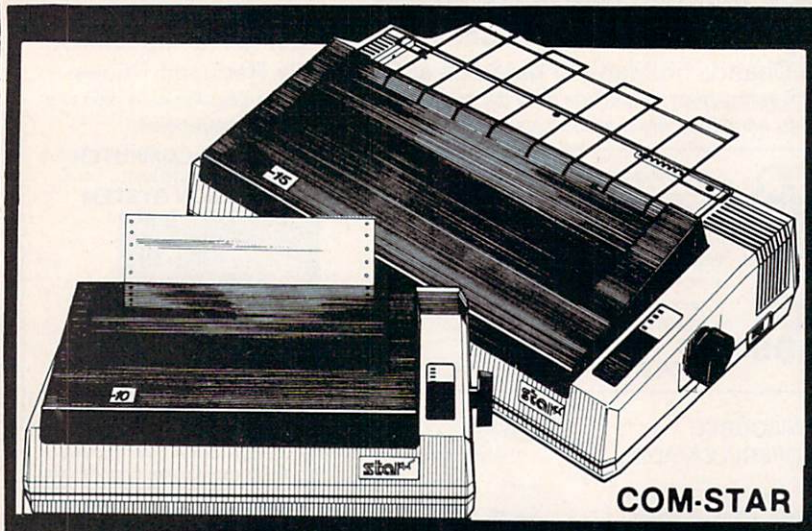


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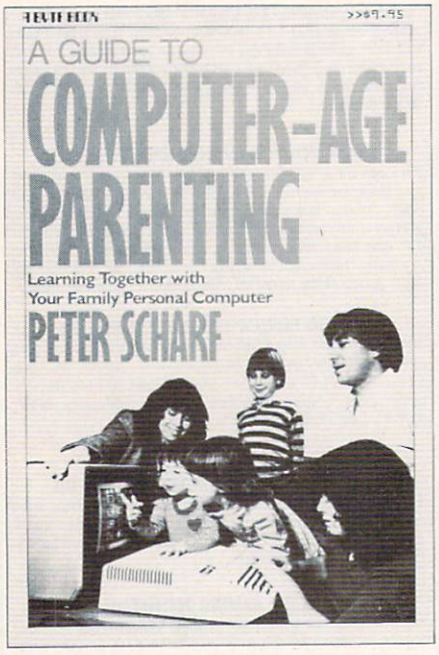
# WHAT'S IN STORE
# BOOK REVIEWS

### A Guide to Computer-Age Parenting: Learning Together with Your Family Personal Computer

Peter Scharf
McGraw-Hill/Byte Books, 1984
234 pages, softcover, $9.95

Peter Scharf's *Computer-Age Parenting* offers just the right blend of comfort and caution to help you see that you do stand a chance of survival as a parent in the computer revolution. Besides being a father of four, a university professor, and an open-minded and observant computerist, he's also the author of such books as *Growing Up Moral* and *Readings in Moral Education.* Scharf's analysis of the moral/social implications of the computer age is simple and elegant.




This unpretentious book addresses parents who are trying to sort through the glut of information surrounding computers and family life. Computer hardware is described in enough detail for you to understand the importance of knowing more. Software suggestions appear to be carefully researched and documented. Each chapter contains a brief but excellent resource guide and thoughtful family-activity ideas.

What distinguishes Scharf's book from others of its kind is the direction it gives parents. The author actually suggests ways to cope with potentially demoralizing situations that are by-products of a high-tech society for example, the phenomenon of shoot-'em-up arcade games. At first I thought some of his ideas were a bit hokey. But after trying his "Family Activities" suggestions, I discovered kids do have internal conflicts about the message behind their video entertainment. My own 4-year-old was quite disturbed by the boulders that bopped her cute little video friend on the head.

Parenting for an uncertain future is hard work. We've no idea what sorts of skills or workplaces will exist for our children in the future. While Scharf addresses parents' deepest concerns, he also offers an energetic program of parent/child/computer exchange as a healthy way of preparing for what's out there.

### The First Family Computer Book

Ed and Stevie Baldwin and
K. Bruce Fingerle
Chilton Book Company, 1984
226 pages, softcover, $12.95

First, let's clear up any misconceptions the title may cause. *The First Family Computer Book* is by no means the first computer book geared for the family who wants to know what a computer can do and how to go about getting involved. Second, the book is billed as a "Family Workshop Book" but there are no exercises or tutorials for family participation.

The book does provide a useful overview of microcomputer architecture and operations, and offers some tips for the prospective buyer. It does so with a great deal of good-natured humor and adorable cartoons.

The authors are talented and well-versed computer experts, but they haven't really figured out who their audience is. Curiously, they omit Logo from their discussion of programming languages (it's one of the computer languages most commonly taught in schools). Plus, I've yet to find a family who gives one hooey about the meaning of arithmetic and logic units and Boolean logic.

*The First Family Computer Book* covers a great deal, but much of what the family needs to know is obscured by the trimmings. A book like this should describe what computers can do for families. How they do it is only secondary.

### Silicon Valley Fever: Growth of High-Technology Culture

Everett M. Rogers and
Judith K. Larsen
McGraw-Hill/Basic Books, Inc., 1984
302 pages, hardcover, $19.95

Suddenly, the nerd is in! Engineers have become cult heroes. And where do those E.E. (electrical engineering) geniuses breed like fruit flies? In Silicon Valley, California, of course! With a history as dynamic as the industry itself, the Valley has been transformed from a bunch of fruit trees to the high technology capital of the world.

*Silicon Valley Fever* documents the people and places that are Silicon Valley. The first part of the book is a sort of "Who's Who" of today's computer industry. People like Nolan Bushnell who started Atari and Chuck E. Cheese Pizza Time Theatre; Arthur Rock, famed venture capitalist; and a host of bright, quirky, and "entrepreneurial" others are depicted as having the "right stuff" of the computing world!

The second part of the book looks at the Silicon Valley microcosm. It makes keen observations as well as gross generalizations. In these chapters, the marriages, the kids, the alcoholics, the jog-aholics, the ranks of toiling factory employees, and the "me generation" of bright but self-serving engineers are all described in detail.

The authors maintain that the Valley is unique, basically because of the three S's: sunshine, semiconductors, and Stanford University. I'm not so sure that the personalities in the Valley are any different from those enterprising rascals in Dearborn or Detroit who were in the forefront before the Japanese started making 'em better and cheaper. Whether the Valley guys can stay on top longer also remains to be seen.

Its anecdotal style is informative and entertaining, but I'm skeptical about books that do a lot of generalizing. Tracy Kidder's *The Soul of a New Machine* is an in-depth story of one computer design and the people behind it that offers at least as many insights. Still, if you're a devotee of "hacker history," this one is a fine collection of juicy tidbits.

—REVIEWS BY ROBIN RASKIN

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Wayne Motel—Dyer, Indiana

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# THE PRIMER

The Primer is a regular department of FAMILY COMPUTING, though the information presented changes from time to time. It is a handy reference guide that briefly explains the basic words and concepts you'll encounter when using a computer.

The only way to learn to use a computer is to use one. But before you start, it's well worth asking, "What can I do with a computer?" And, "How does a computer work?"

The illustration of a computer system on the following page shows various pieces of equipment, referred to as hardware. To work effectively, this hardware needs step-by-step instructions, or programs. These programs are often called software. What you can do with a computer depends on the software you use.

The many uses of home computers can be broken down into several broad categories.

## WHAT A COMPUTER DOES

**Game Playing.** Several types of games are available—arcade-style action, fantasy, adventure. Some take minutes to master; others months. Many games can be played by more than one person at a time.

**Education.** Whether you are learning math, French, history, or typing, these programs allow you to learn at your own pace. Programs range from question-and-answer drills to loose creative exercises. Some test logical skills by putting you in a real-life problem-solving situation; others teach you to program by letting you draw pictures.

**Paperwork.** When it comes to handling reams of information, the computer can't be beat. It functions as an endless supply of paper, file cabinets, and a calculator rolled into one. With an electronic spreadsheet, you can change one figure in a budget and the rest will automatically change. The ability to ask "What if?" and see immediate results has obvious time-saving benefits.

The computer is equally adept at setting up a filing system, and allows you to cross-reference data in any number of ways for easy recall.

With a word-processing program, the computer can speed up and simplify the writing process by allowing you to change or rearrange words and paragraphs without retyping.

**Communications.** You can connect your computer, via the telephone, to much larger computers at "information service" companies. When connected (for an hourly usage fee), you can "call up" stock quotations, airline schedules, newspaper or magazine bibliographies, and get the latest news relating to your particular computer. You can also leave or receive messages for other subscribers, a practice called "electronic mail."

In addition, you can connect your computer to individual computers around the country. You can chat with friends, exchange programs, or call up local "bulletin boards." They are considerably smaller than information services, usually run out of someone's house, and specialize in one topic only.

**Programming.** It's possible to enjoy practical benefits from your computer without ever buying a commercial program—you can write your own. And, in some cases, you can adapt commercial programs to better suit your practical needs.

## HOW A COMPUTER WORKS

The computer is an information-handling machine. It stores, compares, changes, and manipulates information of almost any kind at tremendously high speeds.

The computer's operating method can be boiled down to four simple steps. (1) INPUT: Instructions and information, in the form of a program and data, are entered into the computer. (2) PROCESSING: The computer executes the steps of the program. (3) OUTPUT: The results of the computer's work are made visible and available to the user. (4) STORAGE: Results can be stored and saved.

Most home computers do not come ready-made in one piece, but must be assembled from various components. Following are the components needed for each of the four operating steps, and how they work.

**Input.** There are four basic ways of getting a program and/or other information into a home computer.

KEYBOARD. The keyboard looks and behaves much like that of a typewriter. Some keyboards have special keys for certain computer functions, and some have a numeric keypad, much like a calculator. But on any unit, every keystroke you type goes directly into the computer's memory. That information will stay there until you delete it or turn the computer off. (You can also store, or save, that information for future use.)

CASSETTE TAPE RECORDER. You can copy a program stored on a cassette tape directly into the computer's memory. Regular tape recorders and cassettes can be used with most home computers, although you will need a special cable to connect the two. Once connected, you merely type a simple command to transfer the program from tape to computer.

DISK DRIVE. The transfer method is much the same with a disk drive, except that the program is stored on a floppy disk, which looks much like a 45 rpm record.

The disk drive enters programs much more quickly and with less chance of error than the cassette recorder. But the cassette recorder is significantly cheaper.

CARTRIDGE. A cartridge, which plugs into a slot built into some computers, also stores programs. Putting a cartridge into a computer actually adds memory to the computer—and that memory contains a program.

**Processing.** All input goes to the Central Processing Unit (CPU). The CPU, a tiny maze of electronic circuits, is most often located underneath the keyboard. However, in some computers it's contained in a separate system unit.

The CPU controls the flow of information into, out of, and inside the computer. The computer's memory, where information is stored, is located in the CPU. The CPU also interprets a program, performs each of its steps, and then sends the results to the user.

**Output.** The visible result of a CPU's work is called output. Output is made available on the screen of a TV or monitor, or from a printer.

See the accompanying illustration to find out how these components

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are connected to the computer.

**Storage.** When the computer is turned on, it will store and remember all information it receives. But when it is turned off, this information will vanish—unless you instruct the computer to save it.

You can store information on a blank tape or disk. Either way, you can record the results of the computer's work, just as you would record a speech. Then, any time you want to run that program again, you can transfer it into the computer's memory, and see it on the display screen.

You cannot store new information on a cartridge.

**Peripherals.** Peripherals are optional pieces of equipment that can be added to your computer, but are not crucial to the computer's operation. A printer, in fact, is considered a peripheral. One of the most popular peripherals is a modem.

MODEM. If you want to link your computer to an information service or to another computer by phone, you will need a modem. A modem either holds a telephone receiver or a modular telephone jack, and can send and receive data through the phone lines.

Remember that the computer is a tool. As with all tools and machines, there is no need to know everything about how a computer works. All you need to know is how to use it for your own purposes.

## THE COMPONENTS & CONNECTIONS

**A. Disk Drive.** Disk drives sold for a particular computer brand generally come with the proper connecting cable.

**B. Monitor/TV.** Often a round DIN connector hooks into the computer; a cable with audio/video jacks hooks into the monitor. Sometimes a simple video cable, with one jack at each end, is used (no sound output). To connect a TV to a computer, you'll need an RF modulator, which is standard equipment with most computers.

**C. Cassette.** The interface is often a cable with two jacks (or three) at each end: one for saving a program to tape, and one for loading a program into the computer. Sometimes the computer end of the cable is a round DIN connector. And, for Ataris and Commodores, the cassette end of the cable is hard-wired into the cassette player.

**D. Printer.** The most common printer connection is the Centronics-type parallel interface, though RS-232C interfaces are usually an option. Apple's Macintosh uses a high-speed serial port. Atari and Commodore computers require special cables. Apple II and IBM PC require internal circuit boards. IBM PC*jr* requires a parallel printer attachment.

**E. Computer.** A computer's ports, where cables are connected, can be on the back, side, front, or even the bottom of the unit. Note: sometimes the keyboard unit is separate from the Central Processing Unit (CPU), or system unit.

**F. Modem.** Most external modems are connected with an RS-232C serial cable. Slight wiring modifications are sometimes required. Internal modems, available for Apple and IBM, are circuit boards that go into slots inside the computer; no connecting device is necessary.

**G. DB Connector.** Used to connect printers, modems, and even joysticks, the DB connector has between nine and 25 pins. The classic RS-232C serial interface, shown here, has 25 pins, with each pin leading to a wire inside the cable.

**H. Round DIN Connector.** Round DIN connectors plug into the computer's serial port (for modems and printers), or they are used as one end of a monitor cable. One-, five-, six-, and eight-pin configurations are used.

**I. Centronics Parallel Interface.** The most common parallel interface is the Centronics connector, which is used to connect printers. The 36 "pins" do not protrude, but lie flat against a plastic center ridge.

ILLUSTRATION BY ROBERT CONRAD

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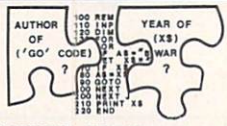


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# PARTY QUIZ

# Best kept secret of the season

## Computer gamers play PQ for hours

*by Tom Benford*

What's a PQ, you ask? See—I told you it was the best-kept secret! PQ stands for *Party Quiz,* a computer-trivia game from Suncom Inc.

PQ is a *social* trivia game that allows up to four players to participate simultaneously. Each player uses a controller to respond directly to the trivia questions on the screen.

Recently, a couple of friends, Chuck and Joan, stopped over to visit. I had just received my review copy of *PQ* that afternoon, and I decided to "boot-up" the program and see just how social this game really was. I couldn't have picked a better couple to participate in an "acid test"—Chuck hates board-type trivia games, and Joan absolutely loathes computers, although she likes trivia questions.

Setting up the game was easy. Each set comes with 2700 "general" questions. Suncom will be offering additional question disks covering specific categories including Sports, Entertainment, a "Bible Edition", and General Edition 2 which expands your inventory of general questions. I received the Commodore/Atari version, although *Party Quiz* is also available for the Apple and will be available soon for the IBM-PC.

After offering my guests beverages and excusing myself to fetch their drinks, I slipped into my study and loaded the game. Returning, I casually asked, "Which country was the first to issue postage stamps and what was the year?" Joan quickly answered, "Great Britain in 1840; now ask me a hard one!" My plan was working; we were on the subject of trivia. I mentioned that I had just received PQ that day, and I was wondering if they'd like to try answering some of the questions asked by the computer. We gravitated into my study.

I handed controllers to Joan and Chuck. My wife, Liz, and I manned the third and fourth. I explained that the computer would display a question, along with four possible answers which were numbered 1-4. The rules were simple: select the right answer and press the corresponding button on the controller. Joan mumbled something about being a klutz, but she took the controller anyway, eyeing it suspiciously.

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After Joan answered the first two questions correctly, I suspected that I was being set-up here; for a "klutz" who hated computers, she was doing very well. She missed on the third question, but Chuck answered correctly. Liz answered the next few questions correctly, and then finally, I got one right. It's not every day I get to look like a dummy in front of my friends!

We spent hours playing Party Quiz and all had a great time playing! The questions covered a myriad of topics, from the color of the Lone Ranger's pants to whether the first footprint on the moon was from a right or left foot.

It had been a special evening, indeed! It's not often that I get the chance to use "non-computing" people for playtesting a new product, and even rarer when I can have my friends actively participate in a computer-based game. We're even considering throwing a PQ Party one of these weekends!

As they were departing for home, Joan mentioned that it was about time she bought a computer for her son to do his schoolwork on. Who's she kidding? Not me—I know she's going to buy one to play Party Quiz on!

As I mentioned at the beginning of this piece, PQ is probably the best-kept secret of this Christmas season, at least for now. If you know someone who has a home computer, and/or is a trivia buff, why not pick up a copy of Party Quiz—it makes a perfect Christmas gift. But you'd better hurry while you can still get one—you know how hard it is to keep things a secret at this time of year!

**PQ is available at your favorite local computer retailer. To locate the dealer nearest you, call toll free 1-800-323-8341. (In Illinois 1-312-459-8000).**

*Tom Benford is Associate Editor of* Run Magazine, *Technical Director of* Electronic Games Magazine *and a frequent contributor to* Video *and* In-Cider magazines.

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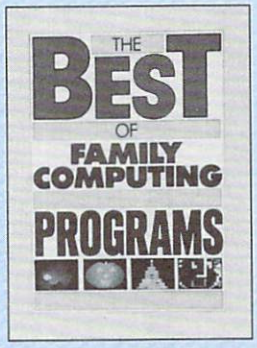


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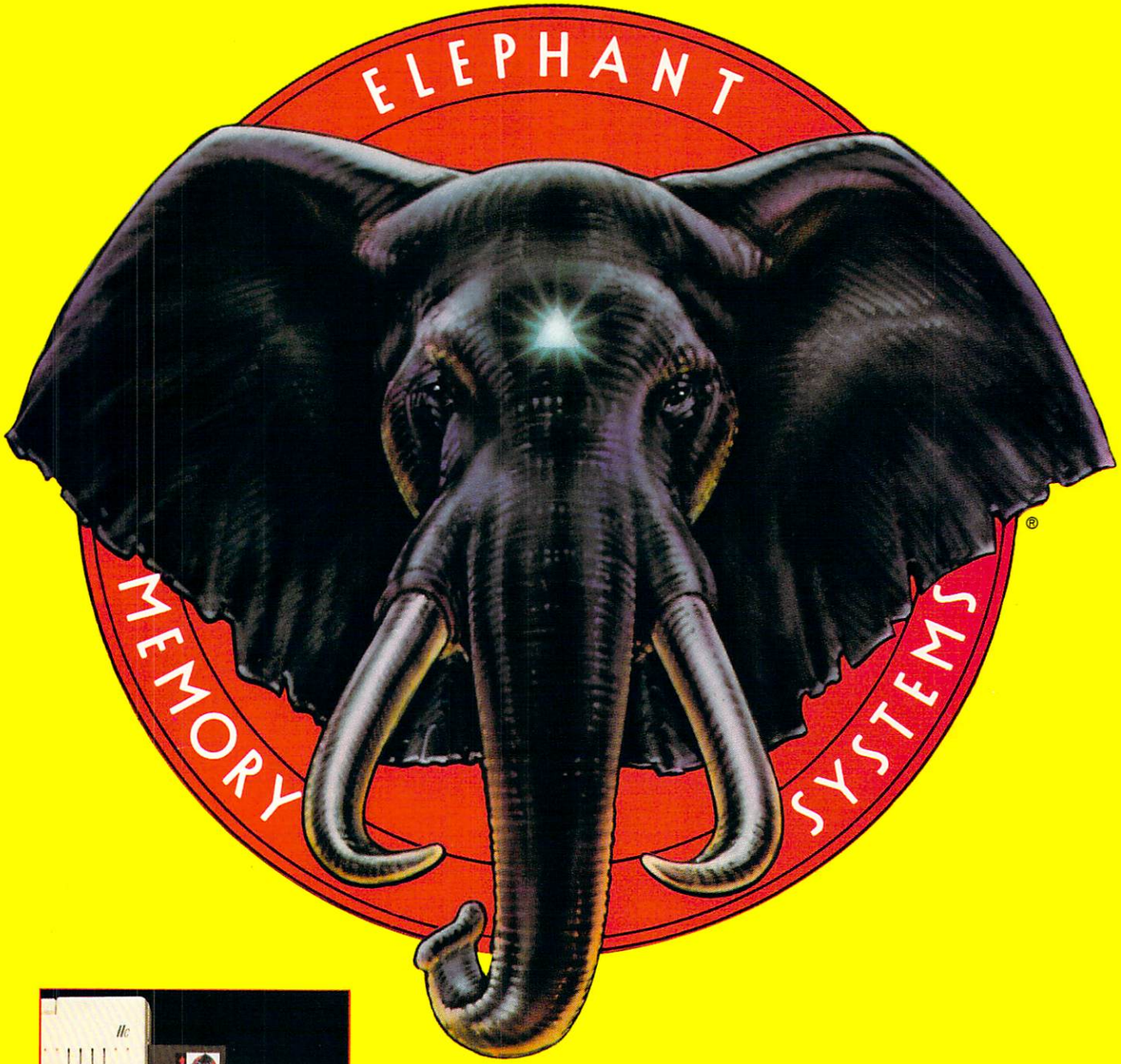

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## 7:00

### FRENZY/ FLIP FLOP

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## 7:30

### SOLAR FOX

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## 8:00

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## 9:00

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*The scene opens on an office desk, complete with digital clock, typewriter, wastebasket and file cabinet. Select functions (typing, filing, editing) by pointing animated finger (Cartridge)*

## 9:30

### INTERNATIONAL SOCCER

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## 10:00

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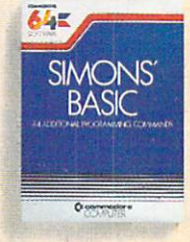


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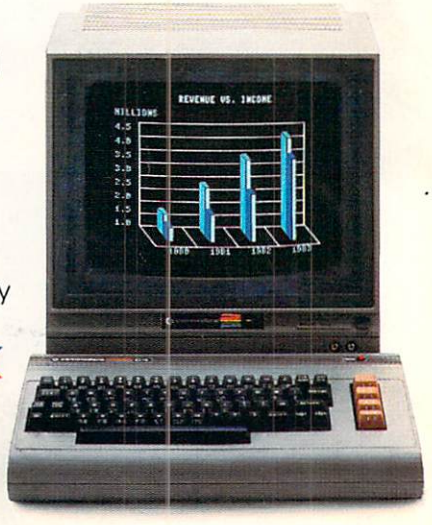
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