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Buyer's Guide to
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Under \$600

FAMILY COMPUTING™

SOFTWARE: SPORTS GAMES COME HOME

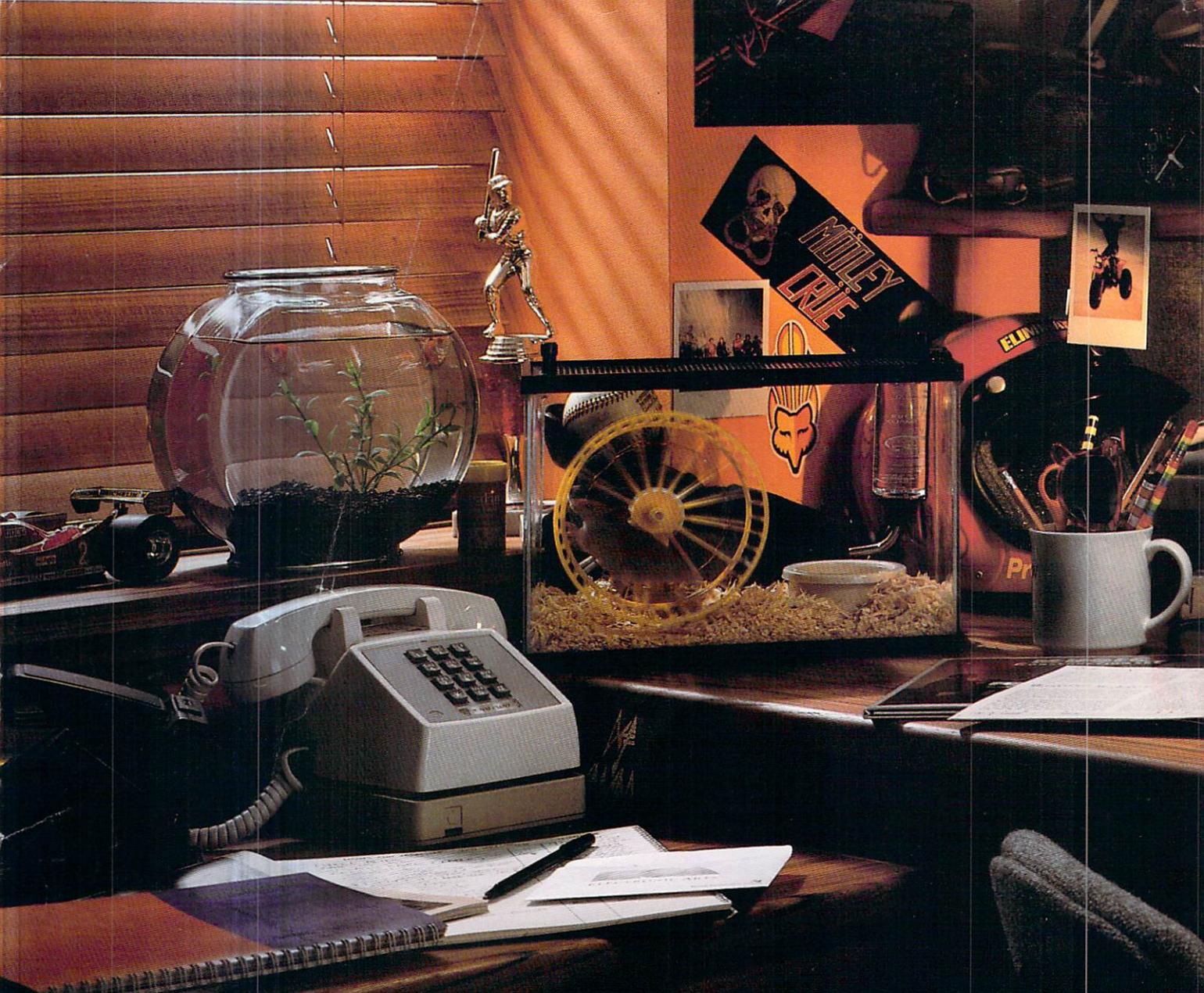
How to Organize Your Household, Data-Base Style

Barter Your Computer Skills

Learning with Logo

Inside: Original Programs for ADAM, Apple, Atari, Commodore 64 & VIC-20, IBM, TI, Timex, and TRS-80



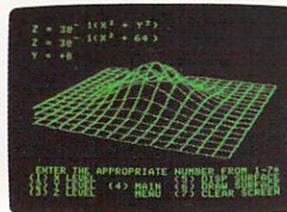


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FAMILY COMPUTING™

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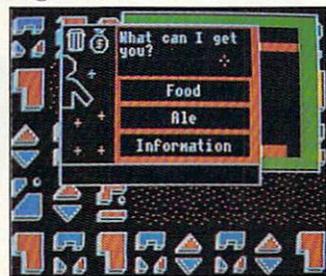
You can trade your computer knowledge for goods, services, or just about anything.

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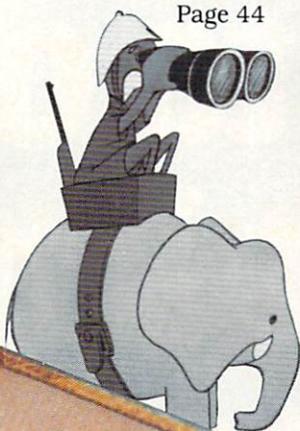
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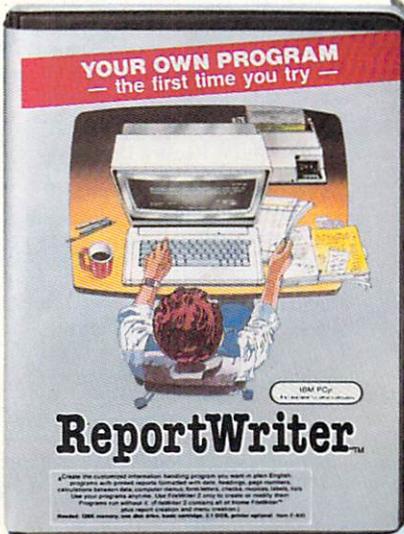
COVER PHOTOGRAPH BY JOEL WHITE

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Of course you know what you want your computer to do. Trouble is, up 'til now, you either had to settle for packaged software off the shelf, which meant squeezing your ideas into somebody else's design. Or you struggled to learn a computer language. And you know how far you got with that.

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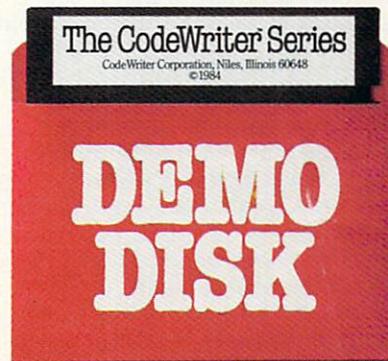
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EDITOR'S NOTE

Computerized

ROBIN'S NEST

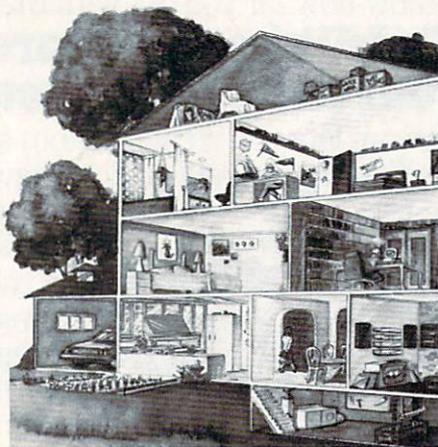
When Contributing Editor Robin Raskin agreed to chronicle her adventures with her data-base program, I cheered inside. I've never told this to anyone, but when I see Robin in the office, I see the embodiment of FAMILY COMPUTING.

Robin has taken control of her computer at home and has stretched its power to work for her and her family. Other people may have done that too, but they're not all like Robin. There's nothing intimidating about her. Robin's real. A "regular person." Not a classic compulsive. Not a stereotypical "computer nut." If she can do it, so can I. That's what it amounts to.

Robin opens our lead feature, "How to Organize Your Home, Data-Base-Style" (page 39), by describing her house as "nouveau clutter." You know she's telling the truth. Her computer hasn't changed that. But it's done more important things. It's stopped Robin from worrying about the mess that's part of raising two daughters; it's given her more time; and it's given her the freedom that comes from knowing the framework is in place, the underlying structure is in order. It's given her the security that allows her to relax.

For Robin and her husband, Kaare Christian, computers have become an important part of life. It seems to be that way for many of their friends and relatives as well.

Hardly a week passes without our getting a call from Robin about something new she or someone dear to her is doing with a computer. Hardly a week passes without us giving Robin a call about a particular application we're thinking of covering. Seldom do we turn down one of her ideas; seldom is our application one she hasn't tried. And so, in nearly every issue of FAMILY COMPUTING, there's at least one story by or about Robin and the ways she and



the people she knows (and the people they know) are using computers at home.

This month's feature grew out of an editorial meeting at which several staff members suggested articles documenting a specific household use for a data base. We even had several such articles on hand—mostly by Robin, of course. During the discussion, two main points emerged: 1) Many computer owners don't realize the potential help awaiting them in a single data-base package; and 2) A large number of these same people wish they knew how to better organize their lives—and their homes—utilizing the power of their computers.

Robin knows both these things. In recent weeks she presented us with what seemed like at least 100 household uses for a data-base program. Some of her suggestions were already developed as full-blown articles, but there was still a whole houseful of ideas waiting to be written about. Those are the ideas she's shared with you in this issue.

If you're a "regular person" unaware of all the help your computer can bring you, give Robin's article a try. It could lead to a computerized nest of your own.

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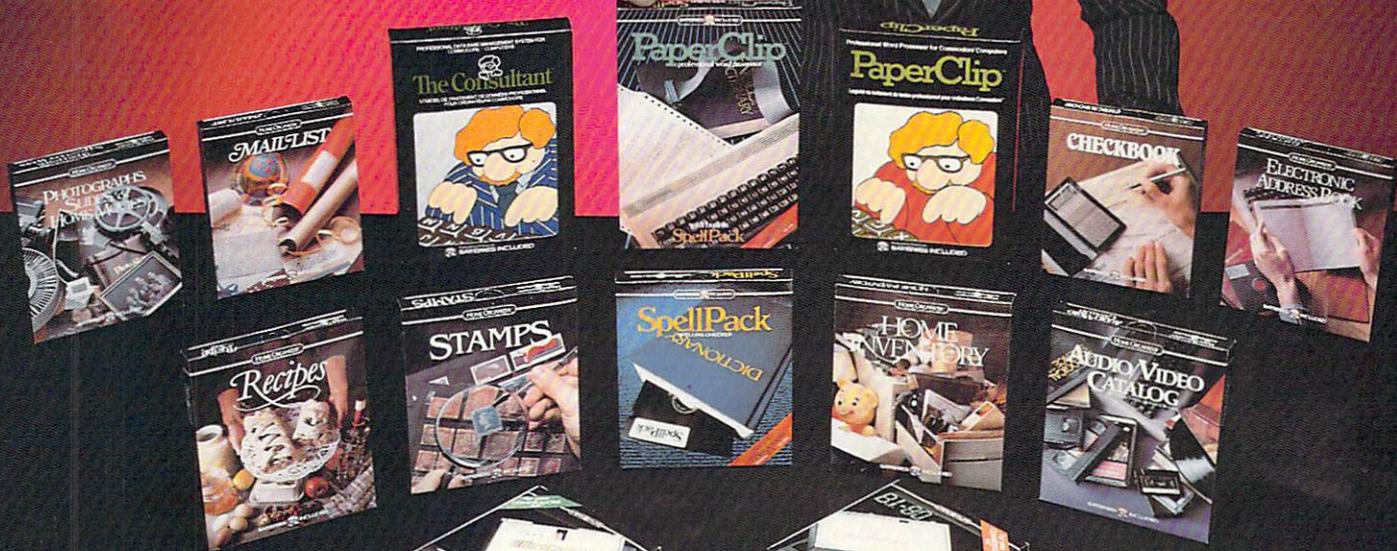
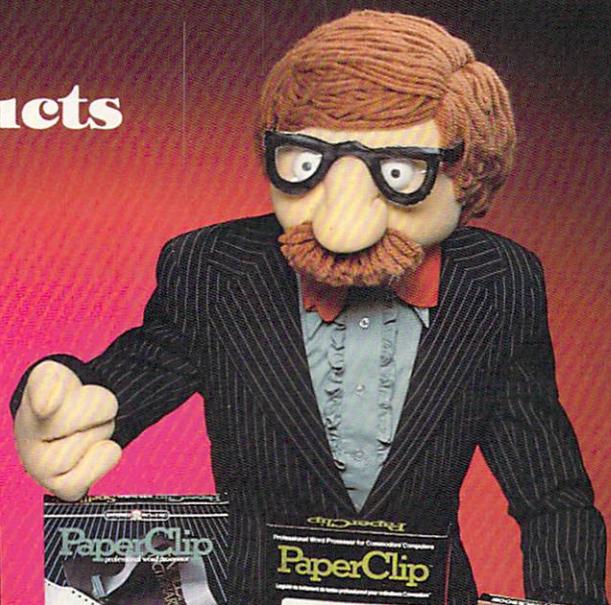
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LETTERS

PUTTING THE HOME BACK INTO HOME COMPUTERS

I've had a computer and have been reading computer magazines for many years. But, the magazines were very business- or "one brand"-oriented. I was not very satisfied until I spotted a new magazine on the stand—FAMILY COMPUTING. After flipping through it, I immediately bought it, and after reading it at home, I immediately subscribed.

In short, just let me say it's about time someone got it right. I believe that FAMILY COMPUTING has put the home back into home computers.

JOHN P. SAURETTE JR.
Fall River, Massachusetts

BELLS OF PRAISE

How can I say how pleased I am with the July issue of FAMILY COMPUTING and especially the Atari Liberty Bell! Can hardly wait to show it to my first and second graders.

I'm eagerly awaiting each new issue of FAMILY COMPUTING.

NANCY LYNCH
Vienna, Virginia

IN SEARCH OF A BBS

I would like to know if you could tell me where I could find a bulletin board system for the Commodore 64 or VIC-20?

AARON SMITH, age 14
Sikeston, Missouri

EDITOR'S NOTE: You can get a lengthy list of bulletin board systems by picking up a copy of Computer Shopper at your local newsstand (price: \$1.95). The list is updated every three months. The People's Message System, Santee, California (619) 561-7277, also provides names and numbers of bulletin boards.

PLEASED WITH PROGRAMS

I thank you for the information about Texas Instruments. In the May issue, I tried the Mother's Day Card. My mom loved it. I thought it was funny. One day when I was by myself, I decided to do the Father's Day Card. I just could not wait until my dad came home. I told my dad I did the Father's Day Card; he said that he wished I would have waited for him to come home. When I was on line 930 of the Phone Cost Moni-

tor, my little sister pressed the quit button. I was so mad, I screamed at her.

Keep coming out with TI information and games, please. Thank you!

JENNIFER NELSON, age 11
Houston, Texas

LOOKING FOR A PEN PAL?

Will FAMILY COMPUTING start having programs for TRS-80 MC-10? Are there any MC-10 users who want to correspond? If so, please write. I find your magazine great. Please remember to keep it simple.

JOHN R. DROGO
23 Ware St.
Somerville, MA 02144

EDITOR'S NOTE: Sorry, unfortunately at this time we have no plans to publish programs for the TRS-80 MC-10. But, we hope some of our readers can help you out.

THE PERFECT REMEDY

Since I purchased a Commodore 64 computer, disk drive, and printer, I have been looking for a magazine that would help me learn more about the computer. Until a friend of mine recommended FAMILY COMPUTING, I was purchasing other publications that were too technical in their makeup. I find FAMILY COMPUTING is just what the doctor ordered. It is written in a language I can understand, and I recommend it very highly for any computer owner.

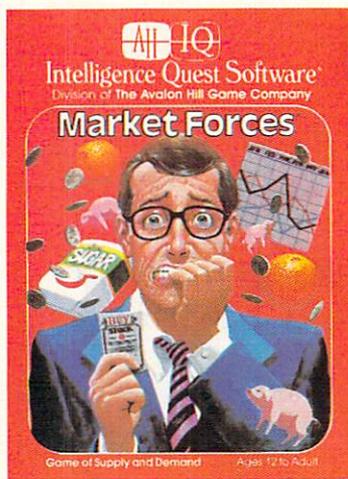
GEORGE B. STEWART
Rutland, Vermont

CORRECTIONS

In the August issue's Telecomputing column, we listed an incorrect telephone number for Plume Books, publisher of The Computer Phone Book. The correct number is: (212) 397-8000.

In the September "Buyer's Guide to Disk Drives," we inadvertently omitted the price of the Concorde C-321P drive for the Commodore 64. It sells for \$389.

FAMILY COMPUTING looks forward to letters from all our readers. Please direct your correspondence to: Letters to the Editor, FAMILY COMPUTING, 730 Broadway, New York, NY 10003. Include your name, address, and phone number. We reserve the right to edit your letters for length and clarity.



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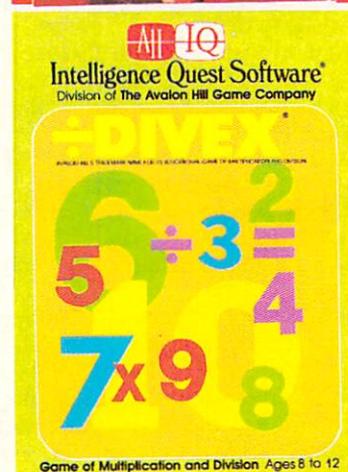
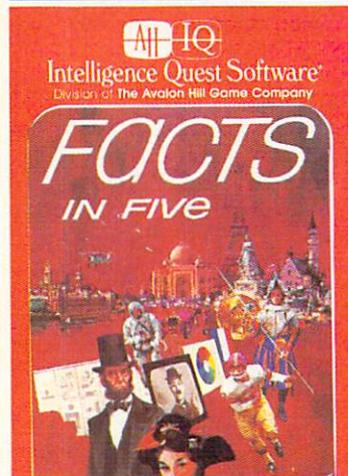
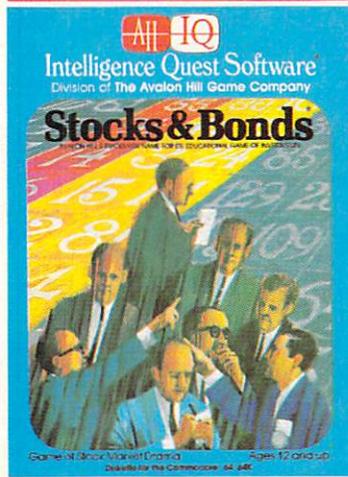
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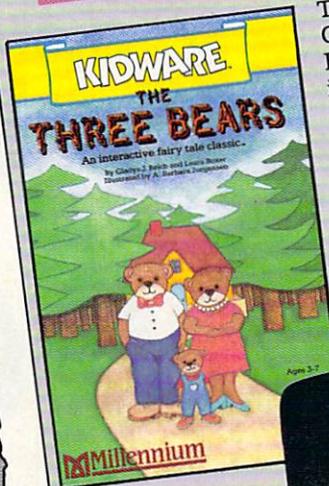
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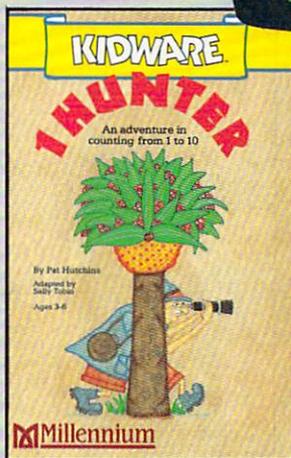
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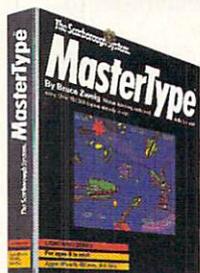
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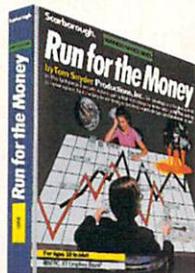
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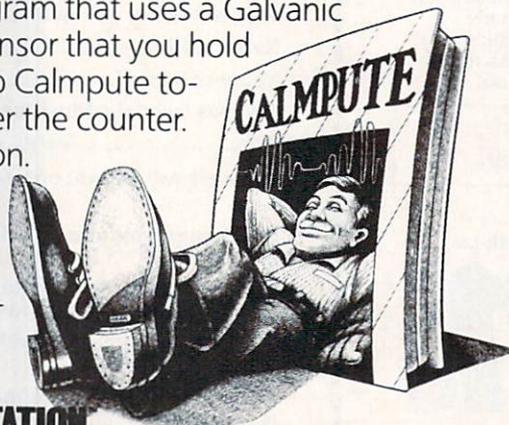
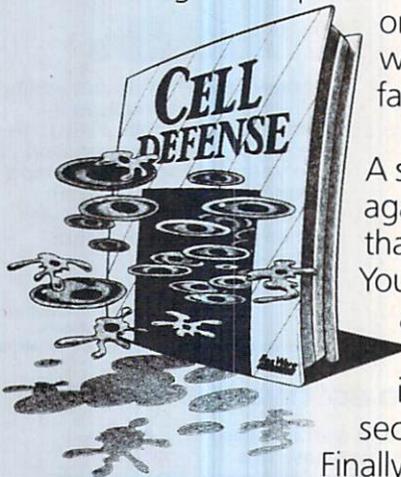
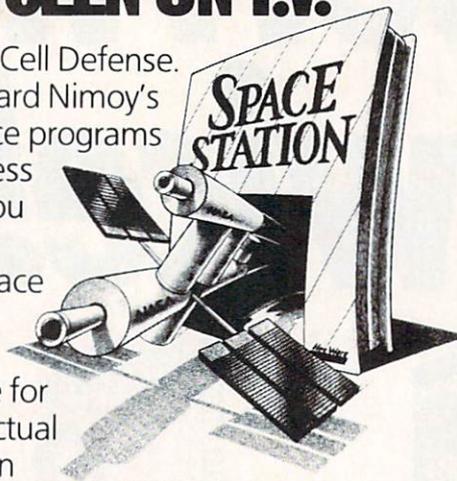
and basic concepts in biology to protect the cells from invaders. Or in a matter of seconds you'll be dead.

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BEHIND THE SCREENS

"Now, cars are going to be towed right and left," he said.

New "Sidnyware" will allow traffic agents to monitor the condition of roads and street signs, potholes, and parking meters, Lindenauer said.

Lindenauer says that if Sidny makes it in New York, "the idea will sweep the country." CitiSource, Sidny's manufacturer, says it's already had inquiries from many major cities.

Sidny has been designed especially for New York's mean streets. Not only is it shockproof, weatherproof, and simple to use, but it's been configured to be almost worthless to anyone who steals one.

—ROXANE FARMANFARMAIAN



Here's Sidny, New York's new portable traffic enforcement computer.

PCs in Space

Many portable, IBM-compatible computers are designed to travel comfortably aboard airlines, but only one can ride aboard NASA spacecraft.

It's called the SC-1, and was designed by scientists at the Southwest Research Institute in San Antonio, Texas. They needed a computer tough enough to fly with their outer-space experiments, but the only acceptable ones they found cost far more than they could afford. So, they built their own.

The 10-pound, 128K computer can resist the stress of a rocket launch, yet still work in the vacuum of space at temperatures ranging from -20 to 180 degrees Fahrenheit. It'll be used to measure solar wind and the properties of near-space.

Since it uses chips similar to those found in the IBM PC, it can run scientific languages that run on the PC, which will make it easier to program. In fact, according to project manager William C. Gibson, it probably could be adapted to run home PC software. But, at \$32,500 per machine, he doubts that anyone is going to try. ☐



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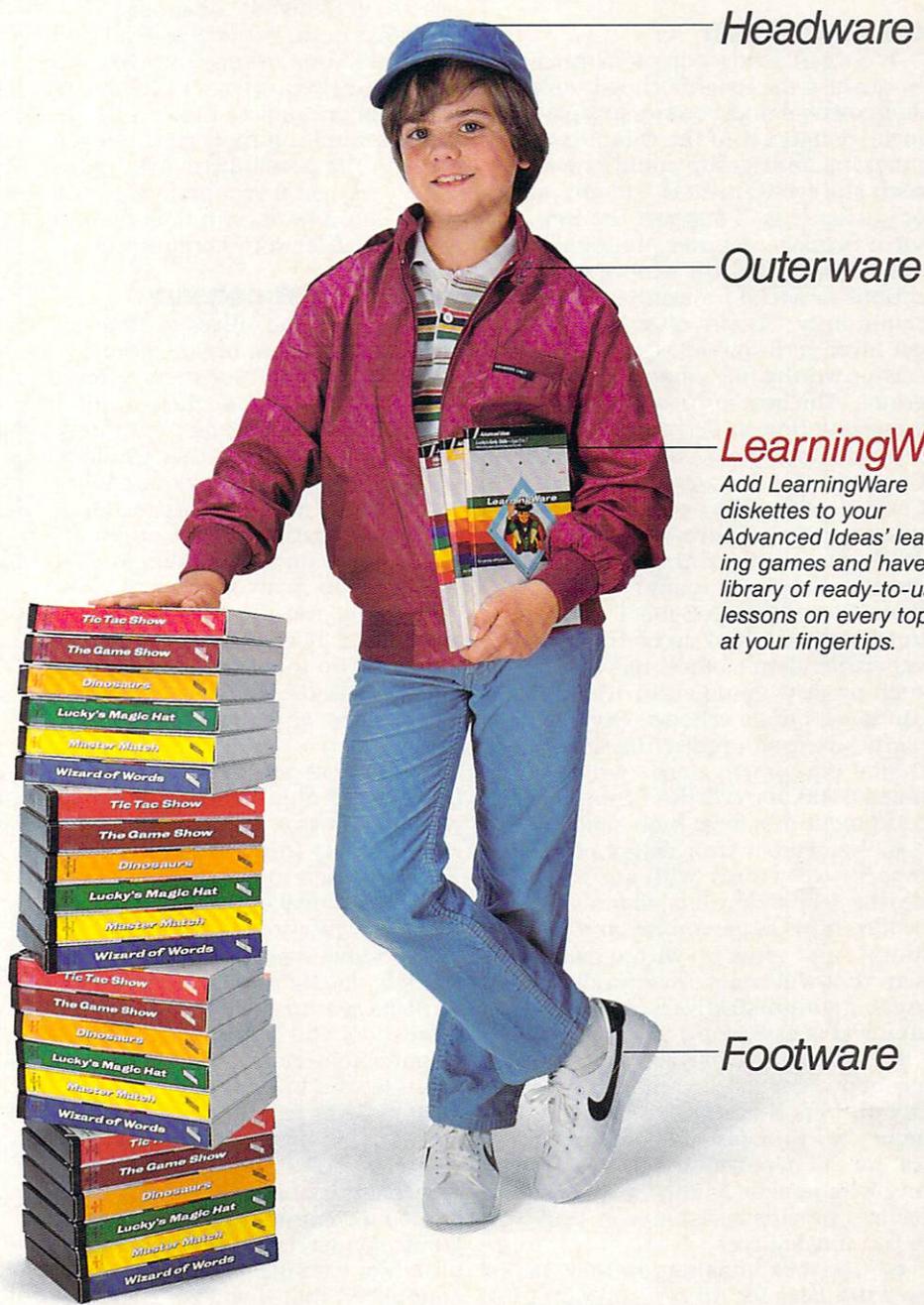
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HOME-SCHOOL CONNECTION

school district can be a good source of information about funding procedures which could be used in acquiring computers. Ask about special pockets of money that might be tapped into.

GO NEXT DOOR

1. Organize a group of volunteers to canvass the neighborhood. Ask shop owners and businesspeople to make donations to the computer program. Your group could provide each store with a small window sign or sticker (e.g. "I support the Smith-town School computer program").

2. Don't forget the service organizations or social fraternities in your community. They're often willing to get involved in public service projects or worthwhile educational programs. The best approach is to plan a presentation in person.

3. Contact the local Chamber of Commerce or Junior Chamber of Commerce for ideas on how businesses could get involved. Offer to send press releases to the local media about each company's contribution. (The "Adopt-A-School" program in Chicago, started up by the school superintendent's office, has 180 such projects going on in 130 of Chicago's public schools. One particularly successful project involves the Digital Equipment Corp., which donated \$100,000 worth of computer equipment to a local high school.)

4. Remember your neighbors! A cooperative venture with one or two nearby school districts allows you to pool resources, personnel, and funds—and come up with a game plan that will benefit everybody. (Again, administrative support and approval is essential.)

5. Contact the mayor's office and ask about any local, community, or city projects that could provide seed money for your program. In large cities, special departments like Community Relations or Family Services often can provide assistance or leads to funding sources.

6. Use your imagination to come up with ideas for fund-raising projects. Consider some of the following suggestions: a) Schedule a community garage or yard sale and donate the proceeds to the computer program; b) Hold a series of bake sales at the local shopping mall; c) Have a Read-a-thon or Jog-a-thon with participants soliciting pledges for number of books read or miles run; d) Set up a "Kids For Hire" service—

students can work for individuals or businesses and donate their earnings to the project; e) Hold a community car wash; f) Silkscreen T-shirts with the town or school logo and sell them through local businesses; g) Schedule a pancake breakfast or strawberry festival and invite everyone in town; h) Organize a community carnival or block party; or i) Hold an "oldies" dance with local DJs donating their time. As you can see, the possibilities are endless, so why not get a group of people together and brainstorm to determine what's best for your community.

AROUND THE CORNER

1. Contact the offices of state or national education organizations, like the National Education Association (NEA). Ask about their fund-raising programs, leads to funding sources, and whether they would be willing to contribute to your cause.

2. Several national corporations, such as department store or restaurant chains, have educational representatives in many metropolitan areas. (In my area, both Sears and McDonald's have contact people.) To find out who to talk to in your community, ask the manager of an individual store, or contact the regional supervisor.

3. Get in touch with your state Department of Education. Ask about various grants or programs that provide auxiliary funds to local schools. This approach may take a lot of time and a great deal of patience, but you could discover some invaluable leads. Sometimes, if you hunt long enough, you'll find knowledgeable contacts within the Department of Education who can provide you with resource materials and information about federal or state grants.

4. Write or call the regional sales offices or company headquarters of several computer manufacturers. They may be able to provide information on grants or funding programs sponsored by their companies. (For example: IBM recently announced that it will be donating approximately \$12 million in hardware and training programs for about 200,000 students and teachers nationwide.) You also can contact software publishers who may donate programs or offer some help.

5. Call your local congressmen or state representatives. Let them know of your interest in obtaining funds for the school or district computer

program. Again, resource people at those offices may be able to put you in touch with organizations that could help your cause. You also may want to write to individual members of your state's congressional education committee and ask for assistance in locating funds or grants.

DOWN THE ROAD

1. *The Federal Register*, a big book with small type, can be an especially valuable resource (it's available in public libraries or through the school superintendent's office.) *The Register* publishes news about upcoming grants available through the federal government, and contains regulations for a variety of grants, including those that can be used to purchase necessary hardware. In addition, it lists grant application and proposal deadlines.

2. Write to private institutions and major corporations for information about their grants and funding projects. Although competition is quite keen for these funds, and you'll have to work hard to get them, private foundations can be a valuable resource. For sources, check *The Foundation Directory*, available at most public libraries.

3. Contact some of the big fund-raising organizations (e.g. the American Cancer Society, the American Heart Association) and ask them to share some of their experience and knowledge.

Finding the money necessary to implement a computer program in your school may seem to be an overwhelming task. As schools integrate more computers into their curriculum (one study recently reported that by 1988 there will be 2 million microcomputers in U.S. schools), funding procedures will become as necessary as terminals and monitors. Obviously, the benefits of the computer revolution are enormous; yet all too often we find that it is the pocketbook that determines how well the revolution is progressing. But, when parents and educators band together to seek the necessary funds for computers, youngsters can reap the rewards of this educational wonder. In the long run, the best computer program will be one that can combine both dollars and sense into a curriculum geared toward positive academic achievement. You and your neighbors may be just the ones to help attain that goal. ☐

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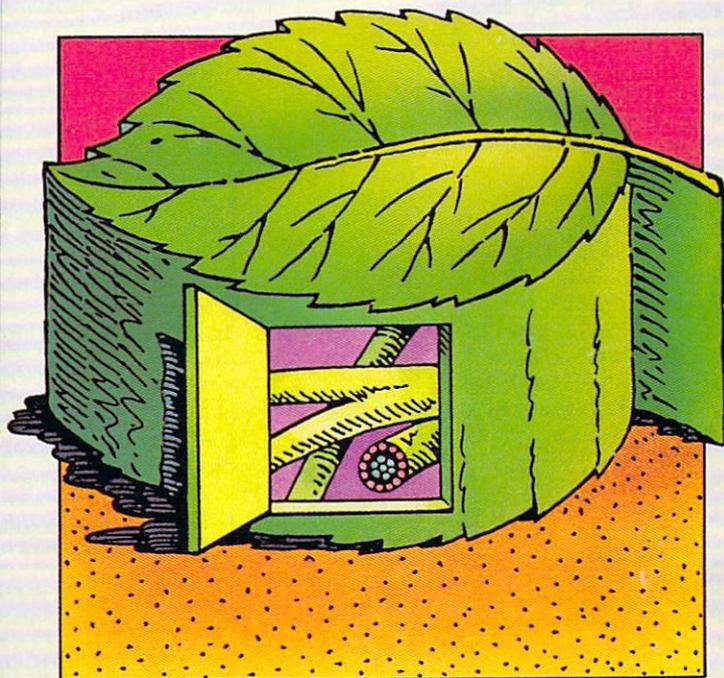
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GAMES

GAMING ETIQUETTE:

BY JAMES DELSON

Gone are the days of the lone computer game-player. From preliminary peeks at the Games Survey we conducted last June, it looks as if computer entertainment is very much a family affair. Inevitably, one question arises: how to handle the hordes—neighbors, friends, and relatives—who pop in invited and otherwise for one (or two or 10) of your new games. Here, FAMILY COMPUTING Games Critic James Delson runs through some of the rules and regulations, the guidelines that have helped him streamline play-testing sessions, which sometimes involve up to 20 people at a time for sessions of up to 10 hours!

HELP FOR THE HOST

- 1. Analyze your situation.** A little forethought goes a long way. Write down the hazards that you may encounter in handling a large number of gamers. Work them out before the commotion starts.
- 2. Schedule.** Alert guests as to which games you're planning to play. Be as specific as possible (difficulty level, suggested play length, skills required). Newcomers to complex games should be allowed enough time to familiarize themselves with the rule book.
- 3. Match games and guests.** Though not always possible, it's best to plan an evening revolving around one game and invite only those you know will enjoy it. If you've invited gamers with varied tastes, be prepared to shuffle games, and keep nonplaying guests occupied.
- 4. Control numbers of guests.** Uninviteds are inevitable, and some guests just won't show up at all. Double-check plans with each player on the day of the game session. Have friends or guests on call as backups in case of cancellations. And, be firm when dealing with the line of "friends of friends" that may appear at your door.
- 5. Plan alternative games.** Games crash and programs won't boot, but guests won't disappear. Have an alternative second or third game ready in case your planned game won't load.

The Do's and Don'ts of Having Fun

What's wrong with this picture? How many don'ts can you find depicted here?



- 6. Inform players of the time element.** Let people know how long the scheduled game or games will take. Parents of visitors will appreciate knowing when to expect their late-night or after-school gamers to return from their adventures.

- 7. Prepare refreshment and relaxation areas.** Designate which areas of the house are off-limits to players and which areas are for resting, eating, and smoking. Smoking and eating zones should be isolated from the play area. Keep drinks and food off the computer table entirely.

- 8. Size up the gaming area.** If you're anticipating more than a couple of people, move the computer to the dining-room table or some other big space to avoid overcrowding.

- 9. Get help.** Unless you're not interested in having any fun at all, enlist the help of another guest to keep food and drink available while game-playing.

- 10. Establish house rules.** Lay down the law about who handles the computer and software. Guests have been known to claim familiarity with the disk drive and promptly spoil a prized game in progress by removing the disk before the drive light goes off. Kids can get especially possessive about using the computer, too.

- 11. Make allowances for relative skill differences.** Chances are, not all guests will be equally skilled. Sometimes programs allow you to adjust skill levels yourself. Experiment beforehand to see if the game has such features, or improvise handicapping systems.

- 12. Appoint a ref.** If you're playing a game in which there might be some problem with rules clarity, appoint a ref to settle arguments.

GOOD GUESTS . . .

- 1.** Eat and snack before they arrive, unless dining is part of the plan.
- 2.** Don't hog the machine and are aware of others who may be waiting their turn.
- 3.** Come prepared to play the game announced.
- 4.** Don't make a mess; replace programs and documentation.
- 5.** Know when to leave and when to call it quits, even if the game isn't completed.
- 6.** Help clean up afterward.
- 7.** Don't worry about attaining expert status in one sitting.
- 8.** Abide by the rules of good sportsmanship and are attentive to opponents.
- 9.** Observe house rules.

GENERAL RULES OF ETIQUETTE

- 1.** Be polite and respectful when it's not your turn. They waited for you, you wait for them.
- 2.** Cheating may be easy and tempting at times. Don't do it.
- 3.** Read rules yourself. Don't take advantage of friends by demanding that they explain every game to you.
- 4.** Don't judge a game, especially a tough one, too quickly. It often takes a while to grasp and begin to enjoy more complex programs.
- 5.** Don't eat while playing. ☐

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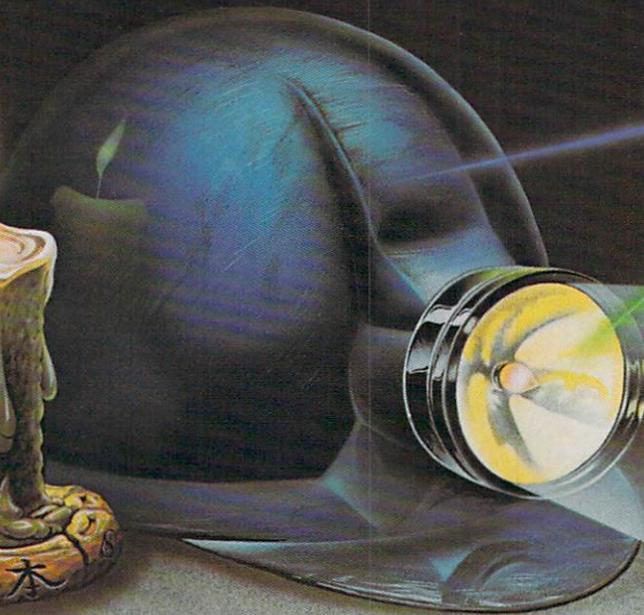
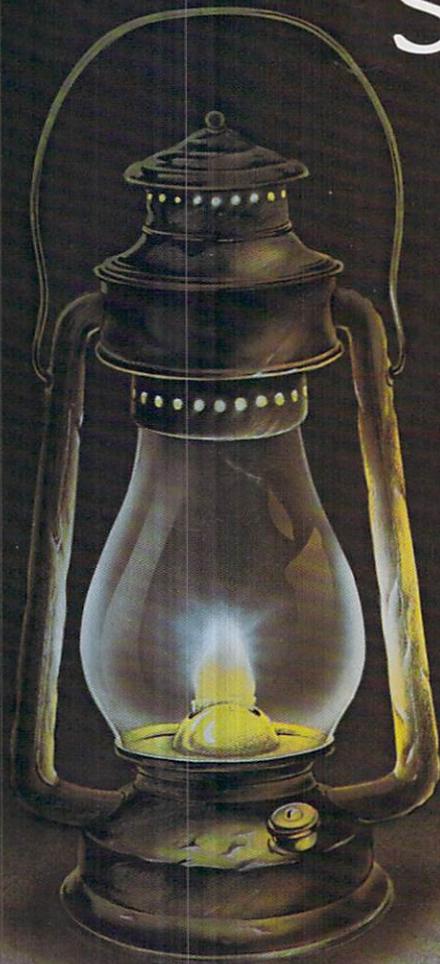


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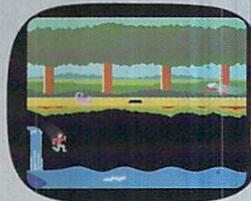
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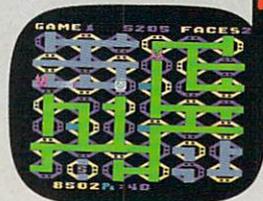
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You have heard the elder speak of one central source and a maze of unconnected grey paths. As you connect each grey path to the central source, what was grey becomes the green of life. When all are connected, then you have achieved "Zenji." But beware the flames and sparks of distraction that move along the paths. You must go beyond strategy, speed, logic. Trust your intuition. The ancient puzzle awaits. Designed by Matthew Hubbard.

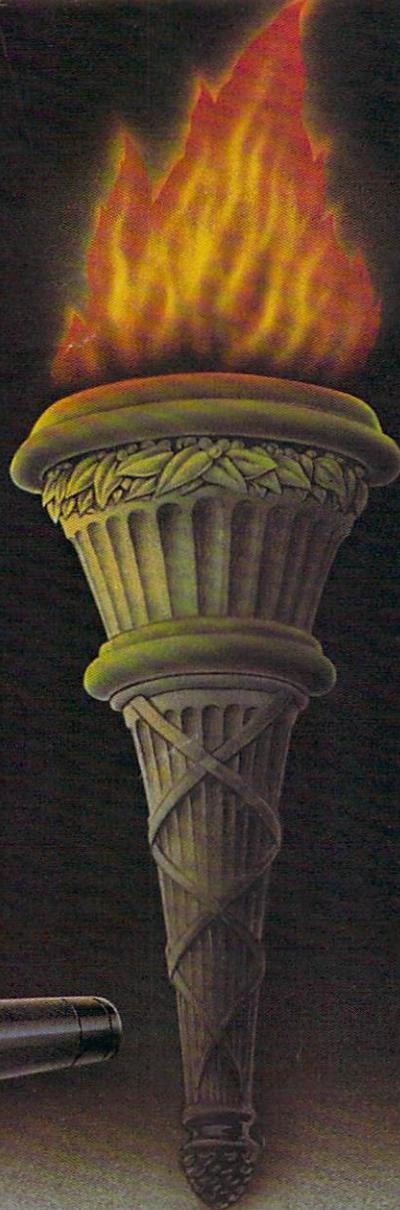
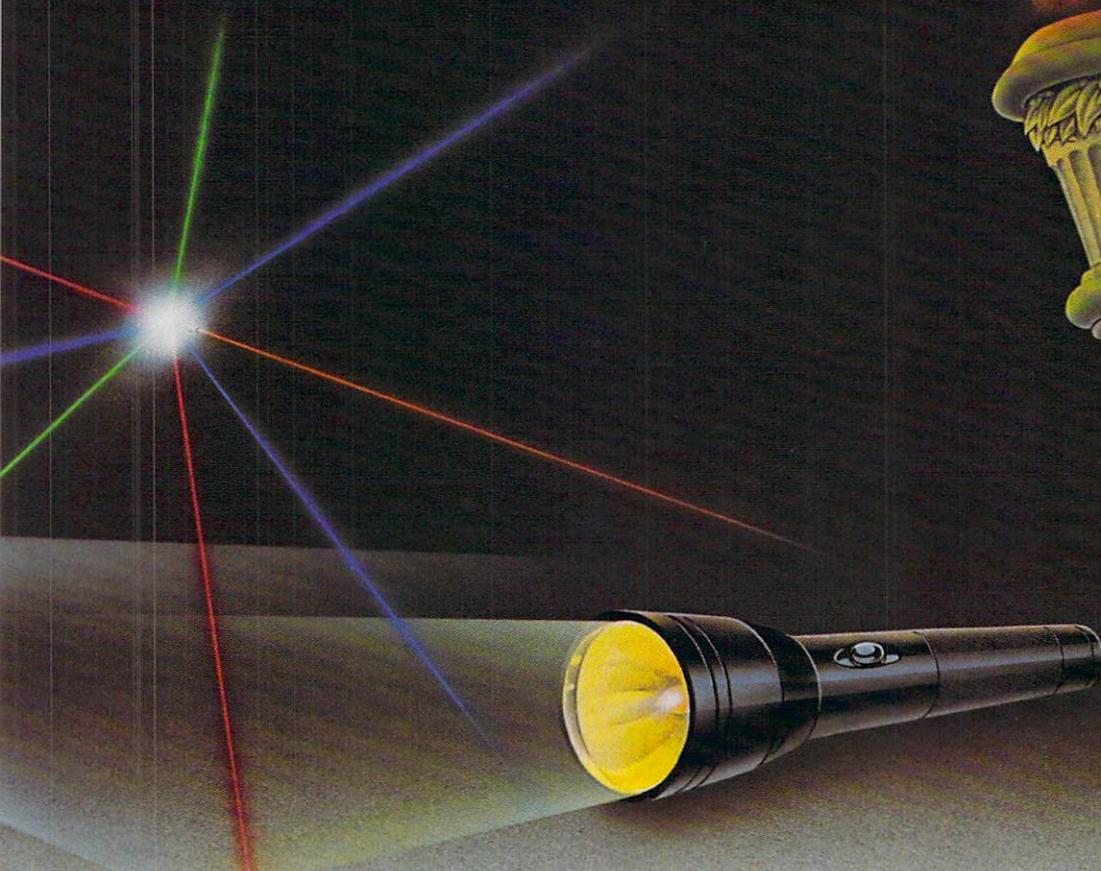


You strap on your helicopter prop-pack, check your laser helmet and dynamite. There's no predicting what you'll have to go through to get to the trapped miners. Blocked shafts, molten lava, animals, insects, who knows what lies below. But you'll go, you're in charge of the Helicopter Emergency Rescue Operation. The miners have only one chance. You. The opening shaft is cleared now, it's time to go. Designed by John Van Ryzin.



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You can almost hear the quiet. And it's your job to keep it that way. A toy factory at midnight. Did you hear something? Guess not. Wrong! Suddenly balloon valves open, conveyor belts move and a whole factory full of toys goes wild. Even the robot, their latest development, is on the loose and after you. Capture the runaway toys. Restore order. Restore peace. Restore quiet. Do something! Hurry! Designed by Mark Turmell.



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TELECOMPUTING

MOM, WIFE, AND SYSOP An Interview with Freida Wolden

BY LANCE PAAVOLA

Near the Disneyland Hotel in Anaheim, California, there is a quiet, tree-lined street of single-family homes. The Woldens' house looks no different from the others, but inside is the heart of IF Magazine, one of the oldest computerized Bulletin Board Systems (BBSs) in the country—and the first to be founded and run by a woman.

When Freida Wolden, now 37, bought an Apple II plus, a modem, and some bulletin-board software in 1979, she knew nothing about computers. She owned and operated The Imagination Factory (IF), a video production company that produced industrial sales videos, and planned to create a small BBS "magazine" about the video industry to help publicize her company.

Now her video-production company has faded into the background and IF Magazine has evolved into a large, magazine-format BBS devoted to spreading and exchanging information about the computer revolution. The magazine features information about different brands of computers, peripherals, and computer languages; a Dungeons & Dragons area; and a sales department where people can place orders for the computer products Freida sells. IF Magazine has received over 57,000 calls, from Alaska to Arabia, and has about 300 dues-paying members.

Freida has become the area's computer expert, speaking frequently to students and staff in her local schools.

Since the Apple II plus on which the BBS runs is tied up 24 hours a day, 365 days a year with IF Magazine, the Woldens have acquired two more computers. Freida's husband, Gene, a plant superintendent for a jet-window company, draws with their new Macintosh; Jim, 17, plays games on their Apple IIe; and Bobby, 14, word processes worksheets for the local Dungeons & Dragons group that meets in their living room.

LANCE PAAVOLA IS FAMILY COMPUTING'S Technical Director.



Freida Wolden in the IF Magazine headquarters.

Freida talked to FAMILY COMPUTING about what it's like being a sysop.

Were you a math whiz in school?

When I was a kid I always liked science and technical things. Back in [Davenport] Iowa, girls didn't go in for those things, but I sent for a science kit every month through Heathkit. [But] I didn't do too well in math, and I thought [computers were] something like higher math, something I could never comprehend.

How did you first get involved with computers?

Right around the beginning of 1979 some friends were talking about making personal computers. There was a lot of excitement. And then I was out shopping one day, and I saw the very first [personal] computer, in a Radio Shack store. I thought it was really something! I figured I'd use a computer for the video business—to keep records or something. I ended up getting an Apple computer because I wanted color. And then I saw a demonstration of a bulletin board and thought it would be a great way to advertise my video business.

When you started, were you at all worried that it might be too difficult to run a BBS?

I wasn't smart enough . . . if I had been, I probably would have never done it! But I've always had the attitude that you can do anything if you put your mind to it.

When I bought my computer, I didn't know anyone who had one. I got home and when I got to about page 4 [of the manual] I realized that I might never get past page 4! I started to panic!

I'd go into [computer] stores, and the salespeople put me down [as] a crazy middle-aged woman. They'd have the attitude that they knew everything and you were real stupid. And I thought, there ought to be somebody who can help you with these questions. [With] IF Magazine, people know that they've got someplace to call. People can call up and just type the word MODEM and read different [users'] opinions on modems, and not feel like someone is trying to sell them something.

What advice do you have for someone who wants to start a bulletin board of their own?

I'd suggest learning how to use a computer first. Then buy a modem and get familiar with the local bulletin boards to see if you [really] want to do it. Then do something different. If there are four bulletin boards in your area already doing the same thing, you're just wasting your time.

What is the minimum that you have to buy?

Let's say you already have your computer. I'd say you need at least two disk drives. Then you need to buy [an auto-answer] modem and bulletin-board software. I imagine you can get some free public-domain software if you look around.

Where would you look?

Get on the local bulletin boards and leave messages. Users' [groups] have public-domain bulletin-board software too, I think. If you want to get something excellent, you might want to buy what I use: Bill Blue's PMS [People's Message System] software



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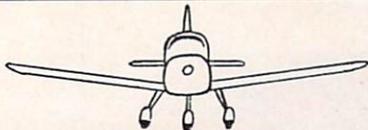
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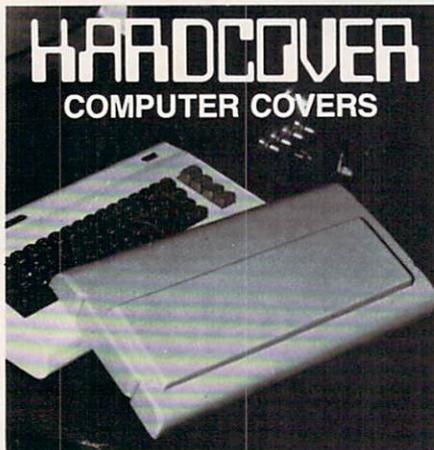
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TELECOMPUTING

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And a person also needs a phone line that they're willing to devote to the system?

Uh-huh.

What exactly does a sysop do?

I spent a lot of my time for the last five years just killing obscene messages . . . and messages I don't think are morally right—piracy and all that. If I went to the store, while I was gone anyone could see [a message]. I had to watch constantly. That took most of my time. Finally I made it so that messages couldn't be left by the public, just by members, and that solved my problem.

If you're going to start a bulletin board, be prepared to hear anything, because [when people call in] they're anonymous. That's the worst part of it, the constant harassment.

Now that that's not a problem, what is your daily schedule like?

I spend an average of an hour a day doing maintenance.

Could you explain what "maintenance" is?

Clearing the log files. When people call in, their name is added to a list that's put on a disk. After a few days that list gets very long, so I have to move it somewhere else or print it out. And I try to make backups [of the entire board] every day.

What else do you do for maintenance?

Answer [electronic] mail. That's the big one! I get 20-30 pieces of mail a day.

Are there other things you do once or twice a week?

Yes. I add new articles, and update the system, and maybe tell people about a special [in the sales section].

Do you write the articles yourself?

Some. Some people write articles at home and download them to me.

When somebody calls up IF Magazine, what do you see on your screen?

Exactly what they see. Only I see their name and the city that they're calling from at the top [of the screen].

Do you converse on-line with callers?

I get in the CHAT mode with them.

One thing that's neat about chatting over the computer is that you have no prejudices. You usually can tell by the name if it's a man or a woman, but that's it. It's what people think, what they feel, that comes across on the computer. Of course, it can work the other way, too. If somebody's saying something and they have a strange sense of humor, they might be laughing while they're typing away and you might be taking it seriously!

Leonid Brezhnev called here once; it wasn't too long after he died! I said, HI, LEONID! HOW'S THE WEATHER OVER THERE IN RUSSIA, SIX FEET UNDER? I've had all kinds of famous people call. Of course, you never know if it's a famous person or not.

When the computer came into your house did you see any changes in your family life?

Uh-huh!

Lots of them?

Well, my husband is an artist, so when he gets into his creative moods, he works the whole day and doesn't like to be disturbed. I figured computing would be great to do when he was doing that. I had the computer on my desk in one corner and he had his table in the other corner where he did his sculptures or paintings, so it worked out good!

I kind of went overboard at first, though. You know how it is when you get into computers; you [always] have one more challenge . . . I could see a bit of resentment, like "All you care about is your computer!"

But after that it mellowed out and I put what is most important, which is my family, ahead of [other] things. You can't become so obsessed with [something] that you do it 24 hours a day. Other things are important.

How has running a BBS changed your life?

It's given me something that I can be proud of, that I did myself. I can't put it into words. It makes me feel good! What can I say? It makes me feel good.

You can reach IF Magazine by modem at (714) 772-8868. Membership costs \$35/year, but you don't have to be a member to use the nonmember areas of the magazine. Members get access to a larger data base, can leave messages, and are entitled to discounts on purchases of computer equipment and software. ☐

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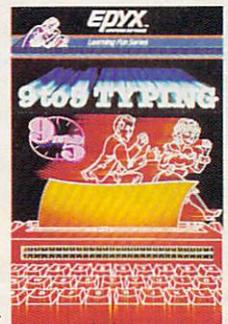
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LEARNING LOGO

TOOLS FOR LEARNING (AND DOING)

First, Some Logo Learning Aids Your Family Can Make. Then, Some New Shortcuts for Your Logo Turtle.

BY MINDY PANTIEL AND BECKY PETERSEN

This is the second of six articles on Logo, a computer programming language originally designed for children, but powerful enough for users of all ages. The six-part series includes:

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.
January	Variations on a theme: changing sizes and shapes.
February	Advanced Logo: where to find out more.

To learn any programming language, you have to become familiar with a number of very specific commands, and then learn what they do when combined with other commands. Logo is no exception.

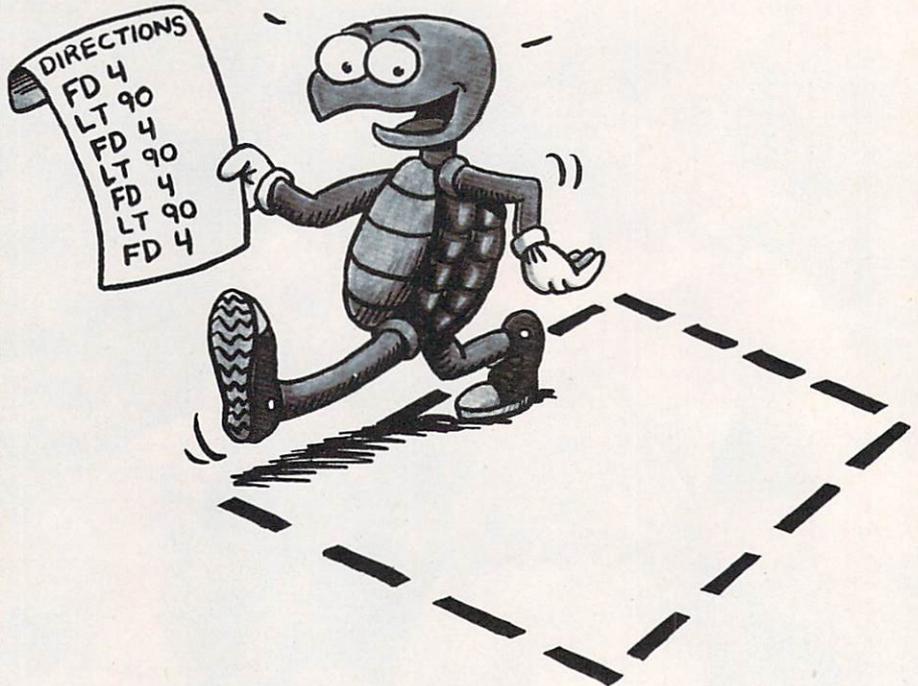
Remembering all these new commands and relationships isn't always easy. Youngsters (and adults, too) often need help—either to jog their memories or to visualize how to accomplish the things they want to do. We've come up with some tools that families can use to make learning Logo easier. Creating these tools can be yet another family activity.

HOMEMADE USERS' MANUAL

Write your own users' manual as you go. Writing is an excellent way to reinforce concepts, and it can help you pick out what you don't really understand. More important, a homemade users' manual can be organized to help your family quickly find answers to the questions you ask most often.

Stenographers' notebooks are especially good for this because they

MINDY PANTIEL and BECKY PETERSEN of Niwot, Colorado, are contributing editors for FAMILY COMPUTING. Both are experienced Logo instructors.



can stand up easily on a table, making for convenient reference. We'd suggest that page 1 include a step-by-step outline of how to load your Logo program into the computer. Page 2 might list the seven commands we introduced last month. Then, you can add a page for each new set of commands you learn.

Later on, "hard copies" of your family's favorite Logo programs can be printed out and pasted on back pages.

TURTLE TEMPLATE

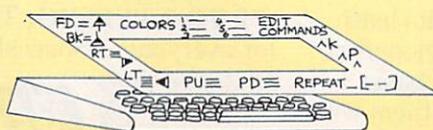
A "template" is an excellent device for putting information you need at your fingertips. It is an overlay that fits snugly on your computer around the outer edges of your keyboard. You can write all the commands you

need on it, and refer to them without even having to look up from your work. (See Diagram No. 1.) Almost all home-computer keyboards can accommodate templates.

Start by placing a large sheet of paper over your keyboard. With a magic marker, outline the perimeter of the key area. Draw a new line 3 inches outside the first. If your keyboard doesn't extend 3 inches in all directions, just outline its perimeter. Now, cut along both the interior and exterior lines you've made. This frame is the pattern for your template. Trace the pattern onto a piece of heavy white cardboard. Cut out the template with a pair of sturdy scissors or a utility knife.

With a fine-tip marking pen, write all the Logo commands you want to keep handy onto the template. Someone with a fairly steady hand should be put in charge of this task, and should leave space for lots of new commands.

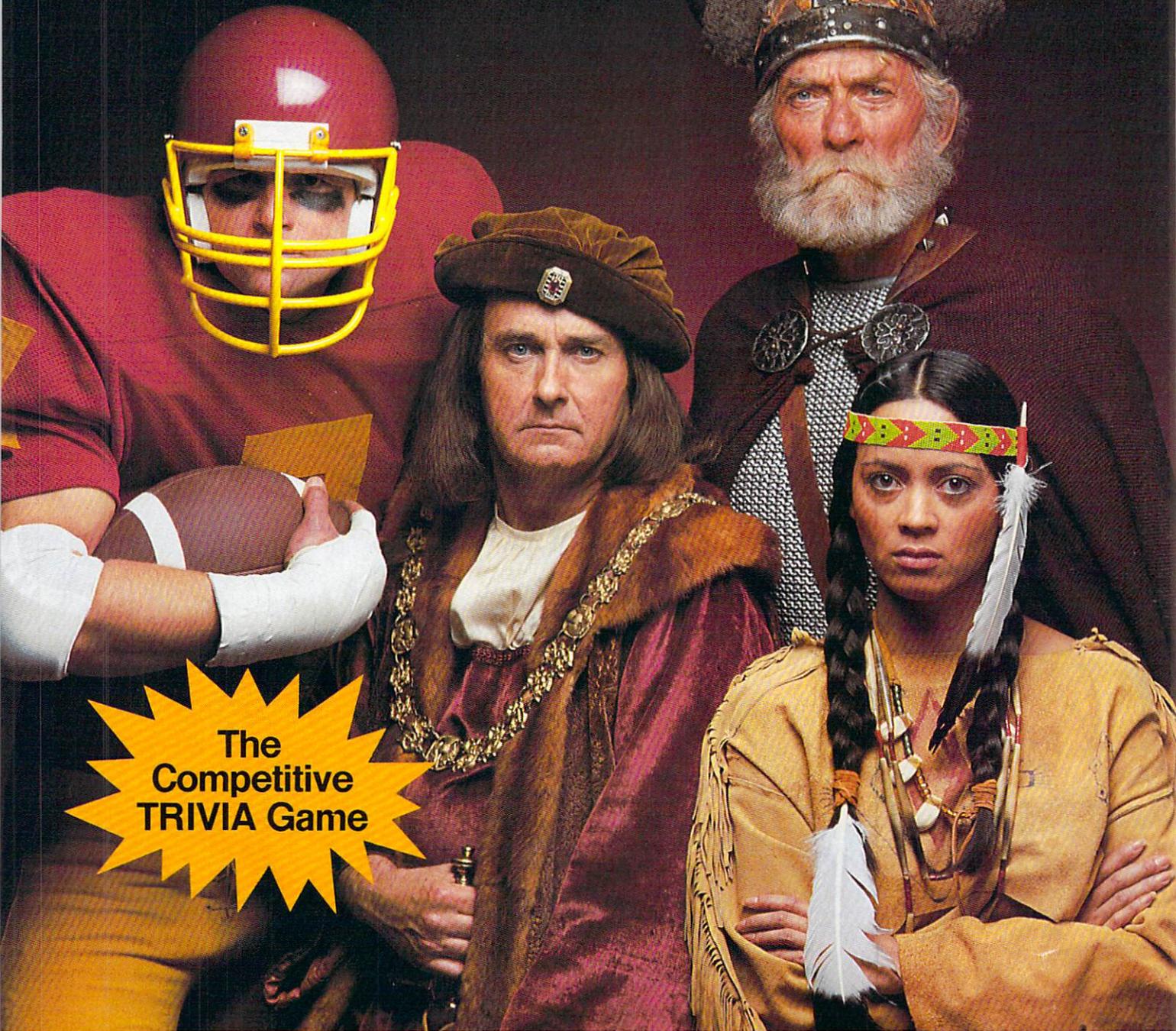
Diagram No. 1 (Template)



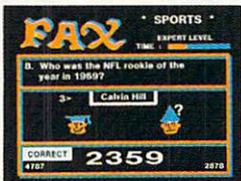
TURTLE COMPASS

Young children often have difficulty determining just how far they want the turtle to turn, and they

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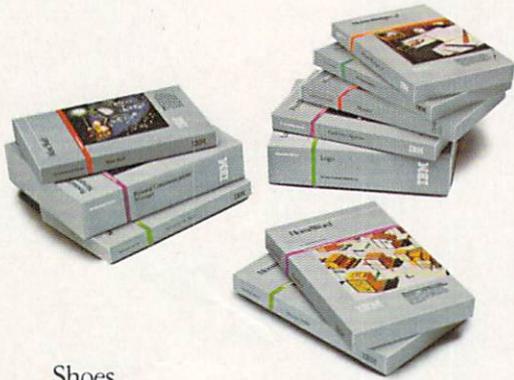


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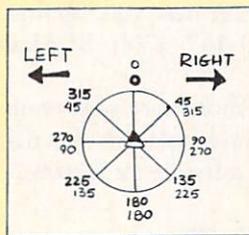
LEARNING LOGO

sometimes forget the difference between right and left. A turtle compass can help them.

On a piece of heavy cardboard, draw a circle and divide it into eight equal pie-shaped parts. Label the circle in 45-degree divisions. You'll have to do it twice: first going clockwise from 0 to 360, and then, using a different color marker, going counterclockwise. Include an explanatory key. (See Diagram No. 2.)

Now make a large, triangular turtle, just like the one on the screen. It should have a "head" to indicate the direction it is going in. Punch a hole in both the turtle and the center of the compass circle, and hook them together in a way that permits the turtle to turn in any direction.

Diagram No. 2 (Compass)



AND... A MASCOT

If you have very young children, you might also want to make, or buy, a stuffed turtle (the kind you'd get from a toy store, not a taxidermist). Attach a felt or paper arrow to the turtle's back to help young children associate the direction of the arrow with the direction of the turtle's head. This tool can help little ones practice moving the turtle before they're ready to work on the computer.

A QUICK REVIEW

Here's a quick review of last month's lesson. First, we taught you to "call up" the turtle by typing DRAW (or, in some cases, SHOWTURTLE). We taught you to move the turtle forward by typing FD along with the number of "turtle steps" you want it to move (e.g. FD 50). To go backwards, you type BK plus the number of steps. To turn the turtle, type LT or RT and the number of the angle you want it to turn—from 0 to 360 degrees. To send the turtle back to the middle of the screen, type HOME. Finally, to start a new drawing, type CS (or CLEARSCREEN). With these commands, you can move the turtle anywhere on the computer screen. Cer-

THE FAMILY CHALLENGE

Using some of the shortcuts and the new commands you've just learned, have everyone draw their own initials with the turtle. This is a task that can be adapted to the various age levels and abilities of everyone in your family.

Think out the problem before you sit down at the keyboard. Older learners might use pencil and paper to plot out the angles and lengths their initials will require. For younger learners, the stuffed turtle can help. Remember that you'll need to use the PU and PD commands to move the turtle to each new initial so turtle tracks don't connect them.

Younger children who've only gotten as far as understanding turtle turns of 90 degrees can make their initials using right angles (with the commands RT 90 and LT 90). Older children can experiment with turns of different sizes. Generally, 45-degree turns work well for beginners.

More advanced learners can try making letters with smaller angles and shorter forward lines. They'll be rewarded with a more realistic looking set of initials.

tain versions of Logo may call for slightly different commands.

THIS MONTH'S LOGO LESSON

Now let's look at a few shortcuts to help you move the turtle a bit more efficiently.

- The first shortcut is very simple. Instead of typing each separate command into the computer and waiting for the turtle to move before you type in another one, type several at once. Logo can process a string of commands just as easily as it can process single entries. For example, this series of commands creates a square:

```
FD 30
```

```
RT 90
```

But you can type all that in one long line:

```
FD 30 RT 90 FD 30 RT 90 FD 30 RT 90 FD 30 RT 90
```

In the first example, the turtle follows your instructions as you type

them in, one line at a time. In the second example, the turtle creates the whole square at once.

- **REPEAT.** If within a series of commands there are smaller groups that are repeated, as in this case FD 30 RT 90, there's an even quicker shortcut: the REPEAT command. This line does the same thing as the ones shown above:

```
REPEAT 4 [FD 30 RT 90]
```

The REPEAT command has three parts. The first part is the word REPEAT, which must be correctly spelled out in full. The second part tells the turtle how many times to repeat the steps you're about to describe (in our example, the turtle is to repeat the steps four times). The final part, contained in brackets, tells the turtle exactly what steps are to be repeated.

(Note: The square brackets used with the REPEAT command are not the parentheses on your keyboard. Some computers have specific left- and right-bracket keys; others use a combination of two or more keys to create brackets. Check your users' manual.)

Try it out on your computer. Use the REPEAT 4 [FD 30 RT 90] command to combine several squares into simple drawings like windows and ladders. Then experiment with repeating other number values and commands.

Later in the series, we'll show you how to invent your own commands and teach them to the turtle. It will then be even simpler to make your square—and other figures too.

MAKE YOUR TURTLE JUMP

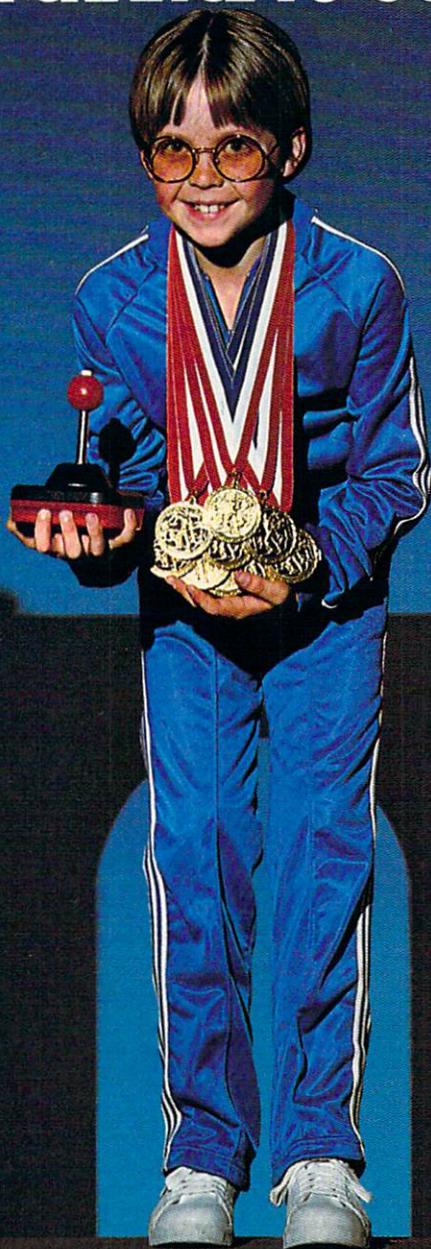
- **PENUP.** What if you want to draw a box on the left side of your screen and a box on the right side, without having them connected? You'll need to move your turtle across the screen without leaving turtle tracks behind. The command for this is PU (or PENUP). For example, PU FD 100 would move the turtle 100 steps forward without leaving turtle tracks.

- **PENDOWN.** When you want your turtle to start leaving tracks again, type PD (PENDOWN). This simply undoes the PENUP command. To have the turtle stop leaving footprints for 100 turtle tracks, and then start leaving them again, you'd type PU FD 100 PD.

Add these new Logo commands to your homemade users' manual or template, so family members can refer to them whenever questions come up. Then, try our suggested exercise, "The Family Challenge." 

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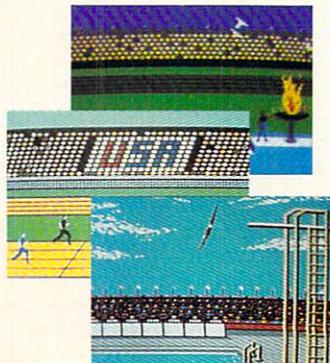
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HAVE YOU BEEN PROGRAMMED TO LEARN PROGRAMMING?

BY DAVID WILSON

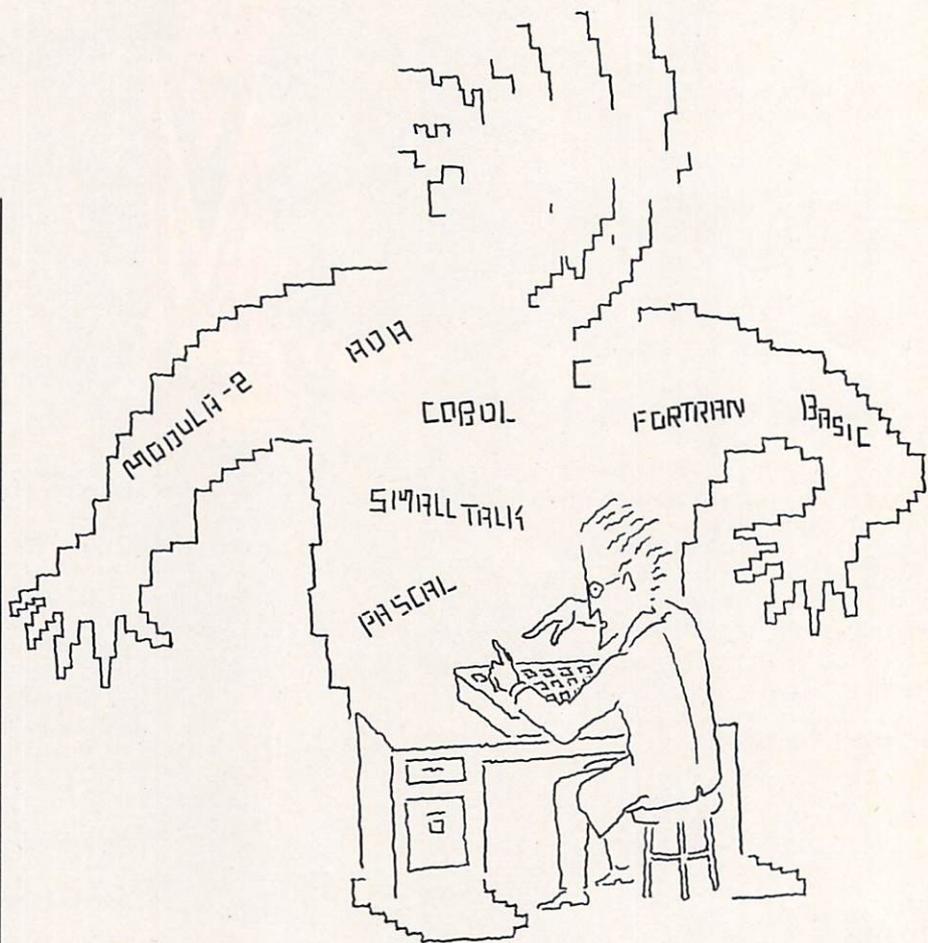
Fall 1983 marked the beginning of my fourth year teaching microcomputer courses at the Cambridge Center for Adult Education in Cambridge, Massachusetts. It has become common practice for my friends, many of my associates, and members of my family to direct people who want to learn about microcomputers to me. Invariably these folks ask, "What about programming? Which programming language should I learn first?" I am no longer surprised by the regularity with which I receive such inquiries, nor am I surprised by the looks of astonishment, disbelief, and, more often than not, relief when I tell these people that there is no need to learn programming at all. But one skeptic, more difficult to convince than most, recently asked me, "If that's true, why do all computer-literacy courses focus on programming?"

The answer to that question is very pertinent and requires some understanding of the history of microcomputers.

HISTORY AND HEREDITY

Heredity and environment have influenced the development of mainframes, minicomputers, and microcomputers. In the beginning, however, there was no provision for adopting (buying) a micro. The hobbyist bought or scrounged the parts, labored long with circuit diagrams, breadboards, and hot soldering irons. Often, when the computer was finally assembled, it would do nothing—not one single thing—until the hobbyist taught (programmed) it

DAVID WILSON of Newton, Massachusetts, operates Bootstrap Associates, a company that teaches people—including teachers—the various applications for microcomputers. He is a self-taught computerist, and the only programming language he teaches is Logo. Wilson bought his first computer, an Apple II, six years ago; he now owns 13 computers.



to do something. In cellars, garages, and workshops around the country, a new elite came into being. To own a microcomputer required that owners not only construct it, but know it so intimately they could and did breathe life into it. They had no choice about whether or not they needed to know programming. No programming, no life for their construction. As with parents, most microcomputer hobbyists had little understanding of the potential or eventual uses of their creation. It was the process of creation that was all-consuming.

You may not know any of these microcomputer hobbyists. They are, after all, limited in number, but they share many of the characteristics of hobbyists in other fields, and somewhere among your family or acquaintances you can probably iden-

tify at least one of them.

In case none comes immediately to mind, let me tell you about my friend Andy. Andy hasn't discovered computers yet, but he has long been an audio fanatic. Andy has built amplifiers, tape decks, speakers, receivers, equalizers—almost anything you can think of that has to do with audio—from scratch. He seldom listens to music because he is continually tearing his system apart to add or change something. In fact, he doesn't care about music at all. He cares only about the performance of his audio system.

Once, while I was visiting Andy, he asked me to listen very closely. Checking his watch, he tuned the receiver to a network station and cocked his ear to the speaker; a moment later his face lit up. "Did you hear that click?" he asked me. "That

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was the network switching over to the local stations. They spend millions of dollars on equipment to keep us from hearing it, but this system of mine is so sensitive they can't hide it from me."

To allay whatever concerns you might have about Andy, let me assure you that in all other areas of his life—at least those with which I have any experience—he is reasonable, rational, and quite charming.

If Andy were to become a computer hobbyist, he would exhibit the same characteristics they do. He, like them, would not be very interested in what useful things you might do with a microcomputer. He would be interested in programming it to do something, to do it in some clever and creative way, to do it as fast as possible, and to do it with as short a program as possible.

THE EVOLUTION OF MICROS

As more and more microcomputers were built, a few became acknowledged as superior. Some hobbyists less skilled in electronics coveted these superior machines, and a market was created for microcomputers. Microcomputers were built and sold, and the buyers expected and were expected to program them. Users' groups were formed; members wrote and swapped programs. Publications such as *Byte* and *Creative Computing* appeared to increase the spread of information—mainly how to build and how to program a microcomputer. To make the writing and editing of programs easier, programmers wrote text-editing programs. Gradually, these became more and more sophisticated until they were combined with text-formatting programs, creating the first word-processing programs for microcomputers.

The capabilities of word processing and game playing provided an entrée for microcomputers into homes and businesses. A new group of users began to develop. These folks didn't care much about how a microcomputer did something, but they did care a great deal about what it did and how it could be useful to them. They cared enough to withstand and endure the inarticulate, poorly documented, often patronizing and arrogant treatment they received from microcomputer manufacturers and software publishers. They forged new expecta-

tions of what a microcomputer should be capable of doing, they demanded higher standards of hardware and software from the manufacturers, and they learned a little about programming—enough to be able to patch up much of the unfinished, incompletely tested product that was routinely sold just a few years before. Most learned enough about programming to know that they had no interest in it.

A COMMON PRODUCT?

We are approaching a time (although many manufacturers think that time is already here) when hardware or software will be much like other consumer products—that is, you take it out of the box, you plug it in, and it does word processing or spreadsheeting or information management or whatever. Learning to use the hardware and software to do useful and satisfying things creatively and with elegance will be our next challenge.

While computer users outnumber computer hobbyists many times over, the expectation that you must know how to program to use a computer lingers with us. It is patently not true.

Few of us would presume that we had to be etymologists or linguists in order to use the English language.

None of us believes that we have to know how to assemble or tune an internal-combustion engine in order to drive our cars to work every morning.

We do not expect that we must be farmers and grow our own vegetables in order to use vegetables in the preparation of meals.

We would not accept the proposal that we must know how to compose, arrange, and transcribe music, or know how to play a musical instrument, in order to enjoy the music that comes over our radios, or from our tapes and records.

It is an error to so readily assume that in order to make use of a computer we must learn to program.

We can also find economic support for the conclusion that learning to program is not necessary. It was never economically feasible for third parties to write and market programs for mainframe computers or minicomputers because there was never enough of any one model. With the production and sales of first thousands, then tens of thou-

sands, and now hundreds of thousands of compatible microcomputers, a viable market for programs developed. This provided independent programmers with the opportunity to create software, sell it inexpensively, and still make a satisfactory (occasionally a spectacular) profit.

For you or me to write almost any program that will do anything significant, it would take hundreds of hours of our time. For a fraction of the cost of the value of our time, we can buy a program that will do (perhaps not as perfectly as, but perhaps better than one we might write) most of what we want it to with only minor inconveniences.

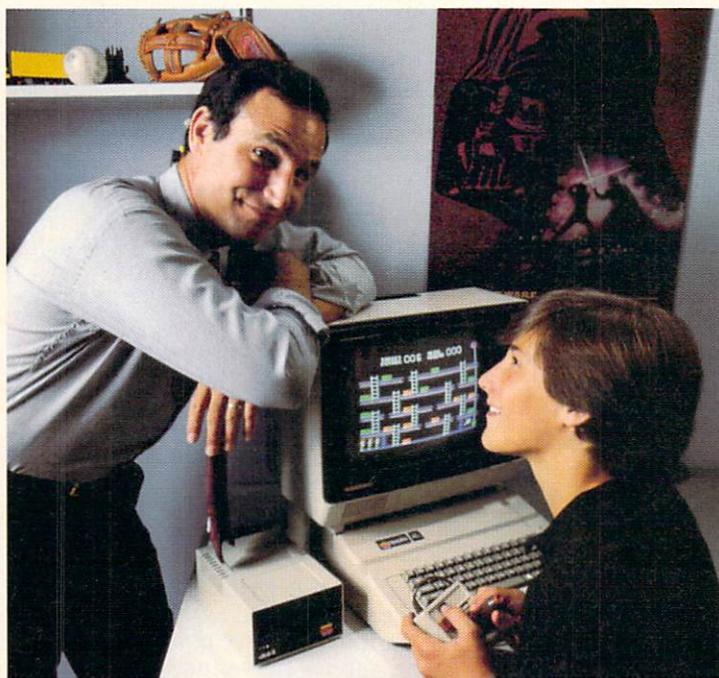
PROGRAMMING'S REWARDS

I would not want to leave you with the idea that I am against programmers or programming. I think that learning to program has rewards of its own that are beneficial to our intellectual processes. In fact, there are two very good reasons to learn to program. The first is to discover that creating in this medium stimulates a passion within you; the second is to provide you with the means to realize an idea for using the computer to do something that nobody else has developed or considered. I am indeed very grateful that there are programmers out there, or my computer could not provide me with the facilities on which I have come to depend. I hope I'll never have to rely on a typewriter again.

My contention is that you do not have to learn programming in order to use computers extensively, satisfactorily, even elegantly. In the course of teaching, I constantly run across people who fear and doubt their abilities to use computers, often because their first and only exposure to computing was a programming course they took somewhere as an introduction to computers. Learning to program in itself will not teach you much about computers. Many programmers who are absolute wizards at writing programs have no more understanding about computer applications than boat designers have about navigation and exotic South Sea islands.

It is, I believe, a more natural sequence first to learn how to use a computer, and then to make the choice to learn to program on the basis of a need or desire that arises out of that use. ☐

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COMPUTING CLINIC

SAVING PROGRAMS • DATA STATEMENTS • LONG PROGRAM LINES • WHAT'S A MOUSE? • TI EXTENDED BASIC

BY JEFFREY BAIRSTOW

I have an Atari 800XL computer with a cassette recorder. When entering long programs, can I type in part of the program and store it on tape? Can I then reload the partial program, finish typing it in, and record it over the same part of the tape?

JOSEPH PJURA
Ozone Park, New York

You can store an incomplete program on a cassette and reload it later to finish the program. The completed program can then be stored on the tape in place of the old part of the program. Your cassette recorder merely stores any program in memory at the time of recording, irrespective of its completeness.

However, I would suggest you record the revised program on a new section of tape. If a mistake is made in recording you will at least still have part of the program intact, whereas if you record over the old program, you erase it from the tape. Save the program before running it, since a single typing error can cause whole programs to disappear.

Why does this program return the error statement * DATA ERROR IN 10?

```
10 READ ROW, COL
20 CALL HCHAR(ROW,COL,42)
30 GOTO 10
40 END
50 DATA 12,16,11,15,10,14
```

The program is intended to put asterisks in the locations specified by the DATA statement (on the TI-99/4A).

JOHN SCOTT
Gardnerville, Nevada

This is a common problem for novice programmers. You have an endless loop in statements 10-30 caused by the GOTO in 30. The READ statement forces the computer to keep checking for data in line 50 even though there are only six coordinates. Limit the loop by using FOR...NEXT statements, such as:

```
10 FOR N=1 TO 3
20 READ ROW,COL
30 CALL HCHAR(ROW,COL,42)
40 NEXT N
50 DATA 12,16,11,15,10,14
```

If you use more than three pairs of coordinates in your DATA statement, change the upper limit number (here it's 3) for the loop in line 10. Try to avoid the use of GOTO statements—they make for messy programs!

When I try to use a program line that is longer than two lines on my Commodore 64, I get a SYNTAX ERROR message. How can I avoid this?

JAMES RHEA
Peoria, Arizona

Program lines on the Commodore 64 are limited to 80 characters, or two lines, on the display. If you have very long program lines, try taking out unnecessary spaces, such as those between commands and variables. For example, PRINTA will produce the same result as PRINT A.

If the long lines are DATA statements, you can break them into several one-line statements. This is good programming practice, by the way. Similarly, if long lines are caused by using lengthy alphanumeric strings, either shorten the strings or use variables to define the parts of the string separately. Finally, if you have several statements in a long line, you can place them in separately numbered lines. Just be sure not to alter the logic of the program; be wary, for instance, of breaking up IF...THEN clauses.

What is a mouse and how is it used?

STEVE TARDIF
Kensington, Connecticut

A mouse is a device for moving a cursor or other object (such as a sprite) around on the screen. Joysticks and cursor keys will also do the same thing, but in many cases are not as easy to use. A typical mouse has one or more buttons on the top of a small box that can be moved around on a flat surface. The box is connected to the computer with a cord that's like a tail, so the gadget does resemble a "mouse." "Optical" mice, such as the PC Mouse, move over a special pad, but most can be used on any desk top.

As the mouse moves, the cursor moves correspondingly on the screen. The buttons are used for specific actions, as is the "fire" button on a joystick.

The mouse's main advantage is that it can move a pointer around on the screen with great precision. On the Apple Macintosh, for example, this is very important since most of its programs have complex displays with menus or graphic icons that are selected by moving a pointer. The mouse is also good at moving the cursor diagonally, such as from the center of the screen to the top left-hand corner. With cursor keys, you cannot make diagonal movements.

Mice are available for several computers, including the IBM PC and the Apple II series. They cost between \$100 and \$200. The price often includes special software that's needed for the mouse to operate.

What is the difference between TI BASIC and TI Extended BASIC for the TI-99/4A computer?

JAMES WILLIAMS
Detroit, Michigan

TI Extended BASIC does indeed extend the capabilities of the TI-99/4A computer. This optional cartridge provides more than 40 additional or "expanded" commands and subprograms to the regular TI BASIC. In particular, Extended BASIC adds sprite graphics, speech capability (with the speech synthesizer), and provides the ability to load and run one program from another. It's such a powerful language that using it is like using a new computer.

The TI Extended BASIC cartridge is available from several mail-order companies, such as 99/4A National Assistance Group, Box 290812, Fort Lauderdale, FL 33329; (305) 583-0467, for under \$100.

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 in England. His family, including two preschoolers, uses a variety of computers.

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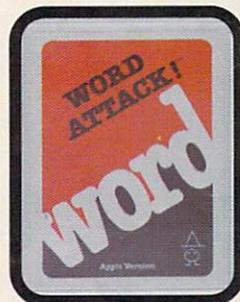


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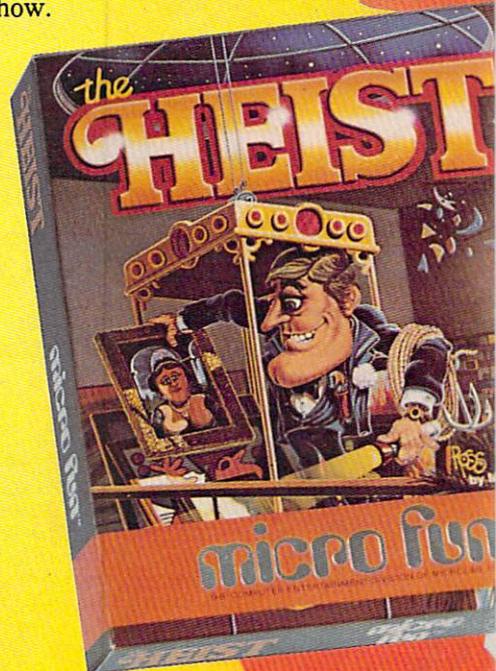
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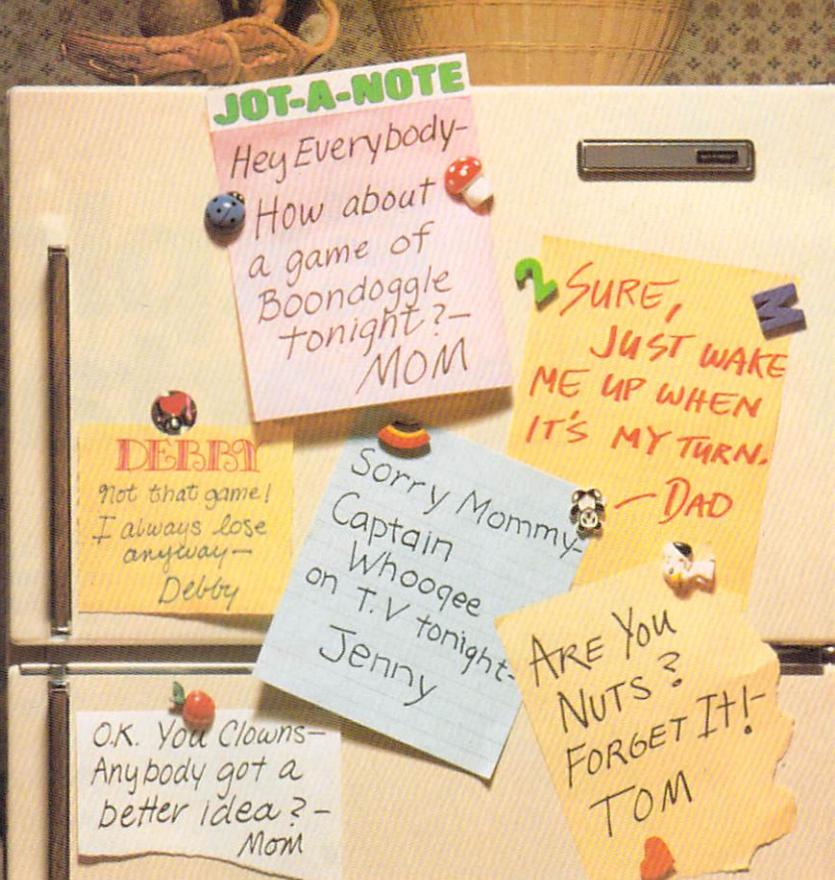
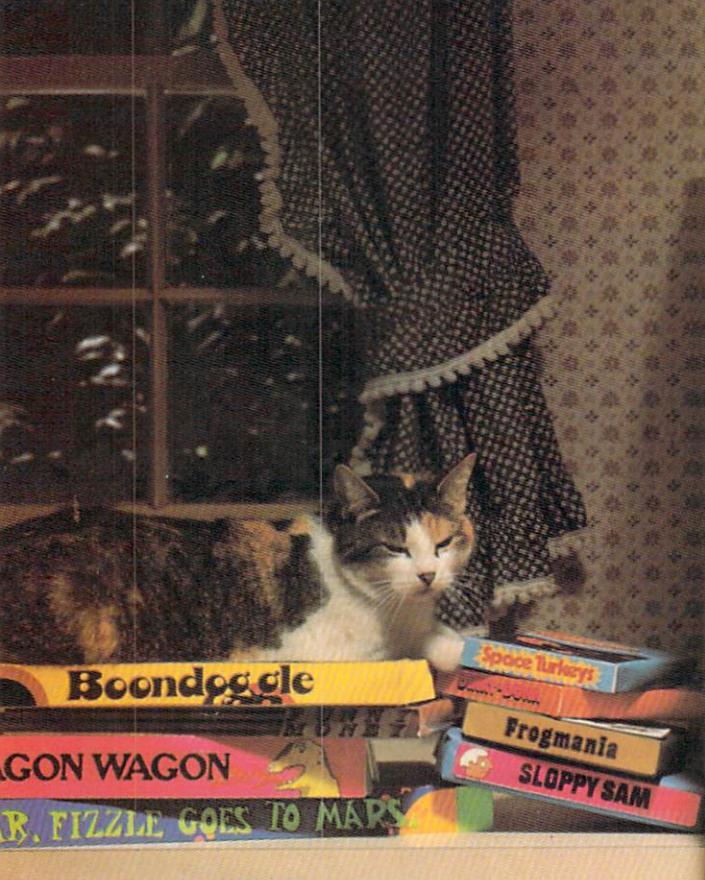


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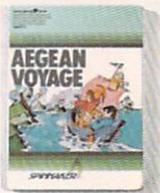
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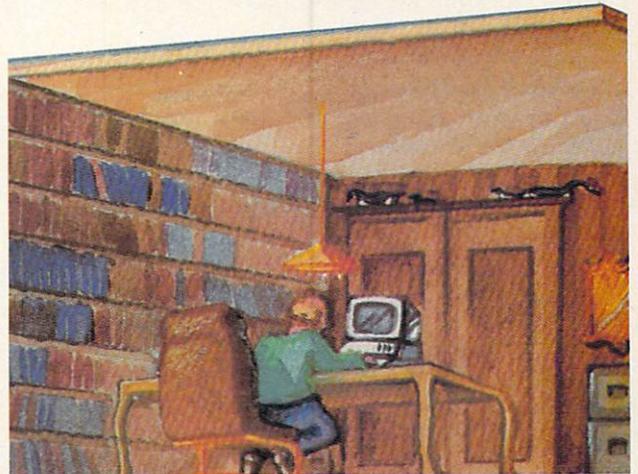
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How to Organize Your Home, Data-Base Style

FAMILY COMPUTING

YOU CAN RUN YOUR HOUSEHOLD BETTER, WITH JUST ONE PIECE OF SOFTWARE AND A LOT OF IMAGINATION



BY ROBIN RASKIN

If your home looks like mine (nouveau clutter), you might find data-base software the greatest invention since the file cabinet. No matter what room of the house you wander into, there's a job for you—and your data base. It can solve the problem of too many lists, too many books in your library, too many antiques, too many scraps of paper with telephone numbers scribbled all over them. . . .

Think of a data base as a set of file cards. Each card contains information about one item, be it one person, one medical record, one recipe, or one stamp in your collection. The trick is to organize your file cards so you can retrieve information easily.

Eventually, the data base can replace your written record or at least reduce the number of papers in your overstuffed filing cabinet. You'll often want to recall information using KEY WORDS for some programs. For example, if I create a data base for my record album collection, I will want to enter the words BEATLES, or BEETHOVEN, or EUGENE ORMANDY, or YELLOW SUBMARINE, and have all of the records or entries with those KEY WORDS appear on my screen. This type of data retrieval, called a SEARCH, is the most important element in any data base.

Computerized file-management can help you streamline your record-keeping in other

ways. Lists and inventories are not stagnant; they must be updated periodically. Any data-base program allows you to add or delete a record from your files and modify the contents of a given record with varying degrees of freedom. Many data bases can SORT lists by putting them in a ranked order, for example, alphabetical or numerical. Some data bases can COUNT, giving you a total number of items, such as how many bowlers there are in the league this year. Finally, the most powerful types of data bases can COMPUTE, giving the answers to mathematical questions like how much interest you earned last year, or what percent of the Little League team batted over 300.

The principle behind a data base is simple. Create a format that contains the categories for all the information you'd like to store. Once you've created the format, you type in your own data. In a data base of insurance policies, one category I would include in the format is POLICY NUMBER. My data for that category is the ID number of each policy.

Commercial data-base software ranges from very simple "index card"-type formats to complex systems capable of intricate searches and computations. A good rule of thumb to remember is: The more they do, the more difficult they are to use.

ROBIN RASKIN is a contributing editor to FAMILY COMPUTING. Her last article, "Computerizing Your Hobby," appeared in the August issue.

DIRECTORIES AND MAILING LISTS

The simplest household data to organize is the personal address and telephone directory. You can accommodate lists of names, telephone numbers, and addresses, as well as birthdays and anniversaries in your data base. Depending on how you organize it, it can also perform a number of other tasks for you. If you're involved in a lot of different clubs or organizations, for example, you can create a "relationship" category or field to keep your contacts straight. If Max is in your Great Books discussion group, Mary is in your car pool, and Mr. Breeze is the exterminator, your data base can categorize all this information. Next time you want to mail out newsletters to your Great Books Club, simply enter GREAT BOOKS and have your data base provide the addresses.

The real power of the data base is evident when you begin to include these fields or categories in your design format. The more fields you have, the more useful your data base will be. Depending on the number of categories your data base is capable of searching, you can enter a person's name, phone number, date, or club affiliation, and have the computer retrieve the information. If you want to send birthday cards to everyone in your personal directory who was born in September, you can instruct the data base to search for the list of people who fit that description. If you want to call the exterminator but can't remember his name, you can SEARCH your "service" category, where the names and phone numbers of your favorite plumber, carpenter, and mechanic are listed.

Many data bases have a MERGE feature which allows you to combine your mailing list with a word-processed letter. MERGE lets you type a personalized letter to the group and have the computer supply the name and address of the individual.

As a writer, I have an important category in my data base called COMPUTER-RELATED contacts. If I meet someone who has an interesting application for the computer, I enter a few notes in that category like GARDEN INVENTORY, HOME-BUSINESS SOFTWARE SALES, or ROBOTS. Then, when I search for all my COMPUTER contacts, I get names along with some mind-jostling comments.

But, you needn't be a writer to benefit from data basing. Another self-professed data-base user is Marie Norwood, vice president of customer relations for Women's Ware Software, a Connecticut firm that has created some easy-to-use data-base programs. Marie uses her telephone directory data base to investigate any mysteriously expensive phone calls—and with three children there can be quite a few. She can SEARCH through her data base and match the telephone numbers with the suspect number on the phone bill to determine who talked

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and financial growth;
keep records of accounts
and mail-order packages

KITCHEN
Plan menus,
store recipes,
print out
grocery lists
and chore
assignments

DINING ROOM
Plan party
guest lists,
thank-you notes

FAMILY ROOM
Record book,
videotape, and
album collections

BASEMENT
Track fuel costs,
tool inventory

SOME GUIDELINES FOR PURCHASING A DATA-BASE PROGRAM

1. Remember, the more they do, the harder they are to use. Sophisticated data-base programs are almost like programming languages because they allow you to develop complex relationships between the items you enter into the data base.
2. Check out the limitations of the data base. What is the maximum field length (the number of characters you can type in for a given category)? What is the maximum record length (the description of an item in your data base, for example: ID number, coverage, premiums)? What is the maximum number of records you can store in the data base? (If you have a collection with 600 stamps, you probably won't want to buy one that can hold only 300 records.)
3. Be aware that many data-base programs ask you to maintain a separate data disk for each file. This means your recipes will be on one disk, your antiques on another, your medical records on another, etc. The advantage is you won't need to concern yourself with file names. (I'm cheap, though. Many of my data bases only have a few records. I like to use all my disk space and store a couple of data bases onto one disk.)
4. Make sure you can select and display a portion of your data-base program (for example, all the recipes with meat) without thumbing through your entire file.
5. Determine how powerful and easy to use the SEARCH commands are. Some data bases use English language-type queries, some use programming commands, and others use a series of menus and prompts. Some data-base programs demand more precision than others. For example, if you want to search your album file for jazz records, many data bases insist you type the query using the exact entry format (for example, JAZZ with all uppercase letters) that you did when you created the data base. Other, more friendly data bases may use the cursor or menu to ask you to supply your commands.
6. Determine your need for calculations. Are simple additions and subtractions enough? Will you need to calculate percentages and yields? Generally, the more sophisticated data-base programs allow you to derive mathematical formulas. The simpler home data-base programs have only rudimentary mathematical capabilities. The very simplest have no math abilities at all and operate more like electronic "file cards."
7. Figure out how many fields you are going to need to search on. Some data-base programs SEARCH only a single KEY FIELD, for example: a person's last name. Others let you SEARCH on more than one category. If you need to access your records based on different criteria, this multiple SEARCH is invaluable. In a data base that contains only a small number of records, you may not need to search at all. Make sure you can SCROLL, BROWSE, or electronically page through your data.
8. Check the PRINT options. Printing should be a separate option on the data-base program's menu. You should be able to control the format of the PRINT option so that even if your data-base display is 40 columns, you can still print on an 80-column printer.
9. Determine if mailing labels are important to you. If so, get a data-base program with a MAIL MERGE built in.
10. Decide whether you'd rather spend more time or more money. There are excellent data-base programs available for very specific applications. For example, you can purchase a prepackaged stamp-collecting program or stock-market portfolio. These will already have specified the names of your fields and categories. All you have to do is enter your data; the formatting is done for you. The optimal situation, of course, is to test a data base before buying one. If you can find a friend or a store that will let you enter four or five records and attempt to retrieve them, you'll be better able to judge for yourself.

to whom and why for so long.

It's possible that you don't have a large enough phone directory to warrant a computerized version, but certainly there is some aspect of your household "inventory" that deserves data-base treatment. One busy executive with a country house and a home in the city uses her data base to help manage the complexities of dividing her time between the two. Each weekend she prints out a list of essentials she has to cart from one house to the other. She also keeps an inventory of her valuable possessions, their location, and their condition. Computerizing the operation makes it simpler to update and retrieve the information as possessions change and grow.

Marie Norwood inventories her family's impressive book collection and keeps tabs on their various insurance policies with her data-base program. How about you? Do you car-pool? A data base could easily store the names, addresses, and schedules of those in your car pool. Do you have many house plants? Use a data base to record the type of plant, watering,

and instructions for care. If you take a trip, print out the contents of your plant data base and leave it for the house-sitter. Do you garden? A data base can make your thumb a bit greener by helping you keep track of what's planted where, when to dig up your tulip bulbs, when to rotate your vegetables, and what treatment is needed. Your data base also can help you inventory the garden tools that are forever disappearing.

THE KITCHEN AIDE

Whether it's recording a menu of fine wines, or the most mundane grocery list, a data base is as comfortable in the kitchen as anywhere else in your home. It can be a dazzling chef. But, don't make the mistake of simply using it as a file box. Rather, create categories for your recipes (e.g. meats, vegetables, breads). Indicate if it's breakfast, lunch, or dinner; list the ingredients and how many people the dish serves. You can include some dietary information like calories and protein counts.

Party preparations can be eased using a

WHETHER IT'S RECORDING A MENU OF FINE WINES OR THE MOST MUNDANE GROCERY LIST, A DATA BASE IS AS COMFORTABLE IN THE KITCHEN AS ANYWHERE ELSE IN YOUR HOME.

data base. Keep track of who is invited and who has RSVP'd. If you entertain often, you might want to set up a permanent guest data base including food preferences (vegetarian, kosher, allergic to milk, etc.). If you prefer theme parties, like luaus or Mexican fiestas, you can catalog special needs for each type of celebration, e.g. party favors, special dishes, decorations. You can even keep track of who came with whom to your gathering to avoid bad mixes and repeat good ones. Record the gifts your guests may have brought so you can acknowledge them with a proper thank you. Merge your thank-you notes with your personal directory, and you'll really be computing!

ORGANIZING THE KIDS

Kids are natural squirrels; they adore collecting things. Nothing they tuck away is surprising—stamps, rocks, bugs, baseball cards, comic books, coins, dolls, and dollhouse furniture. But, no matter how trivial the collection or hobby, it can become an educational tool with the help of a data base. The child who uses a data base is not only collecting data, but gathering knowledge and skills that can be applied at school, doing homework, or even at a future job.

Let children keep a data base of their own school grades and test scores. If your kids love baseball, they can use the data base to keep the statistics and records of their Little League team. If you have a daughter active in Girl Scouts, the data base can keep tabs on the amounts and types of cookies each girl in the troop has sold.

FUND RAISING

Some of my most grueling childhood memories are of the nights spent, pen in hand, addressing envelopes for my mother's latest crusade or involvement. Today, computer-savvy mothers—and fathers—take on PTA meetings, political campaigns, and fund-raisers single-handedly and with minimal effort. With the MERGE capabilities, they can word process a personalized letter and have the appropriate mailing label addressed by the computer.

CONDENSING YOUR FILES

You'll probably never get rid of all your manila folders as long as there are bills to be paid and accounts to be balanced. But, the same data base that keeps track of your grandmother's heirlooms can be used to help organize your financial file cabinet.

Open your file cabinet and take a look. Make a list of what items you keep track of and determine whether a data base will help or hinder the operation. Our car insurance isn't much of a nuisance. We have one car, pay quarterly, and haven't had much interaction with the insurance company. Why glorify the trivial? A manila folder works just fine. However, we do have small kids, vaccinations, childhood illnesses, and zooming heights and

weights, all of which require constant updating. Therefore, it makes sense for me to use the data base for our medical records. (*Watch for an article about setting up medical records in a future issue.*)

For the energy and cost conscious, let me suggest using a data base to monitor your utilities. Keep track of the price, delivery date, amount delivered, consumption per month, and daily temperatures to get an indication of your average use. You can then plot and test conservation strategies which could save you bundles. Suppose you add solar collectors to your home-heating system. By monitoring the fuel consumption for the same temperatures, you can get a fairly accurate indication of how long it will take for your investment to pay off.

DATA BASING YOUR DOLLARS

Money management is the only area for which I prefer a special financial filing package, or spreadsheet, over my standard data base. Because of the complicated nature of finances, formatting a budget data base can be a formidable task.

To supplement the general data base, there is a wide assortment of reliable financial filing systems to choose from—including home budgeting, tax return, checkbook, home accounting, and stock portfolio programs. They make life easier by providing the formats for you.

If you're financially savvy, however, it's possible to use a data base for home budgeting. You'll want to set up categories for your revenues and expenditures. Each time you conduct a transaction, you will need to record the date and amount. The data base should total all the categories month by month and annually.

Using a data base for stocks and bonds is adequate when you are creating a portfolio, but it is difficult to do any serious financial analysis because of the limited mathematical capabilities of most data bases. A data base can help record the types of stocks, the number of shares, the price at which they were bought and sold, the dates, the amounts of the dividends, and so on. But, once you're interested in doing any type of calculations, a customized program, such as a spreadsheet or stock and bond portfolio program, is a better choice.

Checkbook programs are not hard to set up using a data base. Allow for categories that will record the check number, amount, type of expense, to whom it was issued, whether it's tax-deductible, and then indicate the status of the check. You can do this for just one or for many accounts, but it's wise to have an individual data base for each account.

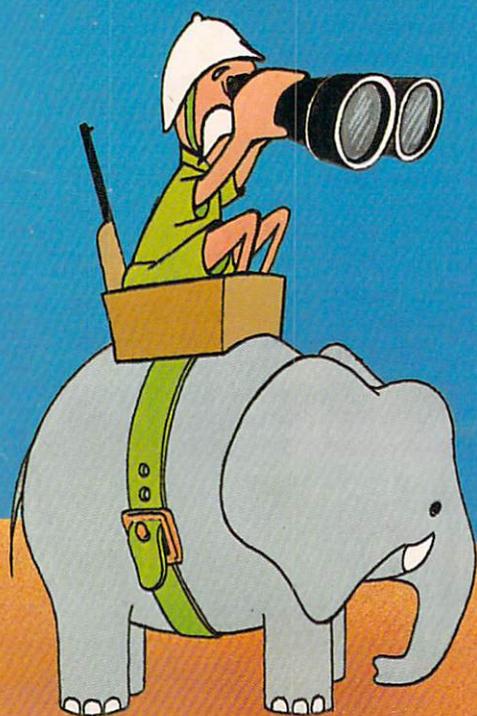
The worst part of getting your data base up and running will be transcribing your records into the computer. Be careful and be patient. Do it right the first time and it will save you hours later. Remember, the data base is 99 percent perspiration and 1 percent inspiration. This article should provide the inspiration . . . now start organizing. 

THE SAME DATA BASE THAT KEEPS TRACK OF YOUR GRAND-MOTHER'S HEIRLOOMS CAN BE USED TO HELP ORGANIZE YOUR FINANCIAL FILE CABINET.

Your Guide to Computer Books

COMPUTER BOOKS ARE A TERRIFIC WAY TO GET MORE OUT OF YOUR COMPUTER, BUT PICKING THE RIGHT ONE CAN BE ROUGH GOING. HERE ARE SOME OF THE BEST WE'VE FOUND.

BY RICHARD W. SLATTA



Any new computer owner knows that one of the most frustrating obstacles to overcome is an inadequate instruction manual. Perhaps the guide to your new machine is overly technical, or poorly organized, or structured in a way that doesn't make sense to you. Worse yet, it could contain actual errors.

Maybe you've already mastered the guidebook. You know how to compute, but you're lost as to *what* to compute. What you need is a collection of programs, a kind of suggestion book for various applications you can create for yourself at a reasonable cost.

Help is on the way. And happily, you may not have to look further than your local bookstore to get good, concise information geared specifically to your machine.

Here's a machine-by-machine breakdown of books that are worth looking into. We've reviewed books that fall into three categories: guides and manuals that introduce you to your computer, introductions to BASIC language programming, and collections of BASIC programs for the home user.

APPLE

For a colorful, humorous, and entertaining introduction to BASIC, look for Rodnay Zaks' *Your First Apple II Program* (Sybex, 1983, \$12.95, 182 pages). One of the most talented of today's computer writers, Zaks doesn't try to cover all elements of BASIC programming—just enough to get you started. Sets of exercises testing you on your knowledge conclude each chapter. (Versions of this clever book are available for Atari, Commodore 64, TI-99/4A, VIC-20, and IBM PC.)

For a good beginner's guide, we recommend Robert Price and Jerry Willis' *How to Use the Apple II & IIe* (dilithium Press, 1984, \$5.95, 146 pages). This book is one of dilithium's *How To Use* series which covers the most popular personal computers. The authors give a useful list of peripherals and discuss micro maintenance and the rudiments of troubleshooting. They also offer advice on software purchases and suggestions for further reading.

If you're ready to move deeper into BASIC programming, look for David C. Goodfellow's *Apple II Basic* (TAB Books, 1983, \$12.95, 227 pages), a well-organized tutorial guide to programming. The author writes for the user who's familiar with the fundamentals of BASIC and wants to learn more. Goodfellow presents programming ground rules and includes thorough sections on the various functions of the computer. He describes input, output, and the manipulation of files.

For a "heavier" reference book, try the second edition of the *Apple II User's Guide*, by Steven Cook, Martin McNiff, and Lon Poole (Osborne/McGraw-Hill, 1983, \$17.95, 482 pages). This technical manual is comprehensive and clear but a bit intimidating for new users. Its extensive appendices make this a book that one can consult for years.

If you're looking for home finance and business programs to type yourself, you'll enjoy *Apple II BASIC Programs in Minutes* (Sybex, 1983, \$12.95, 176 pages). Author Stanley R. Trost gives listings for 65 home applications in business, real estate, data analysis, record-keeping, and math drills. Most of the programs are short and require a 64K Apple II or IIe. (Also available in Atari BASIC.)

ATARI

For those who prefer a humorous approach to learning, *Dr. C. Wacko's Miracle Guide to Designing and Programming Your Own Atari Computer Arcade Games* (Addison-Wesley, 1984, \$12.95, 256 pages), by David Heller, John Johnson, and Robert Kurcina, is right on target. It will give you a good understanding of programming, plus program listings for such details as flying saucers, missiles, and even music. Wide margins leave room to write notes and comments. (Versions by different authors are available for Commodore 64 and Coleco ADAM.)

The Easy Guide to Your ATARI 600XL/800XL (Sybex, 1984, \$9.95, 198 pages), is another good beginner's book—a quick, friendly way to ease into Atari computing. Author Thomas Blackadar looks at the hardware and its capabilities, and includes a section that skims through BASIC programming.

If you already know something about BASIC and want a good selection of programs, seek out Howard Berenbon's *Mostly BASIC: Applications for Your Atari, Book 2* (Howard W. Sams, 1983, \$15.95, 224 pages). This large, spiral-bound book contains 84 programs, including plenty of education and home applications, home finance, and even a few fantasy dungeon games. (Also published for Apple, TRS-80, and IBM PC.)

Your ATARI Computer: A Guide to Atari 400/800 Personal Computers (Osborne/McGraw-Hill, 1982, \$17.95, 458 pages), by Lon Poole, is a valuable manual for serious Atari users—similar to Poole's reference book for the Apple II plus and IIe. (See the Apple section above.)

COLECO ADAM

Note: Coleco ADAM owners have certainly heard a lot about their machine's flaws. Now, several books are available that are geared to help them get the most out of their computer. We turned to Donald Wigal, a New York-based writer who has worked and word-processed extensively with the ADAM. Here are his recommendations on books to help users overcome some of the difficulties and realize the ADAM's potential.

For ADAM users trying to swim through the machine's confusing documentation, the best books around on most counts are *Programming ADAM*, by Edward B. Claflin and John A. Heil (Banbury Books, 1984, \$14.95, 320 pages), and *Understanding ADAM*, by Eric N. Berg and Alan Smith (Banbury Books, 1984, \$14.95, 320 pages). Besides being well-orga-

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nized (except for the annoying omission of an index), they contain a wealth of information to help you get your computer up and running. The programming guide will gently walk you through the ground floor of BASIC. One chapter, "Finding the Bug," teaches you how to dissect programs to find what's keeping them from running smoothly.

A little less comprehensive, and less expensive, but still concise and valuable, Jerry Willis, Merle Miller, and Cleborne D. Maddox's ADAM version of the *Things To Do . . .* series (Signet/dilithium Press, 1983, \$3.95, 186 pages), will appeal to potential ADAM purchasers.

The *Coleco ADAM User's Handbook*, by Weber Systems (Ballantine Books 1984, \$9.95, 304 pages) will come in handy as a no-nonsense guide to the machine. No hand-holding or chattiness here, just a lot of solid technical information, invaluable for ADAM purchasers

who have early versions of the machine's inadequate documentation.

COMMODORE VIC-20

Though most users will quickly outgrow it, *How to Use the VIC-20 Computer* (dilithium Press, 1984, \$5.95, 171 pages) is priced low enough, and written clearly enough, to make it a good buy for beginning adults and even some younger VIC users. Authors Jerry and Deborah Willis cover hardware setup, include a few chapters on programming, and list suppliers of peripherals and sources of other information. The authors also make suggestions on software purchases for many home applications.

Another intro book, suitable for older children and adults, is *Getting the Most From Your VIC-20* (Spectrum/Prentice-Hall, 1983, \$9.95, 136 pages). Hank Librach's learn-by-doing book includes lots of fun exercises plus 10

BOOK-BUYING GUIDELINES

If you're feeling a bit lost in the jungle of computer books, it's no wonder. This year alone, more than 2,300 new titles may be published. The search for the right computer book can lead to as many frustrations as the search for the right computer. Making sense of all the titles out there is really a process of narrowing down the options and asking yourself several questions. Here are a few guidelines you should follow.

WHAT YOU'LL DO WITH IT

What do you want to do with it? Which of the following categories of computer books most applies to your needs?

Computer-specific books are available for virtually every known brand of computer. The titles mentioned above fall into this category. They usually furnish some or all of the following: technical information about hardware; guides to programming on your particular machine; listings of useful programs for your computer; evaluations and descriptions of software available.

General computing books usually provide a history of the computer and a survey of its uses. Frequently they compare different brands of computers on the market.

General applications books describe one or more common uses of the computer, such as word processing, computer-aided design (CAD), computer-aided instruction (CAI), etc. **Specific applications** books focus on one particular program, serving as a users' manual for popular programs like *WordStar* or *VisiCalc*. **Vertical applications** books discuss the uses of computers in certain professions, such as real estate.

Language-specific books contain reference material on commands and program structure. Only sometimes do they include tutorials for learning the language.

Operating-system-specific books are even more technical, aimed primarily at professional and very serious programmers who want such systems as CP/M, MS-DOS, or UNIX described in detail.

Buyer's Guides are aimed at teaching good shopping strategy. They usually contain directories of hardware and software companies, and sources for more information.

Activities books help you explore your computer further by suggesting unusual projects the whole family may enjoy. They are often general in nature, and not geared specifically to one brand of computer.

WHAT IT DOES FOR YOU

After you've decided which type of book you want, and found one that addresses your needs, consider whether or not it supplements the literature or manuals that came with your hardware or software. Is it better written? More clearly organized? Well-indexed?

What's the book's publication date? In the maelstrom of technical innovation, many books date quickly. In particular, beware of buyer's guides that make recommendations about models that may have been discontinued or not yet been introduced.

Who is the book's audience? The only thing more frustrating for a novice than an overly technical guidebook is a condescending or limited one.

Read book reviews.

In the bookstore, check the index and table of contents to make sure you can refer back to find information easily. Make sure the author's style suits your own.

Follow these tips and you'll find yourself with a helpful book or two, and well on your way to getting more out of your computer.

—DAVID WILSON



household and educational program listings.

Besides being a complete introduction to the machine, *The VIC 20 User Guide* (Osborne/McGraw-Hill, 1983, \$15.95, 388 pages), is a thorough programming reference. The authors, John Heilborn and Ran Talbott, include clear instructions for setting up and running the VIC and its peripherals. The more useful sections of the book are the chapters on programming—game controllers, animation, high-resolution graphics, and uses for BASIC. Beginners may find some sections overly technical, but the appendices will help.

Mastering the VIC-20 (TAB Books, 1983, \$9.95, 213 pages), by John Herriott, provides a friendly, learn-by-doing approach that leads beginners through more than 50 sample programs. All the programs are open-ended: Readers can modify and adapt them as they gain experience. (Note: Some listings require 16K.)

For an inexpensive collection of VIC games suitable for children, try *VIC-20: 50 Easy-to-Run Computer Games* (Howard W. Sams, 1983, \$5.95, 96 pages), by Edward Burns. The program listings are all shorter than 30 statements long. (Versions available on disk and cassette, too, for the Commodore 64, IBM PC, and TI-99/4A. TI programs aren't in color.)

Thirty-eight programs are offered in *More Than 32 BASIC Programs for the VIC-20 Computer* (dilithium Press, 1983, \$19.95, 331 pages). The listings cover more than just games. Graphics displays, math programs, and other applications are also included. Each chapter describes the purpose and logic of the program, gives a sample run and printout, and suggests easy changes. Beginners may wish to keep a more detailed BASIC manual handy. (Also available on cassette for \$39.95.)

COMMODORE 64

Beginning adults and older children will enjoy Tim Onosko's *Commodore 64: Getting the Most From It* (Brady Communications Co., 1983, \$14.95, 303 pages). The first three chapters are designed to get the user comfortable with the 64. Then Onosko introduces BASIC programming, with discussions on graphics, animation, and music. A short glossary, appendices, and an index come at the end.

Another no-nonsense programming guide is by Carl Shipman: *How to Program Your Commodore 64: BASIC for Beginners* (HP Books, 1983, \$9.95, 334 pages). Like the Onosko book, this one is almost all text. The big, clear type is a plus for children and readers with eyesight problems. Shipman's is a thorough but relatively easy read that covers the basics of machine use, and moves to more advanced programming.

In *Programming Your Commodore 64 in BASIC* (Spectrum/Prentice-Hall, 1984, \$12.95, 240 pages), Mario J. Eisenbacher guides the reader from the basics of machine use and data manipulation (the main function of the computer) to special effects and a number of useful

applications programs that you type yourself. (Version available for Timex Sinclair 1000.)

For program listings for the C 64, three titles worth exploring are: *The Commodore 64 Experience* (Datamost, 1983, \$14.95, 207 pages), by Mike Dean Klein; *Commodore 64 Fun & Games* (Osborne/McGraw-Hill, 1983, \$11.95, 192 pages), by Ron Jeffries, Glen Fisher, and Brian Sawyer; and *35 Amazing Games for Your Commodore 64* (HP Books, 1984, \$9.95, 120 pages), by John Mihalik. Klein's book includes home-management and business-oriented programs. Mihalik's and Jeffries' are geared more toward entertainment.

For an excellent programming reference, look at *The Commodore 64/VIC-20 BASIC Handbook* (Sybex, 1983, \$14.95, 185 pages) by Douglas Hergert, who has authored a number of computer books.

Two guides recommended in the VIC list above have equally valuable C 64 versions: *Your Commodore 64: A Guide to the Commodore 64 Computer* (Osborne/McGraw-Hill, 1983, \$14.95, 464 pages), by John Heilborn and Ran Talbott, and *How to Use the Commodore 64 Computer* (dilithium Press, 1984, \$3.95, 139 pages), by Deborah and John Willis.

IBM PC

A short, easy guide for children or beginning adults is Tim Hartnell's *How to Program Your IBM PC (Even if You've Never Programmed a Computer Before)*; (Ballantine Books, 1983, \$6.95, 101 pages). Hartnell uses games programs to teach programming skills—an appealing way to get started in computing with a maximum of fun and a minimum of confusion. (Versions for Apple IIe and Commodore 64.)

For more substantial programming knowledge, refer to *IBM BASIC From the Ground Up* (Hayden, 1983, \$17.95, 301 pages). Assuming the reader has no knowledge of computers and very little of mathematics, author David E. Simon approaches his subject with a light, witty style, and simple, straightforward explanations.

Another book that teaches BASIC through playing games is Robert J. Traister's delightful *33 Games of Skill and Chance for the IBM PC* (TAB, 1983, \$12.95, 232 pages). It begins with an intelligent description of the IBM PC, continues into a glossary defining BASIC commands, and then moves to examples of elementary and then more challenging games.

IBM PCjr

PCjr beginners will find Jerry Willis and William Manning's *How to Use the IBM PCjr* (dilithium Press, 1984, \$5.95, 136 pages) and *Things to do with Your IBM PCjr Computer*, by Jerry and Deborah Willis and Merl Miller (Signet/dilithium Press, 1984, \$3.95, 213 pages), most suitable as a pair of short, easy reads.

Longer and more substantial is *The Complete Guide to Success with the IBM PCjr* (Times Mirror/Mosby, 1984, \$14.95, 400 pages). Written by Vernon, Eileen, and Norman



Sondak, the book is an excellent introduction and reference guide. It has chapters on choosing and using software, and on the rudiments of programming in BASIC and another popular computer language, Logo.

More advanced users will enjoy Peter Norton's *Exploring the IBM PCjr Home Computer* (Microsoft, 1984, \$18.25, 336 pages). Written for those who've "become comfortable" with the PCjr, the book offers 20 chapters of clear, interesting instruction.

RADIO SHACK COLOR COMPUTER/ TRS-80 MODELS III/4

New CoCo owners or potential buyers should look at *Your Color Computer* (Sybex, 1984, \$16.95, 342 pages). Doug Mosher discusses the CoCo's capabilities and includes advanced-programming tips and lots of program listings. The book also gives advice on the purchase of commercial software.

Jerry Willis and others have published CoCo and TRS-80 Model 4 versions of their inexpensive, popular series, *Things to Do With Your . . .* (Signet/dilithium Press, 1983, \$3.95, 214 pages). Beginners or potential buyers will profit most from these books, which contain descriptions of many commercially available software programs.

If you're looking for BASIC program listings, look no further than *Color Computer Applications* (John Wiley & Sons, 1983, \$10.95, 160 pages). Authors John P. Grillo and J.D. Robertson give clear, concise descriptions of their 11 well-thought out, exciting programs.

TRS-80 Models III or 4 users can find listings in *32 BASIC Programs for the TRS-80 Computer* (dilithium Press, 1980, \$19.95, 266 pages). This is an early edition of Tom Rugg and Phil Feldman's 32 BASIC series (see the Atari section).

TIMEX SINCLAIR

Douglas Hergert's short, engaging guide, *Your Timex Sinclair 1000 and ZX81* (Sybex, 1983, \$6.95, 159 pages) will show you how to unleash your Timex's potential. The author uses a clever structure—that of a play—to organize the book. More full program listings would have been welcome, but on the whole, the book provides an adequate introduction to programming for children or adults. Some of the longer programs will not run on 1K machines.

Learning Timex Sinclair BASIC (CompuSoft, 1983, \$14.95, 333 pages), written by one of the masters of the language, David Lien, covers all the essentials, including math functions and graphics. With a thorough, straightforward style, the book could serve as a self-paced text for older children (with parental guidance).

Advanced beginners will profit from David C. Foyt's *The ZX81/TS 1000 Home Computer Book* (Osborne/McGraw-Hill, 1983, \$7.95, 350 pages). While not a BASIC programming guide per se, the book helps users gain a better understanding of their micros. Many short, in-

structive programs are listed.

TS game players will enjoy *Bogglers: 22 Smart Games Programs (2K to 16K) in Timex/Sinclair BASIC* (Byte/McGraw-Hill, 1983, \$9.95, 162 pages). The authors, Graham Charlton, and other computer experts offer program listings for 22 games and three home applications (including an address book). Some programming notes and explanations follow each listing. Also, Tim Hartnell's collection, *70 games for the Timex/Sinclair 1000 and 1500* (Addison-Wesley, 1983, \$9.95, 210 pages) contains many elegant programs including 24 with moving graphics, 13 board games and simulations, and many exercises which are both educational and entertaining.

TI-99/4A

Bill Brewer and Jerry Willis present a quick intro for Texas Instruments owners in *How to Use the TI-99/4A Computer* (dilithium Press, 1984, \$3.95, 139 pages). Like others in the *How To* series, it is well written and inexpensive. (See the VIC-20 section.)

TI users who wish to learn BASIC programming can do no better than *Get Personal with Your TI-99/4A* (dilithium Press, 1984, \$9.95, 230 pages), by William A. Manning and Lon Ingalsbe. The heart of the book is its excellent minicourse in BASIC, which introduces concepts such as algorithms, string functions, and subprograms. In addition to its optional learning activities, the book has "chapter challenges" at the end of each programming chapter—problems you solve by writing programs.

Several collections of games programs are available for TI users. You'll find 11 listings in *Fun and Games with Your TI-99/4A* (Hayden, 1984, \$12.95, 104 pages), in which author Stephen M. Muncy also includes a brief 40-page tutorial on creating arcade-style games.

In *Zappers: Having Fun Programming and Playing 23 Games for the TI-99/4A* (Computer Books/Simon & Schuster, 1984, \$9.95, 205 pages), Henry Mullish and Dov Kruger not only provide lengthy descriptions of each game, they also analyze the functions of various program statements, and suggest ways to modify the games.

Still more games can be found in *TI-99/4A Game Programs* (TAB, 1983, \$10.95, 214 pages), by Frederick Holtz. Like the games in *Zappers*, the 32 games, written in TI standard (not Extended) BASIC teach a bit of programming along the way.

HAPPY READING

Our coverage of the fast-growing computer-book market is by no means complete. The roster of titles is huge and grows every week. The books we mention here are sure to shed new light on your family's computer. They can help you out of the swamp of confusion that may be hindering your enjoyment of the machine. And they can help you to reach new heights in understanding its vast potential. ☐

The Never-ending Season of Sports Software

THERE IS A VARIETY OF GAMES FOR EVERYONE IN THE FAMILY



PHOTOGRAPH BY JOEL WHITE

FROM THE CASUAL PLAYER TO THE MOST FERVENT FAN

BY BOB CONDOR

Playwright Neil Simon had the right idea when he said, "Sports is the only entertainment where, no matter how many times you go back, you never know the ending." But what Simon didn't know was that he was talking about computer sports games, too.

Today's selection of sports software for the home includes many winners for your family, with a wide range of titles. The fervent fan can be immersed in a game full of strategy and statistics, often based on the real-life performances of pro athletes. Or, the dreamers among us, no matter what age, can stand in a big-leaguer's shoes, pretending to be superstar-for-a-day. And, of course, it's possible for everyone to join in the fun of simulation games, where screen players move, pitch, pass, shoot, and score according to their skill with a joystick.

What follows is our all-star lineup of computer games in the five major team sports—baseball, football, basketball, hockey, and soccer. So let's bring out the teams and play ball!

BASEBALL

The saddest day of the year for any baseball fan is the

BOB CONDOR is the managing editor of *Sportswise*, a participant sports magazine based in New York. He wrote "The Computer as Coach" for the May FAMILY COMPUTING.

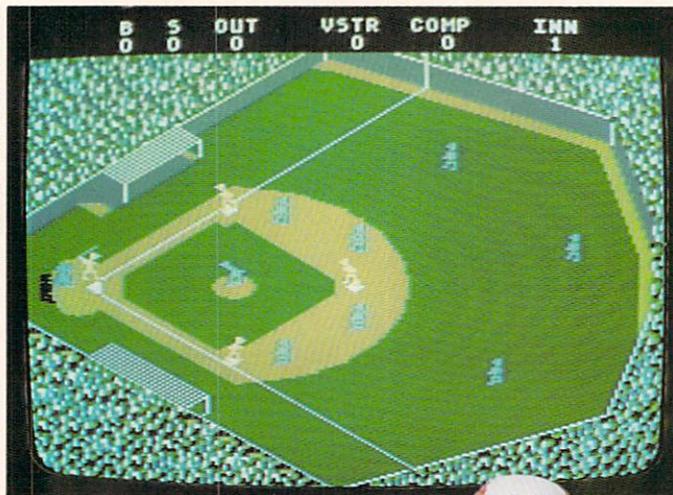
second day after the World Series, for there's no game recap from the previous day, all the bats and gloves are packed, and the new season is at its furthest point from starting. But, with the help of your computer, there's a way to combat those baseball blues.

There are three types of baseball games available. Besides simulated play and statistics-oriented contests, you can also test your trivia knowledge. The best of the simulation offerings is *Star League Baseball* (see chart for manufacturer and hardware information). The angle of the screen lets you see the entire playing field and a ring of "spectators" in the stands. Add a good set of sounds (organ music, crowd noise) and sights (ball casting a shadow, catcher arguing with umpire, scoreboard flashing between innings), and you feel like you're out at the ballpark.

Star League ballgames move at a good pace. You have enough time to make decisions, like stealing a base or pitching carefully to a batter. You don't have to wait long for players to come to bat or leave the field.

Learning how to hit in this game can be tough; take some batting practice against "Heat" Muldoon (one of the two starting pitchers) before the first pitch. Fielding and throwing also takes time, but this game is suitable for players of all levels. *Star League Baseball* is easy to understand and, instead of becoming stale, it's more fun as you become a better player.

Another simulation baseball game with interesting



Star League Baseball, the best of the simulation games, has great sounds and sights.



graphics, but which is a bit tougher for casual players, is *Super Action Baseball*. When up to bat, you see a detailed, large-size hitter and matching pitcher, with three inset "camera closeups" of fielders at first, second, and third base. After you hit the ball (no easy task at first), you get a view of the field like that from a seat in the upper deck behind home plate.

A special set of Super Action Controllers makes this game diverse and lively. Super action, indeed, but it can also be super-frustrating until you get all the button, stick, and roller moves down.

The manufacturer did anticipate a learning period; one person can practice hitting and fielding (two levels) or two players can have a game. The documentation is especially helpful for players of *Super Action Baseball*, which is a game best-suited to knowledgeable (and joystick-skilled) players.

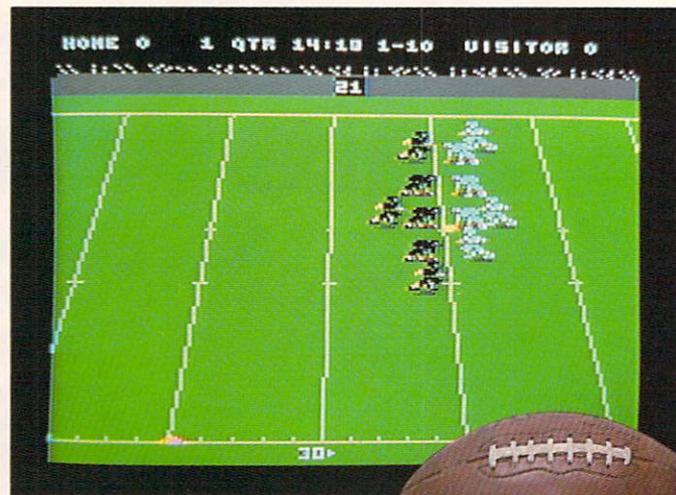
Color Baseball is less complicated, and possibly a bit too simple. The graphics are rough (players are basically stick figures that move stiffly) and pitching is limited to a fastball, curves, and a slow pitch. Another problem is pace. The ball doesn't come off the bat very quickly and player changes are slow. Even so, it is the only simulation baseball game we could find for the TRS-80 CoCo. *Color Baseball* is better than no baseball at all this winter.

One sports software product trying to bridge the gap between simulated play and strategy-oriented competition is *The World's Greatest Baseball Game*. With this package, the simulation mode uses the statistics of real players to control how hitters and pitchers perform while you wield the joystick. On the flip side of the disk you can play a strategy-only game. The pairing of simulation and real-life stats is a good idea, but here it falls short. In our examination, it was difficult to see how the stats were affecting player performance (it seemed everybody was capable of hitting home runs and extra-base hits).

Nonetheless, the graphics are well-done and there is a definite ballpark aura to the game.

The strategy option in *The World's Greatest* is enjoyable, but somewhat light on statistics. You get the distinct feeling the game is oversimplified (one tipoff is the ease of stealing bases). An abbreviated set of documentation doesn't help. Perhaps the manufacturers should have stayed within the simulation-or-strategy framework.

Two old standbys of the strategy-only, no-joystick format are *Statis-Pro Baseball* and *Computer Baseball*. Both



Touchdown Football is easy to learn and offers sharp graphics and realistic play.



are delights for would-be managers of major-league teams, and allow for a full range of moves. You choose a starting lineup from the roster of a recent season's major-league team (note: there are no 1984 stats available), then settle in for nine innings, substituting as you see fit.

Statis-Pro provides a rating system for players to make it easier to manage. Pitchers also have a stamina indicator which changes as a game progresses.

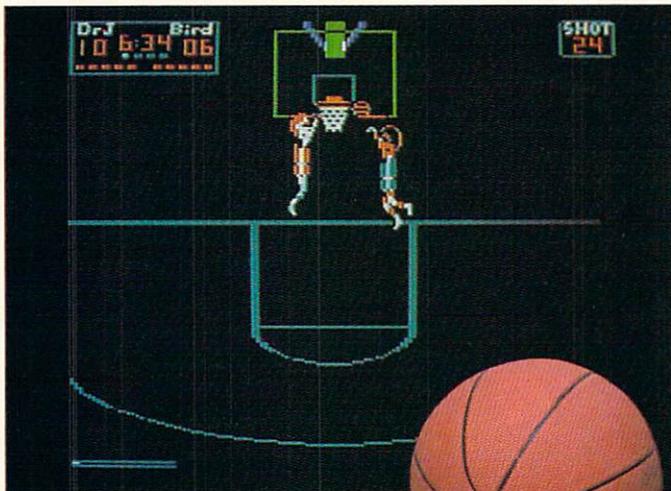
On offense, the *Statis-Pro* manager can signal for a bunt (sacrifice or squeeze), steal, hit and run, and even send a runner for the extra base or to tag up on a fly ball. The opposing manager (one player can easily handle both teams) has options for intentional walks and adjusting fielders. Overall, the game play is quite realistic, although the graphics are limited.

All in all, *Statis-Pro* is a most valuable choice for the out-of-season baseball fan. (A note to IBM PC and PCjr owners: The manufacturer, Avalon Hill, will be offering a similar game, *Pro Manager*, sometime this fall.)

Another outstanding option to warm your winter of discontent is *Computer Baseball*. It plays in a similar fashion to *Statis-Pro*, although there are some differences. One is *Computer Baseball's* graphics, which are more detailed and pleasing. For example, when runners are on base, they're shown on a field diagram and marked with a number (from 1 to 9, 9 is best) indicating their prowess on the base paths. The screen also shows who is throwing in the bullpens. A terrific feature here is that you have to "warm up" your relief pitchers; none can automatically enter a game—you have to wait until they're ready. Other "big league" situations awaiting you include the option to pitch with extra care to a dangerous hitter, pull your infield in, and visit the mound to see how your pitcher is feeling (OK, TIRING, or TIRED).

The game comes with 26 famous pennant-winning teams who played in 13 classic World Series games. You then have the opportunity to pit any two of these teams against each other, creating such dream match-ups as the 1927 New York Yankees versus the 1975 Cincinnati Reds. You can also order disks with statistical data for 26 current major-league teams or create your own teams. *Computer Baseball* is a must for any fan who'd rather be managing than sitting up in the stands. But, beware, it may prove harder than you think!

For a different twist, *I.Q. Baseball* tests your trivia knowledge. The computer poses questions, accompanied



In *One-on-One*, you can step into the sneakers of either Larry Bird or Dr. J.



Up to four people can play *Hockey*, and it's easy for beginners to learn.

PHOTOGRAPHS BY GARY KANE

by simple, but enhancing graphics and sounds. Each time you're right, you get a hit (single, double, triple, or homer, depending upon question difficulty). Each time you're wrong, you're out. (If you pick the one-player option, you get the computer "out" by answering correctly.) Occasionally, you may give the right answer but get "robbed" by a fielder.

The multiple-choice questions, at two difficulty levels, are formidable. But persistent and prepared trivia buffs will win out, and probably order additional disks of questions.

FOOTBALL

Computer football games are adding a brand-new meaning to the term "armchair quarterbacks." After watching their favorite teams play during the weekend, many football fans with computers put their joysticks and coaching criticisms to the test. Although most computer football games are designed for players with at least a basic working knowledge of the sport, novices, remember this: It is just a game, so go ahead and try. The computer may teach you more about football than you'd ever expect (or even think you want) to learn.

Football is capable of providing a quick lesson in the fundamentals. The graphics consist of an overhead view of a football field, with small dots representing the players. Arrows indicate yardage gained or lost.

The offensive player (it takes two to play a game, but one can practice) chooses from four running plays, five pass options, or the kicking game when appropriate. On defense, you have six different formation choices.

Football flows quickly and it's hard not to get involved, particularly when your team fumbles deep in the opponent's territory. Unlike most other football games, this one can be set up and learned in minutes. The documentation is thorough, with an excellent section for the novice. This is a good choice if you're looking for a football game for the entire family.

To be sure, there are more sophisticated and realistic simulation football games. A newer offering, *Touchdown Football*, shows great promise. The demo copy we reviewed displayed crisp graphics showing six players on each team, who move realistically. From a sideline view, your screen shows about 20 yards of the field along with a scoreboard and a sprinkling of fans who yell and scream at the referee's whistle.

When you're on offense (there's a one- or two-player

option), you select play formations, pass patterns, and line blocking. At the line of scrimmage, you can change the play after you read the defense.

The defensive player can call three different formation patterns. As the play develops, five of your defensive men automatically move with the ball and you control the sixth in case you've been fooled.

For all its added complexity and realistic features, *Touchdown Football* remains easy to learn. (Note: The manufacturer, Imagic, will soon be releasing a baseball counterpart, *Grand Slam Baseball*.)

Another simulation game that makes the grade is *Starbowl Football*. A well-established winner, this program has variety but isn't overwhelming. For example, as quarterback, you set pass routes for your two receivers and the blocking assignment for the three-man line, although you're the only running back. On defense, you set the two cornerbacks to cover the receivers, decide a line strategy, and keep a "free safety" to move with your joystick. Some interesting battles of wit develop between the free safety and the quarterback, even when your opponent is the computer!

The key to successful *Starbowl*-ing is learning how to coordinate the passer and receiver, which will take an hour or two. Until you master this skill, you'll be running more than Alberto Salazar. Even so, *Starbowl* is a durable buy; it stays fresh at advanced levels. But for the true addict, Gamestar, the manufacturer, plans a football edition for the super-skilled, *On-Field Football*, due out this fall or winter.

Super Action Football is for the serious joystick jock bound and determined for gridiron glory. It's Coleco's counterpart to *Super Action Baseball* and it too requires the Super Action Controllers. Conservatively, this game requires about 10 hours if you are to learn it well enough to take full advantage of all the options available. Maneuvering the controllers is an art that may seem beyond the reach of the novice; the detailed playbook helps. If you're playing alone, all you can do is practice; it takes two to tackle. But don't worry, you'll need the practice with this game.

The graphics are realistic, providing a sideline view with depth, and letting you get a feel for how wide or tight you can line up receivers and defenders. *Super Action* also allows you to hand off and kick field goals and punts, a rare find.

THE STATS ON SPORTS SOFTWARE

TITLE/PRICE	MANUFACTURER	HARDWARE REQUIREMENTS	NUMBER OF PLAYERS	DIFFICULTY OF LEARNING	DOCUMENTATION	COMMENTS
Color Baseball \$24.95	Tandy/Radio Shack 1800 One Tandy Center Fort Worth, TX 76102 (817) 338-2395	For TRS-80 Color Computer, 16K (cartridge). Joystick(s).	1 or 2	Easy, except fielding, which is difficult	Fair	Graphics a bit rough; pitching too limited; but CoCo owners don't have much choice.
Computer Baseball \$39.95	Strategic Simulations 883 Stierlin Road, Bldg. A-200 Mountain View, CA 94043 (415) 964-1353	Reviewed on Apple II series, 48K (disk). Also for Commodore 64 (disk). Version planned for Atari.	1 or 2	Easy	Very good	Playing the computer is an enjoyable option; opportunity to make many decisions during the game.
Computer Football Strategy \$21 (disk) \$16 (cassette)	Avalon Hill Game Co. 4517 Harford Road Baltimore, MD 21214 (800) 638-9292	Reviewed on IBM PC/PCjr, 64K (disk). Also for Atari Home Computers, 32K (disk or cassette); Commodore 64 (disk or cassette); TRS-80 Models I/II/4, 32K (disk or cassette).	1 or 2	Easy	Excellent	Thinking fan's game; the computer is a tough opponent. Atari version allows for choosing stats from classic pro teams.
Computer Quarterback \$39.95	Strategic Simulations 883 Stierlin Road, Bldg. A-200 Mountain View, CA 94043 (415) 964-1353	For Apple II series, 48K (disk). Paddle(s).	1 or 2	Average	Very good/excellent	Challenges would-be coaches; advanced level is a plus for expert players.
Football \$15.95	Triton Products Co. P.O. Box 8123 San Francisco, CA 94128 (800) 227-6900	For TI-99/4A, 16K (cartridge).	1 (practice) or 2 (play game)	Easy	Very good	Fast, fun game for the entire family; even the novice can learn it easily; simple format, but still diverse; good buy.
Hockey \$29.95	Gamma Software P.O. Box 25625 Los Angeles, CA 90025 (213) 473-7441	For Atari 400/800, 16K (disk or cassette). Joysticks.	2 to 4	Easy	Good	Easy to understand for novices; players on screen move well.
Indoor Soccer \$15.95	Triton Products Co. P.O. Box 8123 San Francisco, CA 94128 (800) 227-6900	For TI-99/4A, 16K (cartridge). Joystick(s).	2	Average	Very good	Lively game; indoor version is good twist; graphics not as realistic as other soccer games.
International Soccer \$24.95	Commodore Bus. Mach. 1200 Wilson Drive West Chester, PA 19380 (215) 431-9100	Commodore 64 (cartridge). Joystick(s).	1 or 2	Average	Fair	Highly entertaining; players have lifelike moves; nine skill levels make it good for family play.
I.Q. Baseball \$24.95	Davka Corp. 845 N. Michigan Ave., Suite 843 Chicago, IL 60611 (800) 621-8227	Reviewed on Commodore 64 (disk). Also for Apple II series, 48K (disk).	1 or 2	Easy	Fair	A trivia game—correct answers are hits; tough questions (two levels of difficulty); great for baseball nuts.
Julius Erving and Larry Bird Go One-on-One \$40	Electronic Arts 2755 Campus Drive San Mateo, CA 94403 (415) 571-7171	Reviewed on Apple II series, 48K (disk). Also for Commodore 64 (disk). Joystick(s) recommended.	1 or 2	Average/difficult	Excellent	Top-notch action; players have the superstars' tendencies; takes practice; a treat for joystick jocks.
Starbowl Football \$31.95	Gamestar, Inc. 1302 State St. Santa Barbara, CA 93101 (805) 963-5487	For Atari Home Computers, 24K (disk or cassette). Joystick(s).	1 or 2	Average, except passing/receiving, which is difficult	Good	Not overly complicated, a plus among football games; one-player feature; good graphics.
Star League Baseball \$31.95 (Atari) \$29.95 (Commodore)	Gamestar, Inc. 1302 State St. Santa Barbara, CA 93101 (805) 963-3487	Reviewed on Atari Home Computers, 32K (disk or cassette). Also for Apple II series, 64K (disk); Commodore 64 (disk or cassette). Joystick(s).	1 or 2	Average, except batting, which is difficult	Good	Best of baseball-simulation games; excellent view of field; ballpark sounds; easy to get involved.
Stats-Pro Baseball \$35	Avalon Hill Game Co. 4517 Harford Road Baltimore, MD 21214 (800) 638-9292	Reviewed on Apple II/II plus/IIe, 48K (disk). Also for TRS-80 Models I/II/4, 48K (disk).	1 or 2	Average	Excellent	Puts you in dugout as manager of any major-league team; a strategy game for stats freaks.
Super Action Baseball \$75 (can only buy w/Super Action Controllers)	Coleco Industries 10 Park St. Amsterdam, NY 12010 (518) 842-0010	For ADAM (cartridge). Super Action Controllers.	1 (practice) or 2 (play game)	Average, except fielding, which is difficult	Good	Highly detailed graphics are interesting; but, overall, not as realistic as other games; batting-practice option is fun.
Super Action Football \$34	Coleco Industries 10 Park St. Amsterdam, NY 12010 (518) 842-0010	For ADAM (cartridge). Super Action Controllers.	1 (offense practice) or 2 (play game)	Difficult	Good/very good	Takes lots of practice; special joysticks full of options; good graphics; extensive playbook.
The World's Greatest Baseball Game \$39.95	Epyx 1043 Kiel Court Sunnyvale, CA 94089 (408) 745-0700	For Commodore 64 (disk). Joysticks for simulation; no joysticks for strategy.	1 or 2	Simulation is difficult/average; strategy is average	Poor	Can play statistics or simulation game; the latter mode is confusing, seems unrealistic.
Touchdown Football \$34.95	Imagic 981 University Ave. Los Gatos, CA 95030 (408) 399-2200	For IBM PCjr (enhanced), 128K (disk). Joystick(s).	1 or 2	Easy	Demo copy only at press time	Easy-to-learn; sharp color graphics; many different formations, fun to play.

Football strategists have two hearty offerings to chew on. *Computer Football Strategy* features minimal graphics but is a whopping challenge. You'll need a steady grip on which plays to call when. (One tip about playing the computer—it likes to pass, often!) Play-probability charts are supplied (on all versions except the Atari) so you can bone up on which offensive formations work against defensive alignments and vice versa. In all, depending upon field position, you can choose from 23 plays on offense; there are a standard 10 different defenses you can call.

The game moves rapidly, which is the beauty of using the computer. In addition, *Computer Football Strategy* supplies quarter-time, half-time, and final stats.

Computer Quarterback is the ultimate game for true football fanatics in your family. It features detailed graphics and two levels of play: "Semi-Pro" and "Professional." The Semi-Pro option allows for 18 offense formations and 14 defensive alignments; the Pro version has a hefty 36 and 24, respectively. You can play alone at the Semi-Pro level, which is a good way to learn the nuances of the game, before finding human opponents.

The statistical component of this game is impressive. It offers some surprises, but plays out realistically. Consequently, games can take about an hour if you're playing regulation 15-minute quarters.

One added attraction of *Computer Quarterback* is its "Pro Draft." Before playing at any level or option, you can conduct a team selection process where each player is allotted \$3 million to pick a team. You can spend your loot on a good quarterback and sure-handed pass receivers, setting up a high-scoring team for yourself, or you can spend more on defensive players so your team gives up fewer points. In connection with this feature, the manufacturer offers separate disks with data for NFL players and teams.

Another intriguing plus in this game is, if you have the proper printer, you can record every play. With this alternative, you get hard copy at game's end which shows how you won or lost: It's something you can study before playing the same opponent again (just like a pro or college coach would review game films).

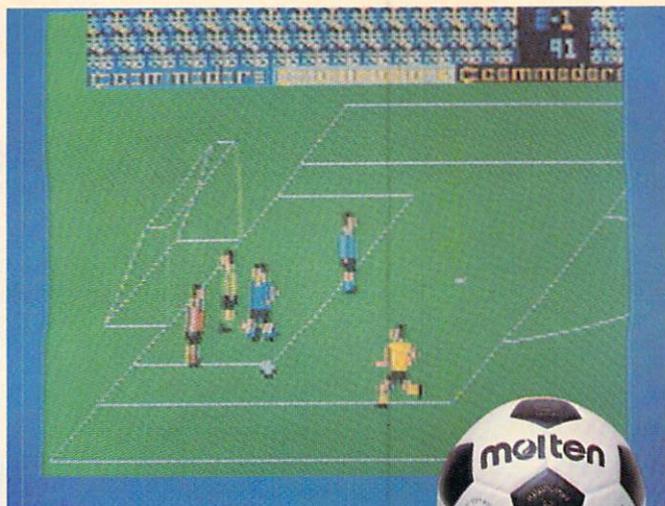
Computer Quarterback comes with advice on how to set up a league of any NFL teams, which isn't a bad idea. Except that this game can get habit-forming.

BASKETBALL

Appropriately enough, *Julius Erving and Larry Bird Go One-on-One* is the only basketball product we've reviewed, for it is in a class by itself. This game has successfully combined the excitement of simulation play and the realism of strategy/statistics games. You have the choice of being either Dr. J or Bird, with a human opponent or the computer taking the other role. What happens after you choose sides is—if the Los Angeles Laker will pardon the expression—purely magic. Or at least hints at artificial intelligence.

Each basketball superstar's on-court tendencies (the players helped with the design) have been programmed into the game. If you're the Doctor, you'll have all the fancy moves inside and be a step quicker. As Bird, you'll be more physical, rebound better, and play relentless defense. What's more, *One-on-One* shows you how tired the players are getting and who has the hot shooting hand.

As you practice—at one of the four skill levels—you'll soon be swishing jumpers and spinning in the air like these stars. Why, you may even hit a point-blank slam dunk which shatters the backboard, bringing out a maintenance man to sweep up. This software package nets my vote for Sports Game of the Year.



International Soccer allows you to play at one of nine skill levels.

HOCKEY

When it comes to the best sports games for the whole family to play together, don't overlook fast-paced hockey. For example, *Hockey* allows for up to four players. The main objective: score more often than your opponent (a defense-oriented approach usually backfires).

Hockey is a sleeper. At first glance, with stick-figure players on a smallish rink covering only about two-thirds of the screen, it doesn't look like much. But the game's players move around the ice well, particularly when they're not carrying the puck. Shooting or moving in any direction is easily done and you won't lack for goal-scoring with this product. A lively puck, which bounces off the boards with power, makes things interesting. However, a smart player will slow down the action a bit.

There are two problems with *Hockey*: 1) the goalie only moves vertically and 2) "offsides" can't be called, meaning a player can "camp out" at the opponent's net.

SOCCER

As more boys and girls play the sport, soccer is fast becoming the family game. And, similar in ways to the computer boom, parents are often learning about soccer after their kids get involved. Although neither of these pieces of software allows for more than two players, each moves quickly enough to provide a fast turnover among participants.

International Soccer could be more realistic, but it is lively. The players are large (seven to a side) and it's easy to see their moves, such as throwing the ball in-bounds, "heading" it downfield, or slowing down when dribbling. Players carrying the ball are slowed purposely, to encourage downfield passing. The most entertaining feature of *International Soccer* is the perky goaltender, who jumps, dives, and sprawls to make the big save.

Another plus with *International Soccer* is its nine skill levels, the highest being a World Class mode that'll have you playing like Pelé.

Indoor Soccer brings a new twist to a traditional game. Just like the American indoor version of soccer played in ice-hockey rinks, this game's ball bounces off the boards with alert players keeping up with the action. The graphics could be better (players run backward instead of turning around to chase a loose ball). But *Indoor Soccer*, with five players on each team, does keep your interest. Perhaps it's that suspense Neil Simon was talking about—you just never know how it's going to end up. **FC**

Bartering Your Computer Skills

YOU CAN
TRADE YOUR COMPUTER
KNOWLEDGE
FOR GOODS, SERVICES,
OR JUST ABOUT
ANYTHING

BY JEFF BALL

I've bartered for years. I trade honey from my suburban beehive for the use of a log splitter each fall. I've bartered the use of my chainsaw for some of the wood my friend cuts with it. Using this age-old method of exchange, I stretch my household budget far beyond where it would be otherwise. Recently, I've discovered an exciting new bartering resource—my computer skills.

A few months ago, I helped my auto mechanic set up his customer record files on a personal computer. In exchange, he adjusted my brakes and taught my son how to do auto bodywork. Now, I'm trading word-processing lessons for tennis lessons. All this got me to thinking about just how many opportunities for bartering a home computer provides. Many of us don't appreciate the value of our computers or our computer knowledge to people who don't have either.

YOU'VE GOT PLENTY TO OFFER

You can help new computer owners become familiar with their machines by guiding

them past the early problems that usually arise. You can teach someone how to run a piece of software you've already gotten the hang of. If you can program, you can help people debug their first programs—or even write a program for them. All these “favors” have value, and they can often become the basis for a bartering arrangement.

Be imaginative. Think of all the things you've paid for recently that you might have been able to trade for. Then assess your own skills. What can you do with your computer that someone else might need?

Don't bite off more than you can chew—there are some tasks that would be better handled by a consultant or programmer.

Computer services can be a particularly valuable barter item for a couple of reasons. First of all, people often need ongoing help. The longer you help them, the more it will be worth. Second, if your barter involves teaching, the recipient is learning something he or she will be able to use forever, and that is a valuable thing to offer.

Spread the word that you're interested in bartering your computer skills. Tell your friends and ask them to tell their friends. If there's a bulletin board in your neighborhood store or food co-op, or at work, post a notice there. Word can spread quickly.

(You can also use computerized bulletin boards and other on-line services to contact barterers. See the accompanying article, "Trading On-Line," for more information on how to do it.)

MORE CIVILIZED THAN CASH

Barter is a very personal medium of exchange. In some respects, it's a more civilized way of doing business than cash. When you mow someone's lawn in return for some home-made peach preserves, you don't dicker over the precise value of the goods and services involved. If the deal doesn't seem fair to both sides, you don't do it. You consider friendship, the age of your bartering partner, and lots of other very human variables that are rarely part of a cash deal.

Keep in mind that the IRS treats bartering as it would a cash transaction: Taxes are due on the fair market value of the goods and services involved. If you're trading tutoring for a couple of apple pies, you probably won't have to worry about the IRS knocking on your door. But if you start trading goods and services in large amounts, keep careful records for the tax people.

JOIN THE CLUB

If you become a serious computer barterer, you can join a club to make connections with other bartering folk. These clubs exist all across the country, especially in larger cities. They provide lists of items each member currently has to barter or is looking for. Members pay a small fee to join and much of the work is

IDEAS TO GET YOU STARTED

FOR ...	IF YOU'LL ...	THEN I'LL ...
plumbing	fix my faucets	debug your program.
legal services	update my will	show you how to get access to legal data bases.
daycare	babysit for my kids	teach your kids BASIC.
clubs and organizations	waive my membership dues	print out your mailing labels.
landscaping	maintain my lawn	computerize your customer list.
borrowing tools	lend me your chainsaw	lend you my printer.
job training	teach me bookkeeping	teach you about computerized spreadsheets.

TRADING ON-LINE

Why not use your computer to help you find barter partners? Don't just post your notice on the supermarket's bulletin board—if you have a computer and a modem, you can post it electronically, too.

If you're bartering small items or services, you can list your notice on a local electronic bulletin board (BBS). *(Don't know where to find one? See this month's Letters column for ideas.)*

Not surprisingly, the most common trades on BBS message systems involve computers and computer-related information. "Someone might leave a message, HAVE THE SOLUTIONS TO WIZARDRY 1, 2, AND 3 - WILL SWAP FOR A MICROBUFFER CARD," says Sandy Bateh of the Florida-based SEB Public Message System.

Bartering noncomputer merchandise and services is less common, but it does happen. In part, it depends on the specific bulletin board. "Shop" for a board that's amenable to this kind of trading—and is nearby, so you won't have to pay long-distance charges.

With BBS bartering, the responses will be posted right on the bulletin board where you can read them at your convenience.

If you have a small business or professional practice, and want to barter regularly for expensive items, there are several companies formed specifically to handle these trades. One dentist used an on-line barter company to trade his services for a vacation in the Bahamas.

To trade through a barter company, you call—by phone or by modem—and explain what you have to offer and what you're looking for. With some companies, an operator scans the data base for you and acts as an intermediary.

Computer-based barter companies make their money from commissions charged on each exchange, and some also charge a one-time membership fee. Two barter companies are: Pan National (1 Linden Place, Suite 307, Great Neck, NY 11021; (516) 352-4445), and Barter Exchange, Inc., 1106 Clayton Lane, Suite 480 W., Austin, TX 78723; (512) 467-9989.

Small-scale on-line bartering is not yet a sure bet for all home computer owners. But for businesspeople and professionals with something big to trade, the barter companies can be the ticket to a very good deal.

—LINDA WILLIAMS

done by volunteers. Again, a good way to find out about bartering clubs in your area is to contact a local food co-op or other grassroots organization. You shouldn't have too much trouble finding fellow barterers; there are a lot of people out there doing it. One study estimates that barter accounts for 3 percent of the U.S. Gross National Product.

Whether you want to just dip your toe into computer bartering, or jump in headfirst, you can benefit. Who knows what you'll find yourself obtaining—fresh produce, a home-made quilt, or the solution to *Wizardry*. And you'll be helping somebody else at the same time. Bartering is not only good for the pocketbook, it's also good for the soul—and a lot of fun. ☐

Writer JEFF BALL lives in Springfield, Pennsylvania. He wrote "The Computer: A New Tool for the Garden" for the March FAMILY COMPUTING. His latest book, Self-Sufficient Suburban Garden, is published by Rodale Press.

Okimate 10



BUYER'S GUIDE TO

PRINTERS UNDER \$600

Alphacom 81



BY BILL HOWEY

Since word processing is one of the most popular uses for computers, printers are among the most sought-after computer peripherals. After all, a manuscript or letter doesn't do anyone much good when it's stuck inside a computer.

While printers are not cheap, prices have dropped considerably in the past year. You can find basic but reliable printers for less than \$300. And in the \$300 to \$600 range, there's a whole slew of fast, sturdy, and versatile printers. You can even find so-called "letter-quality" printers in this price range; a year ago, that was virtually impossible. Finally, in many cases, printers have become easier to shop for, as some manufacturers supply special cables for specific computers.

Here are the three main types of printers, and their strengths and weaknesses.

THREE TYPES OF PRINTERS

Thermal. Thermal printers work by "burning" visible dots onto special heat-sensitive paper. They are extremely reliable, inexpensive, and compact. They are relatively fast, and very quiet. However, the paper is expensive, not suitable for most applications, sometimes hard to find, and the print quality is only mediocre. Now that dot-matrix printers are dropping in price, there's less demand for thermals.

A newer version is the thermal-transfer printer, which actually uses a completely different technology, and is bringing color printers down to an affordable price. The Okimate 10 and the forthcoming Apple Scribe (both color printers), two examples of thermal-transfer printers, work by heating up ribbon and transferring ink to paper. Standard paper may be used. However, the ribbon is good for only one go-through.

Dot-matrix. Dot-matrix printers, like thermals, use the dot process to form characters, but do so by striking a typewriter-style ribbon against regular paper, either single-sheet or fanfold. Fanfold paper has holes along each side which fit into a pin- or tractor-feed mechanism on the printer. Dot-matrix printers are the fastest around, and many can also print out graphics. If you need to do a lot of printing, either of manuscripts or program listings, dot-matrix printers are the best buy. Many users don't think dot-matrix output is good enough for formal use, but if the printer has a "double-strike," or "emphasized," mode, it's pretty close to letter-quality.

Letter-quality. Often known as daisywheel printers, letter-quality printers are ideal for correspondence. They offer the most handsome text output available, trading off this look against speed and price. Individual "dies" for each character are mounted on a small, removable plastic or metal unit, called a daisywheel, thimble, or ball. Because the print elements are removable, it's easy to exchange one set of characters for another.

BILL HOWEY is the system operator for EpSource, Epson's national bulletin board. He wrote the "Buyer's Guide to Modems" in the March FAMILY COMPUTING.

Daisywheel printers can feed single sheets of paper (dot-matrix printers often can't), so that formal letterhead or special paper can be used. However, unless you buy a sheet-feeder, which is expensive, you'll have to feed the printer one sheet at a time. In most cases, a pin- or tractor-feed mechanism is standard or can be added later, to allow use of the perforated, fanfold paper. Also, daisywheel printers usually have wider carriages than dot-matrix printers, often allowing 132-column (or character) printouts. For printing out spreadsheets and other specialized formats, this expanded carriage is a real bonus.

Daisywheel printers, however, are very slow. In the under-\$600 range, you won't find any faster than 25 characters per second (cps), and most are much slower. At this speed, a 20-page, double-spaced report will take half an hour to print—for the frequent user with lots of copy, an annoying waste of time. So, a daisywheel printer may not be your best bet, unless you need a printer for formal business correspondence.

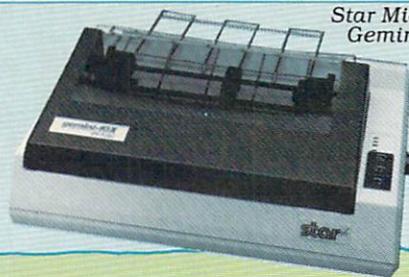
POINTS TO CONSIDER WHEN SHOPPING

Paper. What kind of paper do you want to use? If it doesn't matter, then a thermal or dot-matrix printer is fine. (But don't forget that thermal paper is expensive.) If you want special letterhead paper, then a daisywheel is virtually a necessity. If you want to use fanfold, perforated paper on a daisywheel—for large print jobs—then you'll need a pin- or tractor-feed mechanism. Finally, on any printer, have the salesperson show you how to put the paper into the machine and try it yourself. Is it awkward? Some tractor-feed mechanisms resemble a Chinese ring puzzle! Does the cover swivel (preferable) or must it be removed from the printer (awkward)?

Ribbon/Printheads. The ribbons (on dot-matrix and daisywheel printers) will need to be replaced. Ribbon replacement can be expensive (see ribbon costs on chart). And, if you want to try new character sets on your daisywheel printer, you'll need new daisywheels. So, you want to know that your particular printer uses a standard daisywheel. Qume and Diablo are the standards—ribbons and daisywheels of this type are easy to find.

Cables. You buy a printer, bring it home and . . . Wait! How do you connect it? You need a cable, and there's only one that will work. Make sure you solve that little mystery before you buy. Some manufacturers (such as Alphacom, Axiom, and Star Micronics) now make special cables for specific computers. If such cables don't exist, then a standard Centronics or RS-232C serial cable should work—if your computer has either of those interfaces. In some cases, you'll need to buy an interface card (or circuit board) to give your computer a printer connection. But, there's something funny about standards in the computer industry—don't trust a connector until you see it work with your own eyes.

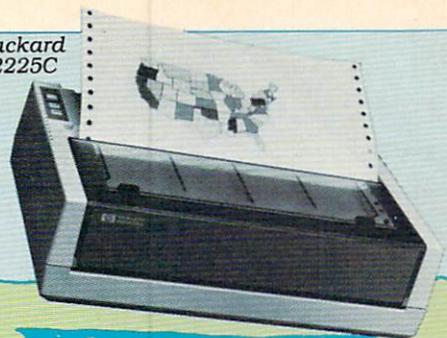
Compatibility. You want to make sure a certain printer works with your computer. If you can connect it, you've



Star Micronics
Gemini 10X



Epson RX-80



Hewlett-Packard
2225C

generally got a match. But, more important, you want to make sure it will work with your favorite piece of software. Most word-processing programs, for instance, are designed to work with two or three printers—beyond those, you may be on your own. Features such as underlining, boldface, subscript (H_2O), and superscript (x^{10}) might work well with one printer and not at all with another.

And, don't assume that just any printer will print out your computer's graphics characters. Most printers have a self-test function, so that you can see all the characters featured by that particular model. Also, remember that a special interface is sometimes needed to print out the graphics. Conversely, don't assume that your computer or software will be able to take advantage of all the features of a certain printer.

Speed. Daisywheels are the slowest printers, dot-matrix are the fastest, and thermals are in-between. Speed is measured in characters per second. To churn out long reports, you'll want something in the 100 cps range, though 60 cps should do close to two double-spaced pages a minute. Anything under 25 cps is considered slow—but if the printer meets your other needs, it's bearable.

Noise. Except for thermals, computer printers are not especially quiet. Printer noise levels are measured in decibels (db). While acceptable noise levels will vary with personal taste and the situation, figure that anything in the 50–65 db range is fairly average. Above that, hold on to your earmuffs!

And now, some quick reviews of some of the top performers in the under-\$600 category.

PRINTERS REVIEWED

Abati LQ-20. This low-cost, letter-quality printer (\$479) is a pleasant surprise. It produces good letter-quality output, and its print wheels and ribbons are standard Qume products, so they should be easy to replace. Two sets of DIP switches (a row of tiny switches used to control different printer functions) allow configuration to most any computer. A smoked plastic cover that swivels to allow access to the ribbon and print head helps to reduce printer noise to a very respectable 58 db. However, speed is not a strong point of the Abati. At 18 cps, it's not intended to be used for extensive "production" work.

Early shipments of the printer included a confusing owner's manual, but an improved, expanded manual should be available soon. And, if you have any troubles, Abati answers its service phone! The LQ-20 is a quality, no-frills printer that should produce clean copy for years.

Alphacom 42 and 81, Alphacom Alphapro. Alphacom's two thermal printers are inexpensive, reliable, and have special interfaces (\$45–\$60) for Atari, Commodore, IBM, and Texas Instruments computers. The Alphacom 42 (\$119) prints two 40-column lines a second, and can print uppercase and lowercase letters. The 81 (\$169) prints 80-column lines at 100 cps. In addition, the 81 is capable of printing fairly sophisticated graphics, and can be connect-

ed to the Apple Macintosh. Neither includes interfaces. Both printers use a friction-feed mechanism to hold thermal roll-paper.

Now, Alphacom is trying to bring its expertise for high-performance, low-cost printers to a letter-quality printer, the Alphapro (\$399). This daisywheel printer, which uses standard Diablo- and Qume-compatible print wheels and

ADDRESSES OF PRINTER MANUFACTURERS

Alphacom, Inc.
2323 S. Bascom Ave.
Campbell, CA 95008
(408) 559-8000

Apple Computer, Inc.
(see your local dealer)

Atari, Inc.
1312 Crossman Road
Sunnyvale, CA 91657
(408) 745-2820

Axlom Corp.
1014 Griswold Ave.
San Fernando, CA 91340
(818) 365-9521

Brother Industry, Inc.
5698 Bandini Blvd.
Bell, CA 90201
(714) 859-9700

Cardeo Inc.
300 S. Topeka
Wichita, KS 67202
(316) 267-6525

Commodore Business Machines
1200 Wilson Drive
West Chester, PA 19380
(215) 431-9100

Epson America, Inc.
3415 Kashiwa St.
Torrance, CA 90505
(800) 421-5426

Ergo Systems
1360 Willow Road
Menlo Park, CA 94025
(415) 322-3746

Hewlett-Packard
1000 N.E. Circle Blvd.
Corvallis, OR 97330
(800) 367-4772

Inforunner
Airport Business Center
431 N. Oak St.
Inglewood, CA 90302
(213) 453-6688

C. Itoh Electronics Inc.
5301 Beethoven St.
Los Angeles, CA 90066
(800) 348-1984

Juki Industries of America
299 Market St.
Saddle Brook, NJ 07662
(201) 368-3666

Kaypro Corp.
533 Stevens Ave.
Solana Beach, CA 92075
(619) 481-4300

Mannesman Tally
8301 S. 180th St.
Kent, WA 98032
(206) 251-5524

Micro D
17406 Mount Cliffwood Circle
Fountain Valley, CA 92708
(800) 854-6801

NEC Home Electronics
Personal Computer Division
Elk Grove Village, IL 60007
(312) 228-5900

Okidata
532 Fellowship Road
Mt. Laurel, NJ 08054
(609) 235-2600

Olympia USA
Route 22, Box 22
Somerville, NJ 08876-0022
(201) 722-7000

Panasonic Co.
One Panasonic Way
Secaucus, NJ 07094
(201) 348-7292

Silver-Reed America, Inc.
19600 S. Vermont Ave.
Torrance, CA 90502
(213) 516-7008

Smith-Corona
65 Locust Ave.
New Canaan, CT 06840
(203) 972-1471

Star Micronics
200 Park Ave., Pan Am Bldg.
New York, NY 10016
(214) 456-0052

Tandy Corp./Radio Shack
1800 One Tandy Center
Fort Worth, TX 76102
(817) 390-3944

Transtar
Box C-96975
Bellevue, WA 98009
(206) 454-9250

UNDER - \$600 PRINTERS

PRINTER MODEL	MFR./DIST.	INTERFACE	PRINT METHOD	SPEED (CPS)	SOUND (Db)	PAPER WIDTH (in.)	PRICE PRINTER/RIBBON	FEATURES
Abati LQ-20	Micro D	P/S	Daisywheel	18	58	13	479/10	Special character wheels available
Alphacom 42	Alphacom, Inc.	P/S	Thermal	80	NA	4.33	119/NA	Atari, Commodore, and Apple compatible
Alphacom 81	Alphacom, Inc.	P/S	Thermal	80	NA	8.75	169/NA	Friction feed; interface for Macintosh (optional)
Alphapro	Alphacom, Inc.	P/S	Daisywheel	18	NA	13	399/5	Intelligent Cable Interface; Diablo-compatible
Atari 1025	Atari, Inc.	S	Dot-matrix	40	66	13	399/6.50	Cable included; direct serial connection
Atari 1027	Atari, Inc.	S	Rotary head	12/20	68	13	349/7.95	Cable included; direct serial connection
Brother HR-15	Brother Industry*	P/S	Dot-matrix	13	65	13.5	559/2.35-3.40	5K buffer
Cardco LQ-2	Cardco Inc.	P	Daisywheel	12	62	8.7	349/7.95	Optional battery pack; interface for PCjr, Commodore
Commodore 1526	Commodore Bus. Mach.	S**	Dot-matrix	30	66	8.5	300/8.95	Interface for Commodore
Delta-10	Star Micronics	P/S	Dot-matrix	160	74	10	549/2.45	Special character sets; 8K buffer
DMP-120	Tandy Corp./Radio Shack	P	Dot-matrix	120	70	9.5	499/17	Pin/friction feed; text and graphics
Electronic Compact NP	Olympia USA	P/S (opt.)	Dot-matrix	100-165	65	10	499/6.95	Tractor feed; bidirectional; very fast
Epson FX-80	Epson America, Inc.	P/S (opt.)	Dot-matrix	160	68	10	599/9-14	Pin/friction feed; many styles
Epson RX-80	Epson America, Inc.	P/S (opt.)	Dot-matrix	100	64	10	399/9-14	Pin/friction feed; graphics
EXP 400	Silver-Reed America, Inc.	P	Daisywheel	12	65	12	399/3.65-7.25	Boldface; sub/superscripts
EXP 500	Silver-Reed America, Inc.	P/S	Daisywheel	16	65	13	549/3.65-7.25	Diablo-compatible
Fastext-80	Smith-Corona	P/S (opt.)	Daisywheel	80	63	11	259/9.50	Friction feed; bidirectional
Gemini 10X	Star Micronics	P/S (opt.)	Dot-matrix	120	74	10	399/2.50	Pin/friction feed
Gemini 15X	Star Micronics	P/S (opt.)	Dot-matrix	120	74	15	549/2.50	Pin/friction feed; 8K buffer
GP-100TI	Axiom Corp.	S	Dot-matrix	50	82	9.5	309/10	Tractor feed; direct-connect cable for TI-99/4A; graphics
GP-550	Axiom Corp.	P/S	Dot-matrix	86/43	60	8.5	319/14.95	Near letter-quality mode
GP-700AT	Axiom Corp.	S	Dot-matrix	50	82	9.5	599/20	Direct connect cable Atari; graphics
HP 2225C	Hewlett-Packard	P	Ink-jet	150	50	12	495/7.95	International character set
HUSH 80P	Ergo Systems	P	Thermal	80	56	8.5	159/NA	Includes interface, cable, and roll-paper; portable
HUSH 80S	Ergo Systems	S	Thermal	80	56	8.5	159/NA	Includes interface, cable, and roll-paper; portable
Imagewriter	Apple Computer, Inc.	S	Dot-matrix	120/80	NA	10	595/10.50	Pin/friction feed; graphics and text
Juki 6100	Juki Industries	P/S (opt.)	Daisywheel	17	62	13	599/5.95	Proportional spacing; add-on buffer available
Kaypro Letter Quality Printer	Kaypro Corp.	P	Daisywheel	18	62	13	599/1.58-3.75	Optional pin feed
KX-P1090	Panasonic Co.	P/S (opt.)	Dot-matrix	80	72	10	399/6.70	Pin/friction feed; graphics
Microline 92	Okidata	P/S (opt.)	Dot-matrix	160	67	9.5	599/3.15	Pin/friction feed; optional acoustical cover; international character set
NEC PC-6021	NEC Home Electronics	P	Thermal	40	54	4.5	249/NA	Friction feed
NEC PC-8027	NEC Home Electronics	P	Dot-matrix	120	NA	10	499/6.79	Pin/friction feed; portable
Okimate 10	Okidata	S**	Thermal	60	50	8	239/6	40 colors; software included
Prowriter 8510-AP	C. Itoh Electronics Inc.	P	Dot-matrix	120	65	10	495/6.79	Additional character sets; pin/friction feed
Rifeman Plus	Inforunner	P	Dot-matrix	120	64	9.75	399/8.50	One of several models
Spirit 80	Mannesman Tally	P/S (opt.)	Dot-matrix	80	64	10	399/8.80	Pin feed; text and graphics
Transtar 120	Transtar	P/S	Daisywheel	14	65	12	550/6.95-8.95	Autoload

KEY TO CHART P = Parallel S = Serial *Also sold as Comriter CR-11 and Dynax DX-15. **Special Commodore or Atari interface
CPS = Characters Per Second Db = Decibels NA = Not Available or Not Applicable

ribbon cartridges, prints 18 cps. An Intelligent Cable Interface (\$49) adapts the Alphapro to computers with RS-232C serial or Centronics-parallel ports; there's also an interface for the Macintosh. The Alphapro offers boldface, double strike (emphasized), superscripts, and subscripts. We have yet to try it out, but it sounds promising.

Brother HR-15, Comriter CR-11, Dynax DX-15. The Brother HR-15 (\$599), also sold under the Comriter and

Dynax labels, has a lot of pluses and one minus. The latter is a turtlelike print speed of 13 cps. Beyond this, the Brother/Comriter/Dynax is a great buy, because many of its features are so well executed. A tractor-feed mechanism (\$139.95), an inexpensive (\$259.95) cut-sheet feeder (for single-sheet paper), a choice of four types of ribbons (\$50-\$70 for 12), and 26 cassette-style daisywheels should be enough incentive to send most printerless com-

Okidata Microline 92



Smith-Corona
Fastext-80



Ergo Systems'
HUSH 80



Kaypro Letter
Quality Printer

puter owners to the nearest store for a closer look—if you want letter-quality output.

Cables do not come with the printer, but are standard and available at many stores. In addition, an attachable typewriter keyboard is available (\$200), so you can use the printer to type up an envelope without loading in a word-processing program, formatting, etc. Overall, the unit is handsome, civilized, and a pleasure to use.

Epson RX-80 and FX-80. You can't go wrong with an Epson printer—at least not that we know of. They are extremely well-built, and will do most anything you ask of them. Expanded, compressed, and italic print styles are standard, as are subscripts and superscripts. The FX-80 (\$599) and RX-80 (\$399) are both durable, fast, and versatile; the FX-80 is somewhat faster and produces slightly crisper letters than its sibling. Both can print graphics characters and international character sets. Again, the FX-80 has slightly better definition. If you're wary of making a purchase mistake and want to buy a proven performer, Epson must be near the top of everyone's list. The documentation is more than adequate, though getting the DIP switches properly adjusted for your particular needs takes a little experimentation.

Juki Model 6100. The Juki is an attractive and solid daisywheel printer that is compatible with existing accessories. Replacement IBM cartridge ribbons can be found in most stationery stores. The 100-character daisywheel is available in a number of print fonts and styles. A 2K buffer is standard, and can be expanded in 2K increments (\$28 each from Juki) to 8K. (A buffer, a storage space inside the printer, allows a computer to send several pages of a document to the printer and free itself up for other tasks.) Though the output is clean and crisp (and includes graphics), the Juki is relatively slow, at 17 cps.

The 6100 uses a 13-inch platen, which will allow use of oversize paper and multipart forms. A tractor-feed is available (\$149), allowing use of perforated fanfold paper. Front-panel controls program the printer for 10, 12, or 15 characters per inch, along with proportional spacing. Word-processing users will be glad to know that subscript, superscript, underscore, boldface, and shadow printing are standard features. The manual is superb. Complete setup instructions for some popular computers and word-processing programs are provided.

Mannesman Tally Spirit 80. The Spirit 80 is one of the lower-priced (\$399), full-featured, dot-matrix printers around. Its film ribbon accounts for the clean, crisp, and fully formed characters. It prints at 80 cps—about two-and-a-half pages per minute. Both serial and parallel versions are available; both accept standard cables that should be available at most major dealers.

The Spirit's smoked plastic cover lifts off to allow access to the ribbon and print head. This design feature, however, is a slight nuisance. Hinged covers don't add that much to the cost of a printer, and make threading paper, changing ribbons, and cleaning the print head easier.

The Mannesman manual is unusually short (it is a 50-page, half-size book), but contains all the information necessary to hook up the printer to just about any computer. One pleasant surprise is the clear explanation given for setting the DIP switches.

Okidata Microline 92. This dot-matrix printer (\$599) does not represent the latest in printer technology, and it's not the darling of the computer-show circuit—but it happens to be an excellent value.

The Microline 92 is small, so it's ideal for the home or crowded office desk. Two built-in character sets make it versatile; and its top speed of 160 cps makes it incredibly efficient. Furthermore, the print output is sharp.

Loading new paper is a breeze. You may select between pin-feed rollers and standard friction feed. Finding new ribbons will never be a problem. The standard spool ribbon can be found in most computer stores.

Two drawbacks: at 67db, it's a little noisy; and setup is a little difficult because the DIP switches are accessed by removing the upper casing. This lack of user consideration is somewhat surprising for a machine that offers so many other convenient features.

Okimate 10. Once regarded as inferior in quality to daisywheel and dot-matrix printers, thermal printers have blossomed with new technology. An example is the new Okimate 10 (\$239), a quiet thermal-transfer printer that is capable of full-color printing in more than 40 shades. A printer of this capability at this price is an unbelievable accomplishment! The Okimate 10 can be used with Atari and Commodore computers, and print out any graphics the computers can produce. Two programs—a learn-to-print and a color-screen kit—are included.

Users get about 10 pages of color printing, and about 75 pages of text from one ribbon (about \$6). High-gloss paper is recommended, but not necessary, for color printing. The printer produces graphics at 18 cps, and text at 60 cps. The text is very clear.

Star Micronics Gemini 10X. Star Micronics has a wide range of printers for less than \$600, and all are solid performers. The STX-80 (\$199) is a fast (60 cps), quiet thermal printer with a standard Centronics-parallel interface. The two Geminis, the 10X (\$399) and 15X (\$549), are dot-matrix printers. Both offer friction and tractor feed as standard items, but can also use single-sheet paper. They print at 120 cps, and can print italic, condensed, enlarged, emphasized, double-strike, and international characters. The output is extremely sharp in any style. Both come with a Centronics-parallel interface, and offer an RS-232C serial interface as an option. The only difference between the two printers is that the 15X features a 15.5-inch carriage, making it ideal for spreadsheet printouts.

Finally, the Delta 10 (\$549) keeps all these laudable features and adds another—speed. It prints at 160 cps, so is ideal for large-volume printing. Star Micronics also has more printers at the high end of the price scale. ☐

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ILLUSTRATION BY BARTON STABLER

★ O C T O B E R ★

PUZZLE

Page 64

Can you rescue Professor Understone from the spell of King Tut's second cousin twice removed?

AUTUMN PROGRAMS

Page 74

A costume for your computer; and some tricks to accompany those sugary treats on Halloween.

PROGRAMMING P.S.

Page 90

Sorry, we goofed! Corrections to previous programs.

Watch for **BYTE-SIZE BASIC** in upcoming issues.

ILLUSTRATION BY JIM CHERRY III

Cherry

MUMMY MANEUVERS

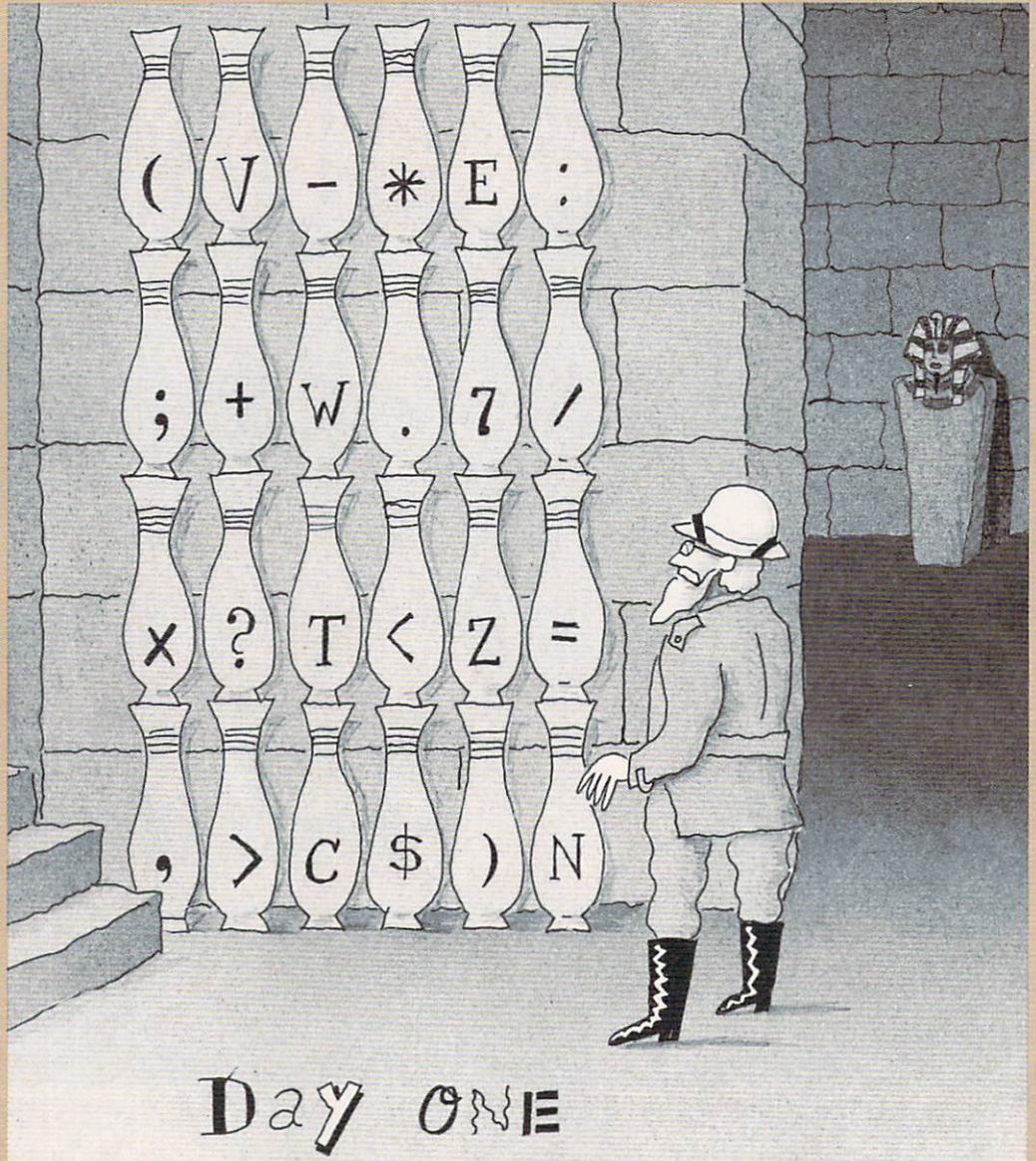
Jug-gling Your Way Out Of An Egyptian Pyramid

BY PETER FAVARO

As Professor Understone stood at the entrance to the ancient Egyptian pyramid, his heart fluttered. His lifelong dream was about to come true. For years, Professor Understone had been scoffed and harrumphed at by his pompous, stuffy colleagues in the archaeology department of the university where he taught. Now, he would finally collect the evidence that would reveal one of the greatest historical inaccuracies of all time—that the wealth and power of ancient Egypt's boy king Tutankhamen was insignificant compared to that of Tut's second cousin twice removed, Muchincommon ("Much" for short).

Much's father (Tut's uncle) owned Egypt's largest pyramid construction company. He died leaving Much the richest and most powerful boy in Egypt. Much never got the attention nor the press that Tut received, because of his stinginess and surly disposition. Much was so stingy that the slogan of his pyramid construction company read: "You Can Take It With You—As Long As It's Well-Sealed!" The rivalry between Tut and Much was so great that Professor Understone even unearthed hieroglyphics about the feuding relatives

PETER FAVARO PH.D. is an education and recreation video-game design consultant who conducts daily archaeological digs for his car keys. He is currently writing a book on educational computing for Prentice-Hall and is a contributing editor to FAMILY COMPUTING.



in the parking lot of what is now an Egyptian fast-food restaurant: McTut's.

Seconds after Professor Understone entered the pyramid, a thundering crash shook the walls and sealed the only door back to the outside world. Armed with only a canteen of water, five peanut butter-and-jelly sandwiches, a few matches, and a disposable lighter, Professor Understone began to explore the pyramid. As he was

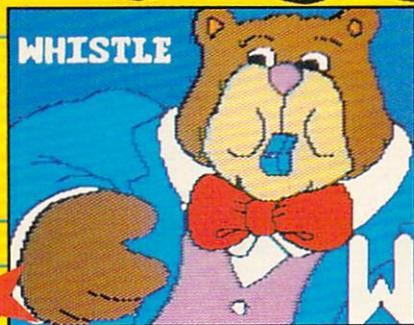
carefully studying the hieroglyphics on 24 ancient Egyptian water jugs, his lighter flickered and died.

Professor Understone's heart sank. A day passed. He was just about to give up all hope of escape when a strange thing happened. The pyramid door opened a crack, throwing a ray of sunlight on the 24 water jugs. Goose pimples rose on the professor's neck when he realized

that several of the jugs had shifted position! New jugs had appeared in place of those that had moved. Suddenly, as quickly as it had opened, the door slammed shut.

The same thing happened during Professor Understone's third and fourth days in the pyramid. Each day the same jugs changed position, and the door opening grew wider. Professor Understone waited with baited breath for the

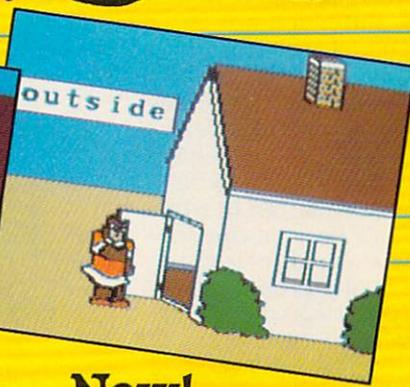
The Bear essentials.



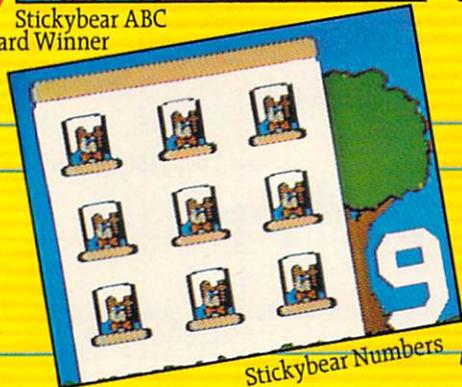
Stickybear ABC
Award Winner



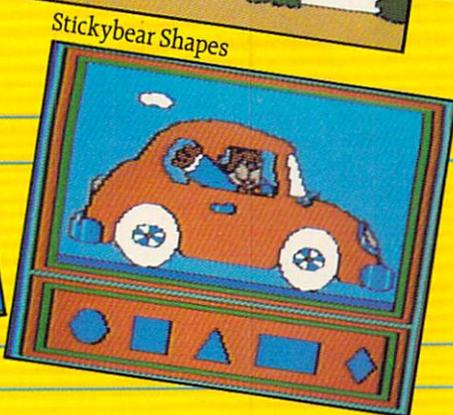
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outside



Stickybear Numbers



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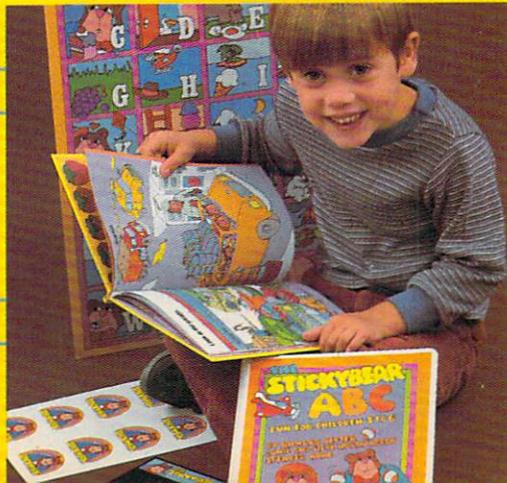
WeeklyReader Family Software

*Apple and Atari only.

Created by Richard Hefter, Janie and Steve Worthington and Spencer Howe for Optimum Resource, Inc.

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A/M84AK9



PUZZLE

fifth day, when, if everything went according to sequence, the door would open wide enough for him to escape. But nothing happened.

Down to his last peanut butter-and-jelly sandwich, Professor Understone racked his brain for all he could recall about Muchin-common. The ancient Egyptian loved puzzles, and clearly had a stake—selfish as it may be—in releasing the Professor and securing his name in history. But Much was as mean and stingy in his afterlife as he had been in his heyday. He was going to make the Professor work for his release. Somehow, the Professor had to discover the pattern in which the jugs were moving, and move them to their fifth and final position himself, thereby triggering the opening of the door.

HOW TO PLAY

Make sure your computer is set for all uppercase letters before you type in or RUN this program. The illustration (page 64) shows the arrangement of the jugs when the Professor first entered the pyramid. When you run *Mummy Maneuvers*, you will see the new arrangement on Day Two. (The jugs will be

represented on the screen by their hieroglyphics.) To see the jug arrangements for days three, four, and five, press the space bar.

Note that the arrangement on day five is exactly the same as that of day four. It is up to you to place the jugs in their final position and thereby permit the opening of the door. Use your "I" (up), "J" (left), "K" (right), and "M" (down) keys to position your cursor over a jug. Then input the appropriate jug hieroglyphic. Repeat this procedure until you are satisfied that all the jugs have been placed in the correct position.

Now type "D" to try the door. If your arrangement is correct, the door will open and the program will end. If your arrangement is incorrect, you can get a helpful hint by typing the "H" key. Pressing the space bar returns you to the fifth day so you can continue with your experimenting. If you need to go back and study the jug arrangements on the previous days, use your space bar. (This will not affect your jug arrangement.) There is no limit to the number of times you can try the door, but hurry; Professor Understone is down to his last sandwich!

Base Version (IBM PC)/Mummy Maneuvers

```

10 DIM DAYS(2,6),S$(24):WL=80:WH=12:XP=32:YP=4:WIDTH W
L:KEY OFF:LOCATE ,,0
20 CLS:TRU=-1:DT=100:TZ=0:TX=1:T1$=CHR$(178)
30 M=(WL-20)/2+TZ:W3=INT(WL/3):DP=2:BL$=""
60 FOR I=1 TO 6:READ DAYS(1,I),T$:C=ASC(LEFT$(T$,1))-6
4
70 FOR Z=2 TO LEN(T$):N=ASC(MID$(T$,Z,1))-C
80 IF N+C<64 THEN N=N+TRU*28*(N<36):GOTO 100
90 N=N+TRU*26*(N<65)
100 DAYS(2,I)=DAYS(2,I)+CHR$(N):NEXT Z:NEXT I
110 FOR I=1 TO 20:LS=LS+"-":NEXT I
120 FOR I=1 TO W3+1:DR$=DR$+T1$:BL$=BL$+" ":NEXT I
130 BL$=LEFT$(BL$,W3-1):W3=W3+TZ
140 FOR I=1 TO 24:S$(I)=MID$(DAYS(2,4),I,1):NEXT I
150 CLS:IF DP<>5 THEN FOR DL=1 TO DT:NEXT DL:GOTO 180
160 DAYS(2,DP)=""$:FOR I=1 TO 24
170 DAYS(2,DP)=DAYS(2,DP)+S$(I):NEXT I
180 Q$="DAY "+DAYS(1,DP):GOSUB 1000:PRINT
190 FOR X=0 TO 3:PRINT TAB(M);L$:PRINT TAB(M);
200 FOR Y=1 TO 6:PRINT " ";MID$(DAYS(2,DP),X*6+Y,1);
210 NEXT Y:PRINT:NEXT X:PRINT TAB(M);L$
220 PRINT:R$="PRESS":IF DP<>5 THEN 240
230 R$="USE <I>,<J>,<K>,<M> TO MOVE CURSOR,<D>
TO TRY DOOR, OR"
    
```

```

240 R$=R$+" <SPACE BAR> TO MOVE FROM DAY TO DAY."
250 GOSUB 2000:IF DP=5 THEN PC=1:GOSUB 3000
260 GOSUB 5000:K$=INKEY$:IF K$<>CHR$(32) OR K$>"Z" THEN
260
270 IF K$<>CHR$(32) THEN 290
280 DP=DP+1-TRU*4*(DP=5):GOTO 150
290 IF DP<>5 THEN 260
300 IF K$="D" THEN 370
310 RD=TRU*((K$="M")-(K$="I")):CD=TRU*((K$="K")-(K$="J"
"))
320 IF RD+CD=0 THEN 360
330 PC=PC+CD+RD*6
340 PC=PC+24*TRU*((PC<1)-(PC>24))
350 GOTO 260
360 S$(PC)=K$:GOSUB 5000:GOTO 260
370 CLS:FL=0:T$="":FOR I=1 TO 24
380 FL=FL+(S$(I)=MID$(DAYS(2,1),I,1)):NEXT I
390 FOR I=1 TO WH+1:PRINT TAB(W3);DR$:NEXT I
400 PRINT TAB(W3/2);DR$:DR$:PRINT:IF ABS(FL)=24 THEN 5
10
410 SOUND 50,1:SOUND 37,2
420 R$="WRONG ARRANGEMENT; DOOR DOESN'T BUDGE!"
430 R$=R$+" PRESS <H> FOR A HINT OR <SPACE BAR> TO CON
TINUE.":GOSUB 2000
440 K$=INKEY$:IF K$=CHR$(32) THEN 150
450 IF K$<>"H" THEN 440
460 CLS:PRINT:R$="TRY LOOKING AT A "+DAYS(2,6)+" ..."
470 GOSUB 2000:PRINT:PRINT:PRINT
480 R$="PLEASE PRESS <SPACE BAR> TO CONTINUE.":GOSUB 2
000
490 K$=INKEY$:IF K$<>CHR$(32) THEN 490
500 GOTO 150
510 R$="RUMBLE RUMBLE ...":GOSUB 2000
520 FOR A=40 TO 500 STEP 30:SOUND A,.1,15:NEXT A
530 X=1:Y=WH+5:GOSUB 4000
540 R$="SUCCESS! THE DOOR SLOWLY RISES. YOU'RE FREE!"
550 GOSUB 2000:X=W3+2-TX:FOR Y=WH+2 TO 2 STEP -1
560 GOSUB 4000:PRINT BL$;
570 FOR A=-5 TO 0 STEP -.1:SOUND 50,A,15:FOR B=1 TO 10
:SOUND 40,.01,15:NEXT B:NEXT A
580 NEXT Y:Y=WH+7:X=1:GOSUB 4000:END
1000 PRINT TAB((WL-LEN(Q$))/2+TZ);Q$;
1010 IF LEN(Q$)<WL THEN PRINT
1020 RETURN
2000 IF LEN(R$)<=WL THEN Q$=R$:GOSUB 1000:RETURN
2010 J=WL+1:K=1:FOR I=WL+1 TO 1 STEP -1
2020 IF MID$(R$,I,1)=" " THEN K=0:J=I:I=1
2030 NEXT I:Q$=LEFT$(R$,J-1):GOSUB 1000
2040 R$=RIGHT$(R$,LEN(R$)-J+K):GOTO 2000
3000 Y=INT((PC-1)/6):X=(PC-6*Y-1)*3+XP
3010 Y=Y*2+YP:GOSUB 4000:RETURN
4000 LOCATE Y,X:RETURN
5000 IF DP<>5 THEN RETURN
5010 GOSUB 3000:PRINT " ";CHR$(29);
5020 FOR DL=1 TO 25:NEXT DL:PRINT S$(PC):RETURN
6000 DATA ONE,"V>R'$A45%$(1)T9P6V7&8Y:?'J"
6010 DATA TWO,"T<P>Y?UWS/'R7N4T5$6Z&=H"
6020 DATA THREE,"W?S(XB56&TV2*U:Q7W8'9Z;$)"
6030 DATA FOUR,"K3G85P)*LHJ&916E+K,N-Q/4Y"
6040 DATA FIVE,NONE,SIX,FIUSVGY
    
```

Atari/Mummy Maneuvers

```

10 DIM DAYS(30),DAY1$(130),R$(5),R1$(25),L$(20),Q$(200
),DR$(40),BL$(14)
20 PRINT CHR$(125):DP=2:OPEN #1,4,0,"K":POKE 752,1
30 DAY$=""$:DAY$(30)=DAY$:DAY$(2)=DAY$:L$=""$:L$(20)=L
$:L$(2)=L$
40 DR$=CHR$(160):DR$(40)=DR$:DR$(2)=DR$:BL$=""$:BL$(14
)=BL$:BL$(2)=BL$
50 FOR I=1 TO 6:READ R$,R1$:DAY$(I*5-4,I*5)=R$:C=ASC(R
1$(1,1))-64
60 FOR Z=2 TO LEN(R1$):N=ASC(R1$(Z,Z))-C
70 IF N+C<64 THEN N=N+28*(N<36):GOTO 90
80 N=N+26*(N<65)
90 DAY1$(LEN(DAY1$)+1)=CHR$(N):NEXT Z:NEXT I
    
```

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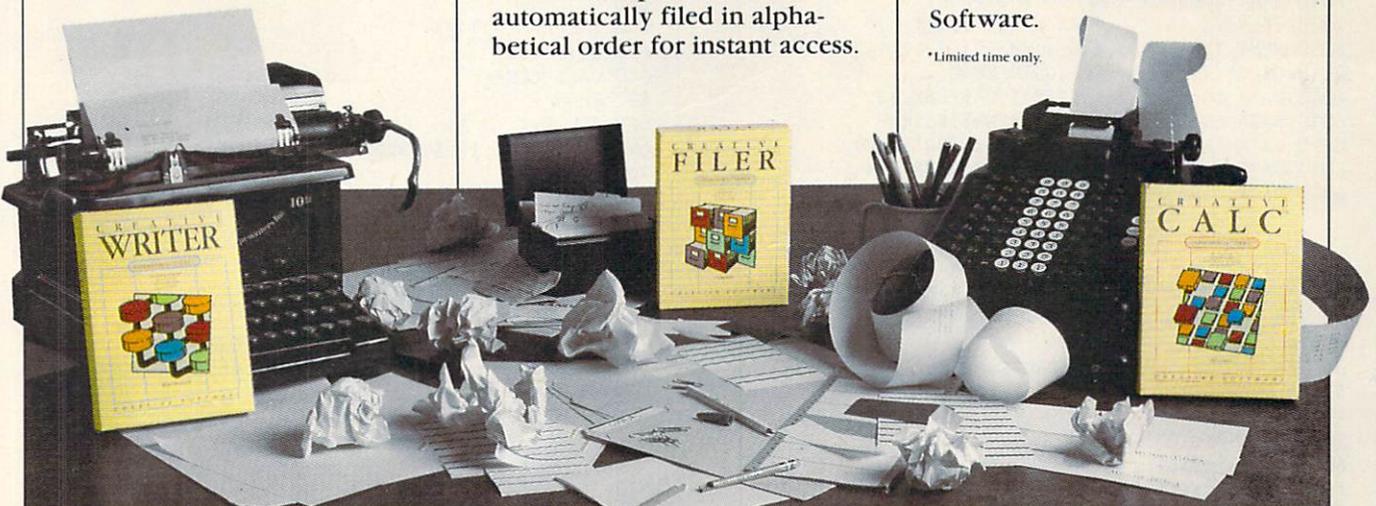
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PUZZLE

```

100 DAY1$(121)=DAY1$(100,LEN(DAY1$))
110 DAY1$(97,120)=DAY1$(73,96)
120 PRINT CHR$(125)
130 POSITION 16,0:PRINT "DAY ";DAY$(DP*5-4,DP*5)
140 POKE 82,10:PRINT :PRINT :FOR X=0 TO 3:PRINT LS
150 FOR Y=1 TO 6:PT=DP*24+X*6+Y-24:PRINT " ";DAY1$(PT
,PT);
160 NEXT Y:PRINT :NEXT X:PRINT L$:POKE 82,0
170 Q$="PRESS":IF DP<>5 THEN 190
180 Q$="USE <I>, <J>, <K>, AND <M> TO MOVE CURSOR, <D>
TO TRY DOOR, OR"
190 Q$(LEN(Q$)+1)=" <SPACE BAR> TO MOVE FROM DAY TO DA
Y."
200 PRINT :GOSUB 2000:IF DP=5 THEN POKE 752,0:POSITION
11,4:PRINT CHR$(31);:X=12:Y=4:PC=97
210 GET #1,K:IF K=32 THEN DP=DP+1-4*(DP=5):POKE 752,1:
GOTO 120
220 IF DP<>5 OR K<33 OR K>90 THEN 210
230 IF K=68 THEN 290
240 RD=(K=77)-(K=73):CD=(K=75)-(K=74)
250 IF RD+CD=0 THEN DAY1$(PC,PC)=CHR$(K):PRINT CHR$(K)
;CHR$(30);:GOTO 210
260 PC=PC+CD+RD*6:PC=PC+24*((PC<97)-(PC>120))
270 N=PC-97:Y=INT(N/6):X=3*(N-6*Y)+12:Y=2*Y+4
280 POSITION X,Y:PRINT CHR$(31);CHR$(30);:GOTO 210
290 PRINT CHR$(125):POKE 752,1:FOR X=1 TO 15
300 POKE 85,12:PRINT DR$(1,16):NEXT X:POKE 85,0:PRINT
DR$
310 IF DAY1$(1,24)=DAY1$(97,120) THEN 410
320 PRINT CHR$(253);
330 Q$="WRONG ARRANGEMENT; DOOR DOESN'T BUDGE! PRESS <
H> FOR A HINT OR <SPACE BAR> TO CONTINUE.":GOSUB 2000
340 GET #1,K:IF K=32 THEN 120
350 IF K<>72 THEN 340
360 PRINT CHR$(125):Q$="TRY LOOKING AT A "
370 Q$(LEN(Q$)+1)=DAY1$(121,127):Q$(LEN(Q$)+1)="." :GOS
UB 2000
380 POSITION 0,10:Q$="PLEASE PRESS <SPACE BAR> TO CONT
INUE.":GOSUB 2000
390 GET #1,K:IF K<>32 THEN 390
400 GOTO 120
410 Q$="RUMBLE RUMBLE ...":GOSUB 2000
420 FOR VL=0 TO 15:FOR VC=0 TO 3:SOUND VC,250,8,VL:NEX
T VC
430 FOR D=1 TO 100:NEXT D:NEXT VL
440 Q$="SUCCESS! THE DOOR SLOWLY RISES. YOU'RE FREE!":
POSITION 0,18:GOSUB 2000
450 FOR I=16 TO 2 STEP -1:POSITION 13,I
460 PRINT BL$:FOR D=1 TO 100:NEXT D:NEXT I
470 FOR VC=0 TO 3:SOUND VC,0,0,0:NEXT VC
480 POKE 82,2:POSITION 0,21:POKE 752,0:END
2000 IF LEN(Q$)<=40 THEN POKE 85,(40-LEN(Q$))/2:PRINT
Q$:RETURN
2010 J=41:K=0:FOR I=40 TO 1 STEP -1
2020 IF Q$(I,I)=" " THEN K=1:J=I:I=1
2030 NEXT I:POKE 85,(40-J)/2:PRINT Q$(1,J-1)
2040 Q$=Q$(J+K,LEN(Q$)):GOTO 2000
6000 DATA ONE,V>R'SA45XS(1)T9P6V7&8Y:~J
6010 DATA TWO,T<PX>Y2?UWS/'R7N4T5$6Z&=H
6020 DATA THREE,W?S(%B56&TV2*U:Q7W8'9Z;$)
6030 DATA FOUR,V>R'SA45WSU1(TXP6V7Y8B:~J
6040 DATA FIVE,NONE,SIX,FIUSGVGY

```

T1-99/4A/Mummy Maneuvers

```

10 DIM DAY$(2,6),S$(24)
20 CALL CLEAR
29 REM --MAKE SURE <ALPHA LOCK> KEY IS DOWN--
30 CALL CHAR(130,"FFFFFFFFFFFFFFFF")
40 DP=2
50 FOR I=1 TO 6
60 READ DAY$(1,I),T$
70 C=ASC(SEG$(T$,1,1))-64
80 FOR Z=2 TO LEN(T$)
90 N=ASC(SEG$(T$,Z,1))-C
100 IF N+C>=64 THEN 130

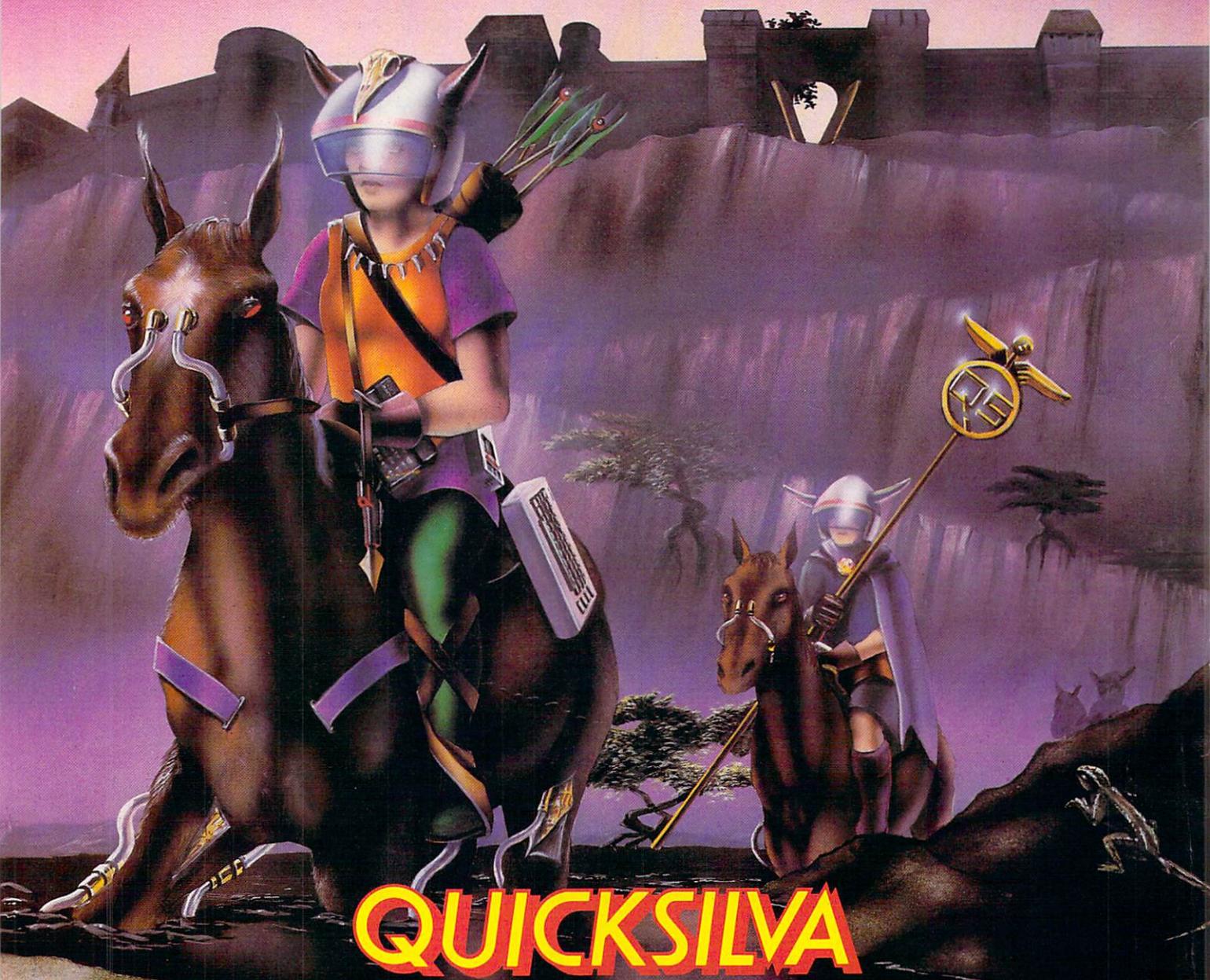
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110 N=N-28*(N<36)
120 GOTO 140
130 N=N-26*(N<65)
140 DAY$(2,I)=DAY$(2,I)&CHR$(N)
150 NEXT Z
160 NEXT I
170 FOR I=1 TO 24
180 S$(I)=SEG$(DAY$(2,4),I,1)
190 NEXT I
200 CALL CLEAR
210 IF DP=5 THEN 250
220 FOR DL=1 TO 200
230 NEXT DL
240 GOTO 290
250 DAY$(2,DP)=""
260 FOR I=1 TO 24
270 DAY$(2,DP)=DAY$(2,DP)&S$(I)
280 NEXT I
290 Q$="DAY "&DAY$(1,DP)
300 R=2
310 GOSUB 2000
320 FOR X=0 TO 3
330 R=5+X*2
340 CALL HCHAR(R-1,6,45,20)
350 FOR Y=1 TO 6
360 CALL HCHAR(R,5+3*Y,ASC(SEG$(DAY$(2,DP),X*6+Y,1)))
370 NEXT Y
380 NEXT X
390 CALL HCHAR(12,6,45,20)
400 R=16
410 R$="PRESS"
420 IF DP<>5 THEN 440
430 R$="USE <I>, <J>, <K>, AND <M> TO MOVE CURSOR, <D>
TO TRY DOOR, OR"
440 R$=R$&" <SPACE BAR> TO MOVE FROM DAY TO DAY."
450 GOSUB 3000
460 IF DP<>5 THEN 490
470 PC=1
480 GOSUB 4000
490 CALL KEY(0,K,S)
500 IF DP<>5 THEN 520
510 GOSUB 5000
520 IF (K<32)+(K>90)THEN 490
530 IF K<>32 THEN 560
540 DP=DP+1+4*(DP=5)
550 GOTO 200
560 IF DP<>5 THEN 490
570 IF K=68 THEN 660
580 RD=(K=73)-(K=77)
590 CD=(K=74)-(K=75)
600 IF RD+CD=0 THEN 640
610 PC=PC+CD+RD*6
620 PC=PC-24*((PC<1)-(PC>24))
630 GOTO 480
640 S$(PC)=CHR$(K)
650 GOTO 480
660 CALL CLEAR
670 FL=0
680 FOR I=1 TO 24
690 FL=FL+(S$(I)=SEG$(DAY$(2,1),I,1))
700 NEXT I
710 FOR I=3 TO 16
720 CALL HCHAR(I,11,130,12)
730 NEXT I
740 CALL HCHAR(17,6,130,22)
750 IF FL=-24 THEN 930
760 CALL SOUND(100,-7,0)
770 R$="WRONG ARRANGEMENT; DOOR DOESN'T BUDGE! "
780 R$=R$&" PRESS <H> FOR A HINT OR <SPACE BAR> TO CO
NTINUE."
790 GOSUB 3000
800 CALL KEY(0,K,S)
810 IF K=32 THEN 200
820 IF K<>72 THEN 800
830 CALL CLEAR
840 R=5
850 R$="TRY LOOKING AT A "&DAY$(2,6)&" ..."

```

A STEP BEYOND.

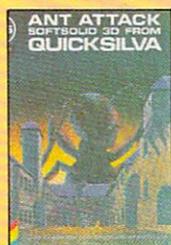


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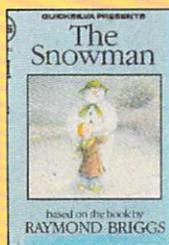
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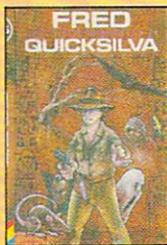
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PUZZLE

```

860 GOSUB 3000
870 R=R+2
880 R$="PLEASE PRESS <SPACE BAR> TO CONTINUE."
890 GOSUB 3000
900 CALL KEY(O,K,S)
910 IF K<>32 THEN 900
920 GOTO 200
930 R$="RUMBLE RUMBLE ..."
940 R=21
950 GOSUB 3000
960 R$="SUCCESS! THE DOOR SLOWLY RISES. YOU'RE FREE!"
970 GOSUB 3000
980 X=12
990 FOR Y=17 TO 4 STEP -1
1000 FOR DL=1 TO 80
1010 NEXT DL
1020 CALL HCHAR(Y,X,32,10)
1030 CALL SOUND(300,-7,0)
1040 NEXT Y
1050 FOR DL=1 TO 1000
1060 NEXT DL
1070 END
2000 W=INT((32-LEN(Q$))/2)
2010 FOR I=1 TO LEN(Q$)
2020 CALL HCHAR(R,W+I,ASC(SEG$(Q$,I,1)))
2030 NEXT I
2040 IF LEN(Q$)>32 THEN 2060
2050 R=R+1
2060 RETURN
3000 IF LEN(R$)>32 THEN 3040
3010 Q$=R$
3020 GOSUB 2000
3030 RETURN
3040 J=33
3050 K=1
3060 FOR I=33 TO 1 STEP -1
3070 IF SEG$(R$,I,1)<>" " THEN 3110
3080 K=0
3090 J=I
3100 I=1
3110 NEXT I
3120 Q$=SEG$(R$,1,J-1)
3130 GOSUB 2000
3140 R$=SEG$(R$,J-K+1,LEN(R$)-J+1)
3150 GOTO 3000
4000 Y=INT((PC-1)/6)
4010 X=(PC-6*Y-1)*3+8
4020 Y=Y+2+5
4030 GOSUB 5000
4040 RETURN
5000 CALL HCHAR(Y,X,30)
5010 CALL HCHAR(Y,X,ASC(S$(PC)))
5020 RETURN
6000 DATA ONE,"V>R'$A45XS(1)T9P6V788Y:?J"
6010 DATA TWO,"T<PX>Y2?UWS/'R7N4T5$6Z&=H"
6020 DATA THREE,"W?S(%B56&TV2*U:Q7W8'9Z;$)"
6030 DATA FOUR,"K3G85P)*LHJ&9I6E+K,N-Q/4Y"
6040 DATA FIVE,NONE,SIX,FIUSVGY

```

Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/Mummy Maneuvers

```

10 PRINT TAB 5;"USE <ENTER> INSTEAD OF";TAB 3;"<SPACE BAR> TO MOVE FROM";TAB 10;"DAY TO DAY."
20 PAUSE 180
30 FAST
40 DIM E$(6,5)
50 DIM D$(6,25)
60 DIM S$(24,1)
70 LET X$=""
80 LET L$=""
90 LET A$=""
100 LET C$=""
110 LET Z$="ONE,YD5JK(BMI60WL7C3G9HNF;AE;,TWO,VA2GH$8F
WY5T1490D6EKC:LB-,THREE,ZE6KL)CNJ79XM8D4HAI0G?BFP,FOUR

```

```

,K.<56P;8L=-IA+4)2*3N1Q/OY,FIVE,NONE,SIX,D6SQTEWW"
120 LET DP=2
130 LET DI=4
140 LET DJ=1
150 FOR I=1 TO 6
160 GOSUB 5000
170 LET E$(I)=X$
180 GOSUB 5000
190 LET T$=X$
200 FOR Z=2 TO LEN T$
210 LET N=CODE T$(Z)-CODE T$(1)+37
220 LET N=N+51*(N<13)
230 LET D$(I,Z-1)=CHR$ N
240 NEXT Z
250 NEXT I
260 FOR I=1 TO 20
270 LET L$=L$+CHR$ 131
280 NEXT I
290 FOR I=1 TO 11
300 LET A$=A$+CHR$ 128
310 LET C$=C$+" "
320 NEXT I
330 LET C$=C$( TO 9)
340 FOR I=1 TO 24
350 LET S$(I)=D$(4,I)
360 NEXT I
370 SLOW
380 CLS
390 IF DP<>5 THEN GOTO 430
400 FOR I=1 TO 24
410 LET D$(DP,I)=S$(I)
420 NEXT I
430 LET Q$="DAY "+E$(DP)
440 GOSUB 2000
450 PRINT
460 FOR X=0 TO 3
470 PRINT TAB 6;L$
480 PRINT TAB 6;
490 FOR Y=1 TO 6
500 PRINT " ";D$(DP,X*6+Y);
510 NEXT Y
520 PRINT
530 NEXT X
540 PRINT TAB 6;L$
550 PRINT
560 LET R$="PRESS"
570 IF DP<>5 THEN GOTO 590
580 LET R$="USE <I>, <J>, <K>, AND <M> TO MOVE CURSOR,
<D> TO TRY DOOR, OR"
590 LET R$=R$+" <ENTER> TO MOVE FROM DAY TO DAY."
600 GOSUB 3000
610 IF DP=5 THEN LET PC=1
620 GOSUB 6000
630 LET K$=INKEY$
640 IF K$="" THEN GOTO 620
650 IF K$<>CHR$ 118 THEN GOTO 680
660 LET DP=DP+1-4*(DP=5)
670 GOTO 380
680 IF DP<>5 THEN GOTO 630
690 IF K$="D" THEN GOTO 780
700 LET RD=(K$="M")-(K$="I")
710 LET CD=(K$="K")-(K$="J")
720 IF RD+CD=0 THEN GOTO 760
730 LET PC=PC+CD+RD*6
740 LET PC=PC+24*((PC<1)-(PC>24))
750 GOTO 620
760 LET S$(PC)=K$
770 GOTO 620
780 CLS
790 LET FL=0
800 LET T$=""
810 FOR I=1 TO 24
820 LET FL=FL+(S$(I)=D$(1,I))
830 NEXT I
840 FOR I=1 TO 13
850 PRINT TAB 10;A$
860 NEXT I

```



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.

The first computer keyboard made especially for young children. And the *only* keyboard with Kermit, Miss Piggy and the Muppet gang right on it—ready to introduce your child to the magic of letters, numbers, and colors.

Imagine you're five years old. Now pick a keyboard.

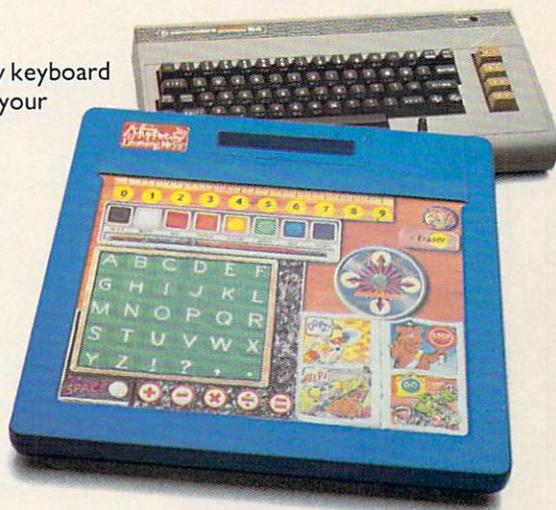
An easy choice, isn't it? That's because Muppet Learning Keys was created by education specialists to make learning an adventure for your child.

Unlike conventional keyboards, 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.

Press any key on the keyboard and something always happens. Kermit flies a kite. Miss Piggy eats a pretzel. Fozzie puts out a fire.

That's how the fun begins. But soon, your child starts to explore and experiment. How many kites can Kermit fly? In how many colors? What do the other letters mean?

Muppet Learning Keys has things that every child knows and loves—a compass, a ruler, an eraser and a blackboard. Lots of stuff that a kid can't wait to get his hands on.



All-consuming tests.

When it came time to test this new marvel, we turned to the experts. Children.

We let them do their worst to it. Peanut butter. Teeth. Even Ketchup.

Then we wiped its washable mylar surface with a sponge, and plugged it in.

And those kids did their best with it—having fun while they experienced the joy and wonder of learning.

Give your child Muppet Learning Keys and make computer learning child's play.

Muppet Learning Keys. The hands-on keyboard for kids.

For the Apple IIc, Apple IIe, and Commodore 64 computers.

In-box software by Sunburst Communications. Muppet Learning Keys works with software that is designed or modified for it.

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The symbol  is a trademark of Sunburst Communications.

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PUZZLE

```

870 PRINT TAB 4;A$;A$
880 PRINT
890 IF FL=24 THEN GOTO 1060
900 LET R$="WRONG ARRANGEMENT; DOOR DOES NOT BUDGE."
910 LET R$=R$+" PRESS <H> FOR A HINT OR <ENTER> TO CON
TINUE."
920 GOSUB 3000
930 LET K$=INKEY$
940 IF K$=CHR$ 118 THEN GOTO 380
950 IF K$<>"H" THEN GOTO 930
960 CLS
970 PRINT
980 LET R$="TRY LOOKING AT A "+D$(6, TO 7)+" ..."
990 GOSUB 3000
1000 PRINT AT 9,0;
1010 LET R$="PLEASE PRESS <ENTER> TO CONTINUE."
1020 GOSUB 3000
1030 LET K$=INKEY$
1040 IF K$<>CHR$ 118 THEN GOTO 1030
1050 GOTO 380
1060 LET R$="RUMBLE RUMBLE ..."
1070 GOSUB 3000
1080 PRINT AT 16,0;
1090 LET R$="SUCCESS. THE DOOR SLOWLY RISES. YOU ARE F
REE."
1100 GOSUB 3000
1110 LET X=11
1120 FOR Y=13 TO 1 STEP -1
1130 PRINT AT Y,X;C$;
1140 PAUSE 60
1150 NEXT Y
1160 STOP
2000 PRINT TAB ((32-LEN Q$)/2);Q$;
2010 IF LEN Q$<32 THEN PRINT
2020 RETURN
3000 IF LEN R$>32 THEN GOTO 3040
3010 LET Q$=R$
3020 GOSUB 2000
3030 RETURN
3040 LET J=33
3050 LET K=1
3060 FOR I=33 TO 1 STEP -1
3070 IF R$(I)<>" " THEN GOTO 3110
3080 LET K=0
3090 LET J=I
3100 LET I=1
3110 NEXT I
3120 LET Q$=R$( TO J-1)
3130 GOSUB 2000
3140 LET R$=R$(J+K TO LEN R$)
3150 GOTO 3000
4000 LET Y=INT ((PC-1)/6)
4010 LET X=(PC-6*Y-1)*3+8
4020 LET Y=Y+2+3
4030 PRINT AT Y,X;
4040 RETURN
5000 IF Z$(DI)="," THEN GOTO 5040
5010 LET DI=DI+1
5020 IF DI>LEN Z$ THEN GOTO 5040
5030 GOTO 5000
5040 LET X$=Z$(DJ TO DI-1)
5050 LET DJ=DI+1
5060 LET DI=DJ+1
5070 RETURN
6000 IF DP<>5 THEN RETURN
6010 GOSUB 4000
6020 PRINT CHR$ 128;
6030 GOSUB 4000
6040 PRINT S$(PC);
6050 RETURN

```

MODIFICATIONS FOR OTHER COMPUTERS

ADAM/Mummy Maneuvers

Use the base version, with the following alterations. Change CLS to HOME in lines 150, 370, and 460. Delete lines 5000-5020. Finally, change lines 10, 20, 260, 350, 360, 400, 410, 440, 490, 520, 570, and 4000 to read as follows:

```

10 DIM day$(2,6),s$(24):wl=31:wh=12:xp=8:yp=4
20 HOME:tru=1:dt=300:tz=1:tx=1:t1$="*"
260 GET k$:IF k$<CHR$(32) OR k$>"Z" THEN 260
350 GOSUB 3000:GOTO 260
360 s$(pc)=k$:PRINT k$;:GOSUB 3000:GOTO 260
400 PRINT TAB(w3/2);dr$;dr$;"*":PRINT:IF ABS(fl)=24 TH
EN 510
410 PRINT CHR$(7);
440 GET k$:IF k$=CHR$(32) THEN 150
490 GET k$:IF k$<>CHR$(32) THEN 490
520 PRINT CHR$(7);CHR$(7);
570 PRINT CHR$(7);:FOR dl=1 to 400:NEXT dl
4000 HTAB x:VTAB y:RETURN

```

Apple/Mummy Maneuvers

Use the base version, with the following alterations. Change CLS to HOME in lines 150, 370, and 460. Delete lines 5000-5020. Finally, change lines 10, 20, 260, 350, 360, 410, 440, 490, 520, 570, and 4000 to read as follows:

```

10 DIM DAYS(2,6),SS(24):WL=40:WH=12:XP=13:YP=4
20 HOME:TRU=1:DT=200:TZ=1:TX=1:T1$="*"
260 GET K$:IF K$<CHR$(32) OR K$>"Z" THEN 260
350 GOSUB 3000:GOTO 260
360 SS(PC)=K$:PRINT K$;:GOSUB 3000:GOTO 260
410 PRINT CHR$(7);
440 GET K$:IF K$=CHR$(32) THEN 150
490 GET K$:IF K$<>CHR$(32) THEN 490
520 FOR I=1 TO 100:A=PEEK(-16336):NEXT I
570 A=PEEK(-16336):FOR DL=1 TO 200:NEXT DL
4000 HTAB X:VTAB Y:RETURN

```

Commodore 64/Mummy Maneuvers

Use the base version, with the following alterations. Add lines 40 and 50:

```

40 VL=54272:VH=VL+1:FOR I=VL TO VL+24:POKE I,0:NEXT I
50 VW=VL+4:POKE VL+24,15:POKE VL+5,10:POKE VL+6,10

```

Change CLS to PRINT CLS; in lines 150, 370, and 460. Finally, change lines 10, 20, 260, 410, 440, 490, 520, 550, 570, 4000, and 5010 to read as follows:

```

10 DIM DAY$(2,6),S$(24):WL=40:WH=12:XP=13:YP=3:CLS=CHR
$(147)
20 PRINT CHR$(5);CLS:TRU=-1:DT=300:TZ=0:T1$="*"
260 GOSUB 5000:GET K$:IF K$<CHR$(32) OR K$>"Z" THEN 26
0
410 POKE VH,15:POKE VL,58:POKE VW,129:FOR DL=1 TO 250:
NEXT DL:POKE VW,128
440 GET K$:IF K$=CHR$(32) THEN 150
490 GET K$:IF K$<>CHR$(32) THEN 490
520 POKE VH,43:POKE VL,52:POKE VW,129:FOR DL=1 TO 150:
NEXT DL:POKE VW,128
550 GOSUB 2000:X=W3+2:FOR Y=WH+2 TO 1 STEP -1
570 POKE VH,38:POKE VL,126:POKE VW,129:FOR DL=1 TO 100
:NEXT DL:POKE VW,128
4000 POKE 214,Y-1:PRINT:PRINT TAB(X-1):RETURN
5010 GOSUB 3000:PRINT CHR$(18);" ";CHR$(146);CHR$(157)
;

```

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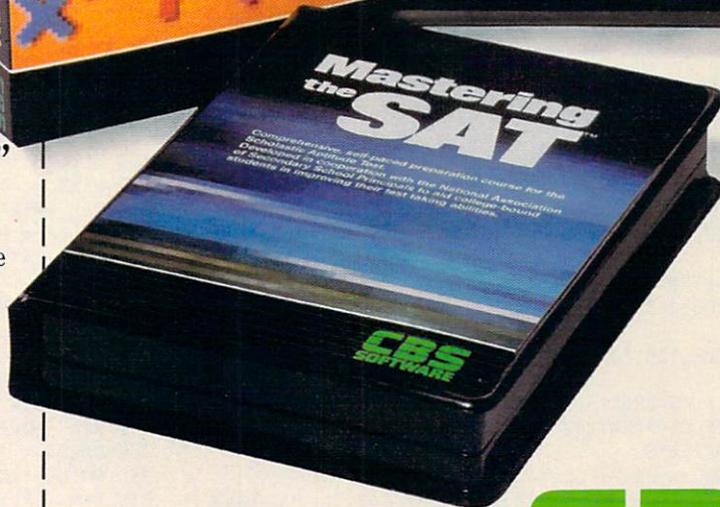
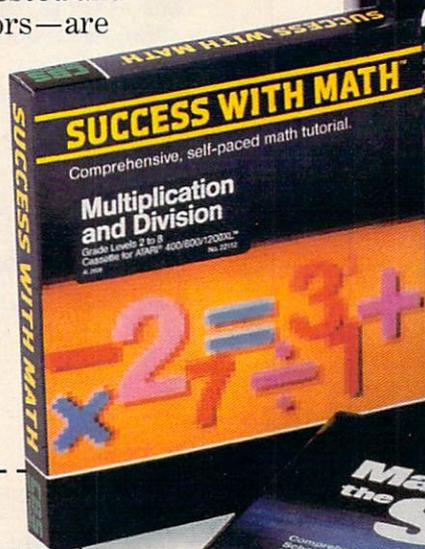
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PUZZLE

IBM PCjr/Mummy Maneuvers

Use the base version, except change line 10 to read as follows:

```
10 DIM DAYS(2,6),SS(24):WL=40:WH=12:XP=12:YP=4:WIDTH W
L:KEY OFF:LOCATE ,,0
```

TRS-80 Color Computer/Mummy Maneuvers

Use the base version, except change lines 10, 20, 180, 410, 520, 570, 4000, and 5010 to read as follows:

```
10 CLEAR 500:DIM DAYS(2,6),SS(24):WL=32:WH=7:XP=9:YP=3
20 CLS:TRU=-1:DT=400:TZ=0:TX=0:T1$=CHR$(128)
180 Q$="DAY "+DAY$(1,DP):GOSUB 1000
410 SOUND 20,1:SOUND 19,1
520 SOUND 70,2:SOUND 50,2
570 SOUND 1,1:SOUND 2,1:FOR DL=1 TO 100:NEXT DL
4000 PRINT@(Y-1)*WL+X-1,"";:RETURN
5010 GOSUB 3000:PRINT " ";CHR$(8);
```

TRS-80 Model III/Mummy Maneuvers

Use the base version, with the following alterations. Delete lines 410 and 520. Also, change lines 10, 20, 570, 4000, and 5010 to read as follows:

```
10 CLEAR 500:DIM DAYS(2,6),SS(24):WL=64:WH=6:XP=25:YP=
4
20 CLS:TRU=-1:DT=400:TZ=0:TX=0:T1$=CHR$(191)
570 FOR DL=1 TO 200:NEXT DL
4000 PRINT@(Y-1)*WL+X-1,"";:RETURN
5010 GOSUB 3000:PRINT " ";:GOSUB 3000
```

TRS-80 Model 4/Mummy Maneuvers

Use the Model III modification instructions, except change lines 10, 20, and 4000 to read as follows:

```
10 DIM DAYS(2,6),SS(24):WL=80:WH=6:XP=33:YP=4:PRINT CH
R$(15)
20 CLS:TRU=-1:DT=500:TZ=0:TX=0:T1$=CHR$(191)
4000 PRINT@(Y-1,X-1);"";:RETURN
```

VIC-20/Mummy Maneuvers

Use the base version, with the following alterations. Add line 40:

```
40 POKE 36878,15
```

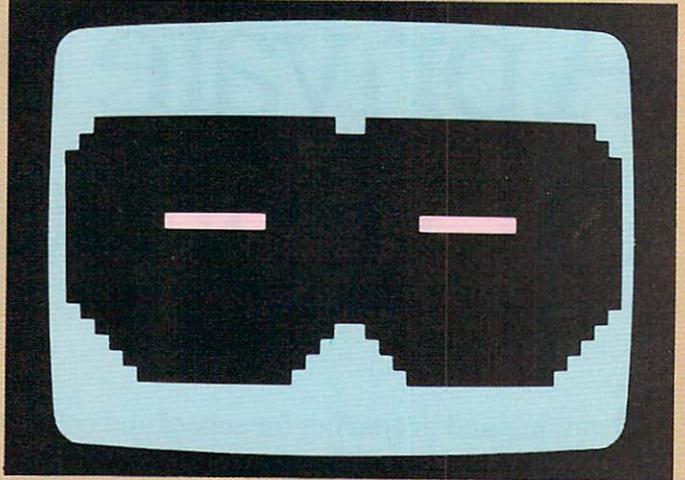
Change CLS to PRINT CLS; in lines 150, 370, and 460. Finally, change lines 10, 20, 260, 410, 440, 490, 520, 550, 570, 4000, and 5010 to read as follows:

```
10 DIM DAYS(2,6),SS(24):WL=22:WH=12:XP=4:YP=3:CL$=CHR$(
147)
20 PRINT CLS:TRU=-1:DT=300:TZ=0:T1$="*"
260 GOSUB 5000:GET K$:IF K$<CHR$(32) OR K$>"Z" THEN 26
0
410 POKE 36877,128:FOR DL=1 TO 100:NEXT DL:POKE 36877,
0
440 GET K$:IF K$=CHR$(32) THEN 150
490 GET K$:IF K$<>CHR$(32) THEN 490
520 POKE 36877,255
550 GOSUB 2000:X=W3+2:FOR Y=WH+2 TO 1 STEP -1
570 POKE 36877,180:POKE 36877,200:FOR DL=1 TO 200:NEXT
DL:POKE 36877,0
4000 POKE 214,Y-1:PRINT:PRINT TAB(X-1):RETURN
5010 GOSUB 3000:PRINT CHR$(18);" ";CHR$(146);CHR$(157)
;
```

AUTUMN PROGRAMS

THE BLACK MASK

BY JOEY LATIMER



Atari version of *The Black Mask*

Who is that stranger in your living room—the one wearing *The Black Mask*? Look at those beady eyes darting back and forth behind the slits in the mask. Why do they look so suspicious? Exactly *who* is hiding behind that black mask?

Why, it's your computer, that's who! Now you can

dress your computer up in disguise and catch the attention of the whole neighborhood this Halloween! All you have to do is type in *The Black Mask*, RUN it, and place your computer in your front window or in your foyer on the 31st. And look closely: Sometimes the eyes cross!

ADAM/The Black Mask

```
9 REM --INITIALIZE VARIABLES AND CLEAR SCREEN--
10 p1 = 10
20 p2 = 28
30 v = 1
40 q = 0
50 fl = 0
60 HOME
70 GR
79 REM --PAINT BACKGROUND ORANGE--
80 COLOR = 9
90 FOR x = 0 TO 39
100 HLINE 0,39 AT x
110 NEXT x
119 REM --DRAW LEFT AND RIGHT SIDES OF MASK--
120 COLOR = 0
130 FOR x = 10 TO 29 STEP 19
140 p = 7
150 FOR y = 8 TO 24
160 HLINE x-p,x+p AT y
170 IF y < 10 THEN p = p+1
180 IF y > 18 THEN p = p-1
190 NEXT y,x
199 REM --DRAW WHITES OF EYES--
200 COLOR = 13
210 GOSUB 1000
219 REM --PRINT PUPILS--
220 COLOR = 6
230 PLOT p1,14
240 PLOT p2,14
249 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
250 IF p1 = 10 OR (p1 = 13 AND p2 = 27) THEN q = 1000
260 FOR d = 1 TO RND(1)*1500+q
270 NEXT d
280 q = 0
289 REM --ERASE PUPILS--
290 COLOR = 13
300 PLOT p1,14
```



Get Star's Gemini-10X personal printer and get more out of your new Apple.

"The kids feel free working at the computer because it's non-threatening. It doesn't yell at them when they're wrong.
"And our Gemini printer is the perfect partner for our Apple.* The kids can create their own graphics and then take them back to their desks.
"The print is really strong and clear. Much sharper than what's on the monitor. The kids really get excited seeing such bold printouts of what they've designed.
"And the Gemini keeps working away. With an entire elementary school taking turns on it, that's quite an achievement.
"I wouldn't buy an Apple without a Gemini!"

*Rick Rogers, 4th Grade Teacher, Batchelder School
North Reading, Mass.*

With Star's Gemini-10X printer, you get 120 characters per second of clean, crisp type, multi-function versatility, and steady, dependable service. All at a price that works.
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AUTUMN PROGRAMS

```
310 PLOT p2,14
319 REM --BLINK SOMETIMES--
320 IF p1 <> 10 OR RND(1) < 0.7 THEN 380
330 COLOR = 9
340 GOSUB 1000
350 FOR d = 1 TO 450
360 NEXT d
370 GOTO 200
379 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
380 IF p1 = 7 OR p1 = 13 THEN v = -v
390 IF fl = 1 AND p1 = 10 THEN fl = 0:GOTO 410
400 IF p1 = 10 AND RND(1) < 0.2 THEN fl = 1:v = 1
410 p1 = p1+v
420 IF fl = 0 THEN p2 = p2+v
430 IF fl = 1 THEN p2 = p2-v
440 GOTO 220
999 REM --FILL EYES WITH CURRENT COLOR--
1000 HLIN 7,13 AT 14
1010 HLIN 25,31 AT 14
1020 RETURN
```

Apple/The Black Mask

```
9 REM --INITIALIZE VARIABLES AND CLEAR SCREEN--
10 P1 = 10
20 P2 = 28
30 V = 1
40 q = 0
50 FL = 0
60 HOME
70 GR
79 REM --CHANGE TEXT WINDOW TO GRAPHICS--
80 POKE -16302,0
89 REM --PAINT BACKGROUND ORANGE--
90 COLOR= 9
100 FOR X = 0 TO 47
110 HLIN 0,39 AT X
120 NEXT X
129 REM --DRAW LEFT AND RIGHT SIDES OF MASK--
130 COLOR= 0
140 FOR X = 10 TO 29 STEP 19
150 P = 7
160 FOR Y = 8 TO 24
170 HLIN X - P,X + P AT Y
180 IF Y < 10 THEN P = P + 1
190 IF Y > 18 THEN P = P - 1
200 NEXT Y,X
209 REM --DRAW WHITES OF EYES--
210 COLOR= 13
220 GOSUB 1000
229 REM --PRINT PUPILS--
230 COLOR= 6
240 PLOT P1,14
250 PLOT P2,14
259 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
260 IF P1 = 10 OR (P1 = 13 AND P2 = 27) THEN q = 1000
270 FOR D = 1 TO RND(1) * 1000 + q
280 NEXT D
290 q = 0
299 REM --ERASE PUPILS--
300 COLOR= 13
310 PLOT P1,14
320 PLOT P2,14
329 REM --BLINK SOMETIMES--
330 IF P1 <> 10 OR RND(1) < 0.7 THEN 390
340 COLOR= 9
350 GOSUB 1000
360 FOR D = 1 TO 450
370 NEXT D
380 GOTO 210
389 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
390 IF P1 = 7 OR P1 = 13 THEN V = -V
400 IF FL = 1 AND P1 = 10 THEN FL = 0:GOTO 420
410 IF P1 = 10 AND RND(1) < 0.2 THEN FL = 1:V = 1
420 P1 = P1 + V
430 IF FL = 0 THEN P2 = P2 + V
440 IF FL = 1 THEN P2 = P2 - V
450 GOTO 230
```

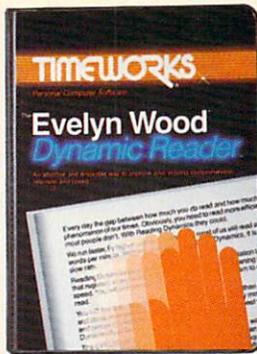
```
440 IF FL = 1 THEN P2 = P2 - V
450 GOTO 230
999 REM --FILL EYES WITH CURRENT COLOR--
1000 HLIN 7,13 AT 14
1010 HLIN 25,31 AT 14
1020 RETURN
```

Atari/The Black Mask

```
9 REM --INITIALIZE VARIABLES--
10 P1=10
20 P2=28
30 V=1
40 q=0
50 FL=0
59 REM --SET GRAPHICS MODE AND COLOR REGISTERS--
60 GRAPHICS 3+16
70 SETCOLOR 0,0,0
80 SETCOLOR 1,5,7
90 SETCOLOR 2,5,8
100 SETCOLOR 4,0,10
109 REM --DRAW LEFT AND RIGHT SIDES OF MASK--
110 COLOR 1
120 FOR X=10 TO 29 STEP 19
130 P=8
140 FOR Y=4 TO 20
150 PLOT X-P,Y
160 DRAWTO X+P,Y
170 IF Y<6 THEN P=P+1
180 IF Y>14 THEN P=P-1
190 NEXT Y
200 NEXT X
209 REM --DRAW WHITES OF EYES--
210 COLOR 4
220 GOSUB 1000
229 REM --PRINT PUPILS--
230 COLOR 2
240 PLOT P1,10
250 PLOT P2,10
259 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
260 IF P1=10 OR (P1=13 AND P2=25) THEN q=500
270 FOR D=1 TO RND(0)*100+q
280 NEXT D
290 q=0
299 REM --ERASE PUPILS--
300 COLOR 4
310 PLOT P1,10
320 PLOT P2,10
329 REM --BLINK SOMETIMES--
330 IF P1<>10 OR RND(0)<0.7 THEN 390
340 COLOR 3
350 GOSUB 1000
360 FOR D=1 TO 300
370 NEXT D
380 GOTO 210
389 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
390 IF P1=7 OR P1=13 THEN V=-V
400 IF FL=1 AND P1=10 THEN FL=0:GOTO 420
410 IF P1=10 AND RND(0)<0.2 THEN FL=1:V=1
420 P1=P1+V
430 IF FL=0 THEN P2=P2+V
440 IF FL=1 THEN P2=P2-V
450 GOTO 230
999 REM --FILL EYES WITH CURRENT COLOR--
1000 PLOT 7,10
1010 DRAWTO 13,10
1020 PLOT 25,10
1030 DRAWTO 31,10
1040 RETURN
```

Commodore 64/The Black Mask

```
9 REM --INITIALIZE VARIABLES AND CLEAR SCREEN--
10 CB=55296
20 SB=1024
```



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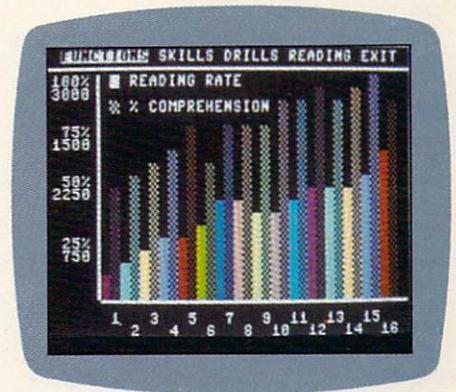
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AUTUMN PROGRAMS

```

30 P1=10
40 P2=28
50 V=1
60 Q=0
70 FL=0
80 PRINT CHR$(147)
89 REM ---SET BACKGROUND AND BORDER COLOR TO YELLOW---
90 POKE 53280,7
100 POKE 53281,7
109 REM ---DRAW LEFT AND RIGHT SIDES OF MASK---
110 FOR X=10 TO 29 STEP 19
120 P=7
130 FOR Y=4 TO 20
140 FOR Z=X-P TO X+P
150 POKE SB+Z+40*Y,160
160 POKE CB+Z+40*Y,0
170 NEXT Z
180 IF Y<6 THEN P=P+1
190 IF Y>14 THEN P=P-1
200 NEXT Y,X
209 REM ---DRAW WHITES OF EYES---
210 KO=7
220 GOSUB 1000
229 REM ---PRINT PUPILS---
230 POKE SB+P1+400,81
240 POKE CB+P1+400,6
250 POKE SB+P2+400,81
260 POKE CB+P2+400,6
269 REM ---PAUSE (LONG IF PUPILS CENTERED OR CROSSED)---
270 IF P1=10 OR (P1=13 AND P2=27) THEN Q=1000
280 FOR D=1 TO RND(1)*1500+Q
290 NEXT D
300 Q=0
309 REM ---ERASE PUPILS---
310 POKE SB+P1+400,160
320 POKE CB+P1+400,7
330 POKE SB+P2+400,160
340 POKE CB+P2+400,7
349 REM ---BLINK SOMETIMES---
350 IF P1<>10 OR RND(0)<0.7 THEN 410
360 KO=6
370 GOSUB 1000
380 FOR D=1 TO 450
390 NEXT D
400 GOTO 210
409 REM ---COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS---
410 IF P1=7 OR P1=13 THEN V=-V
420 IF FL=1 AND P1=10 THEN FL=0:GOTO 440
430 IF RND(0)<0.2 AND P1=10 THEN FL=1:V=1
440 P1=P1+V
450 IF FL=0 THEN P2=P2+V
460 IF FL=1 THEN P2=P2-V
470 GOTO 230
999 REM ---FILL EYES WITH COLOR KO---
1000 FOR Z=7 TO 13
1010 POKE CB+Z+400,KO
1020 POKE CB+Z+400+18,KO
1030 NEXT Z
1040 RETURN

```

IBM PC w/Color Graphics Adapter & IBM PCjr/The Black Mask

```

10 RANDOMIZE
20 WIDTH 40
30 KEY OFF
40 SCREEN 0,1
50 COLOR ,7,7
59 REM ---INITIALIZE VARIABLES AND CLEAR SCREEN---
60 P1=11
70 P2=26
80 V=1
90 Q=0
100 FL=0
110 CLS
119 REM ---DRAW LEFT AND RIGHT SIDES OF MASK---

```

```

120 COLOR 0
130 FOR X=11 TO 26 STEP 15
140 P=5
150 FOR Y=5 TO 19
160 FOR Z=X-P TO X+P
170 LOCATE Y,Z:PRINT CHR$(219)
180 NEXT Z
190 IF Y<7 THEN P=P+1
200 IF Y>15 THEN P=P-1
210 NEXT Y,X
219 REM ---DRAW WHITES OF EYES---
220 COLOR 7
230 GOSUB 1000
239 REM ---PRINT PUPILS---
240 COLOR 0
250 LOCATE 10,P1:PRINT "0"
260 LOCATE 10,P2:PRINT "0"
269 REM ---PAUSE (LONG IF PUPILS CENTERED OR CROSSED)---
270 IF P1=11 OR (P1=15 AND P2=23) THEN Q=1000
280 FOR D=1 TO RND(1)*800+Q
290 NEXT D
300 Q=0
309 REM ---ERASE PUPILS---
310 COLOR 7
320 LOCATE 10,P1:PRINT CHR$(219)
330 LOCATE 10,P2:PRINT CHR$(219)
339 REM ---BLINK SOMETIMES---
340 IF P1<>11 OR RND(1)<.5 THEN 400
350 COLOR 12
360 GOSUB 1000
370 FOR D=1 TO 600
380 NEXT D
390 GOTO 220
399 REM ---COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS---
400 IF P1=8 OR P1=14 THEN V=-V
410 IF FL=1 AND P1=11 THEN FL=0:GOTO 430
420 IF P1=11 AND RND(1)<.2 THEN FL=1:V=1
430 P1=P1+V
440 IF FL=0 THEN P2=P2+V
450 IF FL=1 THEN P2=P2-V
460 GOTO 240
999 REM ---FILL EYES WITH CURRENT COLOR---
1000 LOCATE 10,8:PRINT STRING$(7,219)
1010 LOCATE 10,23:PRINT STRING$(7,219)
1020 RETURN

```

Tl-99/4A/The Black Mask

```

10 RANDOMIZE
19 REM ---INITIALIZE VARIABLES AND CLEAR SCREEN---
20 P1=11
30 P2=22
40 V=1
50 Q=0
60 FL=0
70 CALL CLEAR
80 CALL SCREEN(12)
89 REM ---NOTE: MAKE SURE ALPHA LOCK IS DOWN---
90 AS="FFFFFFFFFFFFFFFF"
100 CS="3C7EFFFFFFFF7E3C"
110 CALL CHAR(128,AS)
120 CALL CHAR(136,AS)
130 CALL CHAR(144,CS)
140 CALL CHAR(152,AS)
150 CALL COLOR(13,2,2)
160 CALL COLOR(14,10,1)
170 CALL COLOR(15,5,1)
180 CALL COLOR(16,12,12)
189 REM ---DRAW LEFT AND RIGHT SIDES OF MASK---
190 FOR X=11 TO 22 STEP 11
200 P=3
210 FOR Y=4 TO 19
220 FOR Z=X-P TO X+P
230 CALL MCHAR(Y,Z,128)
240 NEXT Z

```

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AUTUMN PROGRAMS

```
250 IF Y>=6 THEN 270
260 P=P+1
270 IF Y<=15 THEN 290
280 P=P-1
290 NEXT Y
300 NEXT X
309 REM --DRAW WHITES OF EYES--
310 KO=152
320 GOSUB 1000
329 REM --PRINT PUPILS--
330 CALL HCHAR(10,P1,144)
340 CALL HCHAR(10,P2,144)
349 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
350 IF (P1<>11)*(P1<>14)+(P2<>19))THEN 370
360 Q=1000
370 FOR D=1 TO RND*500+Q
380 NEXT D
390 Q=0
399 REM --ERASE PUPILS--
400 CALL HCHAR(10,P1,152)
410 CALL HCHAR(10,P2,152)
419 REM --BLINK SOMETIMES--
420 IF (P1<>11)+(RND<0.7)THEN 480
430 KO=136
440 GOSUB 1000
450 FOR D=1 TO 300
460 NEXT D
470 GOTO 310
479 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
480 IF (P1<>8)*(P1<>14)THEN 500
490 V=-V
500 IF (FL<>1)+(P1<>11)THEN 530
510 FL=0
520 GOTO 560
530 IF (P1<>11)+(RND>0.2)THEN 560
540 FL=1
550 V=1
560 P1=P1+V
570 IF FL=1 THEN 600
580 P2=P2+V
590 GOTO 330
600 P2=P2-V
610 GOTO 330
999 REM --FILL EYES WITH CHARACTER KO--
1000 CALL HCHAR(10,8,KO,7)
1010 CALL HCHAR(10,19,KO,7)
1020 RETURN
```

Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/The Black Mask

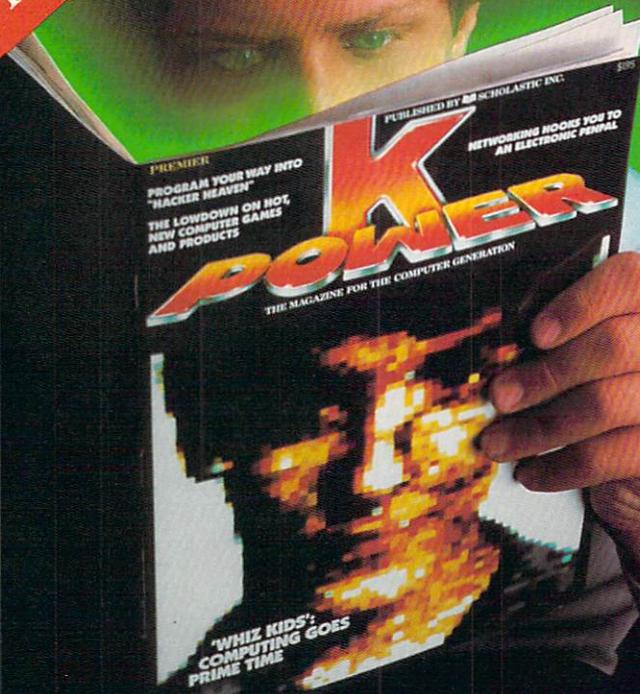
```
10 FAST
20 RAND
30 DIM P$(2,7)
39 REM --INITIALIZE VARIABLES--
40 FOR X=1 TO 7
50 LET P$(1,X)=CHR$(0)
60 LET P$(2,X)=CHR$(136)
70 NEXT X
80 LET P1=9
90 LET P2=22
100 LET V=1
110 LET Q=0
120 LET FL=0
129 REM --DRAW LEFT AND RIGHT SIDES OF MASK--
130 FOR X=9 TO 22 STEP 13
140 LET P=4
150 FOR Y=2 TO 17
160 FOR Z=X-P TO X+P
170 PRINT AT Y,Z;CHR$(128)
180 NEXT Z
190 IF Y<4 THEN LET P=P+1
200 IF Y>12 THEN LET P=P-1
210 NEXT Y
220 NEXT X
230 SLOW
```

```
239 REM --DRAW WHITES OF EYES--
240 LET KO=1
250 GOSUB 1000
259 REM --PRINT PUPILS--
260 PRINT AT 9,P1;CHR$(52);AT 9,P2;CHR$(52)
269 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
270 IF P1=10 OR (P1=12 AND P2=25) THEN LET Q=5
280 FOR D=1 TO RND*20+Q
290 NEXT D
300 LET Q=0
309 REM --ERASE PUPILS--
310 PRINT AT 9,P1;CHR$(0);AT 9,P2;CHR$(0)
319 REM --BLINK SOMETIMES--
320 IF P1<>9 OR RND<0.7 THEN GOTO 380
330 LET KO=2
340 GOSUB 1000
350 FOR D=1 TO 5
360 NEXT D
370 GOTO 240
379 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
380 IF P1=6 OR P1=12 THEN LET V=-V
390 IF FL=0 OR P1<>9 THEN GOTO 420
400 LET FL=0
410 GOTO 450
420 IF P1<>9 OR RND>0.2 THEN GOTO 450
430 LET FL=1
440 LET V=1
450 LET P1=P1+V
460 IF FL=0 THEN LET P2=P2+V
470 IF FL=1 THEN LET P2=P2-V
480 GOTO 260
999 REM --FILL EYES WITH P$(KO)--
1000 PRINT AT 9,6;P$(KO);AT 9,19;P$(KO)
1010 RETURN
```

TRS-80 Color Computer/The Black Mask

```
9 REM --INITIALIZE VARIABLES AND CLEAR SCREEN--
10 P1=8
20 P2=23
30 V=1
40 Q=0
50 FL=0
60 CLS(2)
69 REM --DRAW LEFT AND RIGHT SIDES OF MASK--
70 FOR X=9 TO 22 STEP 13
80 P=5
90 FOR Y=2 TO 13
100 FOR Z=X-P TO X+P
110 PRINT@Z+32*Y,CHR$(128);
120 NEXT Z
130 IF Y<3 THEN P=P+1
140 IF Y>8 THEN P=P-1
150 NEXT Y,X
159 REM --DRAW WHITES OF EYES--
160 KO=159
170 GOSUB 1000
179 REM --PRINT PUPILS--
180 PRINT@P1+224,CHR$(175);
190 PRINT@P2+224,CHR$(175);
199 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
200 IF P1=8 OR (P1=1 AND P2=19) THEN Q=1000
210 FOR D=1 TO RND(500)+Q
220 NEXT D
230 Q=0
239 REM --ERASE PUPILS--
240 PRINT@P1+224,CHR$(159);
250 PRINT@P2+224,CHR$(159);
259 REM --BLINK SOMETIMES--
260 IF P1<>8 OR RND(0)<0.7 THEN 320
270 KO=191
280 GOSUB 1000
290 FOR D=1 TO 600
300 NEXT D
310 GOTO 160
```

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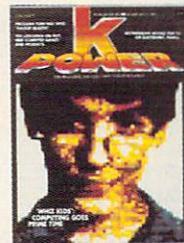
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AUTUMN PROGRAMS

```
319 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
320 IF P1=5 OR P1=11 THEN V=-V
330 IF FL=1 AND P1=8 THEN FL=0:GOTO 350
340 IF P1=8 AND RND(0)<0.2 THEN FL=1:V=1
350 P1=P1+V
360 IF FL=0 THEN P2=P2+V
370 IF FL=1 THEN P2=P2-V
380 GOTO 180
999 REM --FILL EYES WITH CHARACTER KO--
1000 PRINT@229,STRING$(7,KO);
1010 PRINT@244,STRING$(7,KO);
1020 RETURN
```

TRS-80 Model III/The Black Mask

```
9 REM --INITIALIZE VARIABLES AND CLEAR SCREEN--
10 P1=17
20 P2=45
30 V=1
40 Q=0
50 FL=0
60 CLS
69 REM --PAINT BACKGROUND WHITE--
70 FOR X=0 TO 63
80 FOR Y=0 TO 14
90 PRINT@X+64*Y,CHR$(191);
100 NEXT Y,X
109 REM --DRAW LEFT AND RIGHT SIDES OF MASK--
110 FOR X=19 TO 44 STEP 25
120 P=8
130 FOR Y=1 TO 10
140 FOR Z=X-P TO X+P
150 PRINT@Z+64*Y,CHR$(128);
160 NEXT Z
170 IF Y<3 THEN P=P+2
180 IF Y>7 THEN P=P-2
190 NEXT Y,X
199 REM --DRAW WHITES OF EYES--
200 KO=191
210 GOSUB 1000
279 REM --PRINT PUPILS--
280 PRINT@P1+320,CHR$(131);
290 PRINT@P2+320,CHR$(131);
299 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
300 IF P1=17 OR (P1=20 AND P2=41) THEN Q=750
310 FOR D=1 TO RND(300)+Q
320 NEXT D
330 Q=0
339 REM --ERASE PUPILS--
340 PRINT@P1+320,CHR$(191);
350 PRINT@P2+320,CHR$(191);
359 REM --BLINK SOMETIMES--
360 IF P1<>17 OR RND(10)<5 THEN 420
370 KO=179
380 GOSUB 1000
390 FOR D=1 TO 450
400 NEXT D
410 GOTO 200
419 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
420 IF P1=13 OR P1=21 THEN V=-V
430 IF PL=1 AND P1=17 THEN FL=0:GOTO 450
440 IF P1=17 AND RND(10)<4 THEN FL=1:V=1
450 P1=P1+V
460 IF FL=0 THEN P2=P2+V
470 IF FL=1 THEN P2=P2-V
480 GOTO 280
999 REM --FILL EYES WITH CHARACTER KO--
1000 PRINT@333,STRING$(9,KO);
1010 PRINT@361,STRING$(9,KO);
1020 RETURN
```

VIC-20/The Black Mask

```
9 REM --INITIALIZE VARIABLES AND CLEAR SCREEN--
10 CB=38400
```

```
20 SB=7680
30 P1=5
40 P2=16
50 V=1
60 Q=0
70 FL=0
80 PRINT CHR$(147)
89 REM --SET BACKGROUND COLOR TO ORANGE--
90 POKE 36879,127
99 REM --DRAW LEFT AND RIGHT SIDES OF MASK--
100 FOR X=5 TO 16 STEP 11
110 P=1
120 FOR Y=3 TO 17
130 FOR Z=X-P TO X+P
140 POKE SB+Z+22*Y,160
150 POKE CB+Z+22*Y,0
160 NEXT Z
170 IF Y<7 THEN P=P+1
180 IF Y>13 THEN P=P-1
190 NEXT Y,X
199 REM --DRAW WHITES OF EYES--
200 KO=7
210 GOSUB 1000
219 REM --PRINT PUPILS--
220 POKE SB+P1+220,81
230 POKE CB+P1+220,6
240 POKE SB+P2+220,81
250 POKE CB+P2+220,6
259 REM --PAUSE (LONG IF PUPILS CENTERED OR CROSSED)--
260 IF P1=5 OR (P1=7 AND P2=14) THEN Q=1000
270 FOR D=1 TO RND(1)*1500+Q
280 NEXT D
290 Q=0
299 REM --ERASE PUPILS--
300 POKE SB+P1+220,160
310 POKE CB+P1+220,7
320 POKE SB+P2+220,160
330 POKE CB+P2+220,7
339 REM --BLINK SOMETIMES--
340 IF P1<>5 OR RND(0)<0.7 THEN 400
350 KO=4
360 GOSUB 1000
370 FOR D=1 TO 450
380 NEXT D
390 GOTO 200
399 REM --COMPUTE NEW POSITIONS (P1,P2) FOR PUPILS--
400 IF P1=3 OR P1=7 THEN V=-V
410 IF FL=1 AND P1=5 THEN FL=0:GOTO 430
420 IF P1=5 AND RND(0)<0.2 THEN FL=1:V=1
430 P1=P1+V
440 IF FL=0 THEN P2=P2+V
450 IF FL=1 THEN P2=P2-V
460 GOTO 220
999 REM --FILL EYES WITH COLOR KO--
1000 FOR Z=3 TO 7
1010 POKE CB+Z+220,KO
1020 POKE CB+Z+11+220,KO
1030 NEXT Z
1040 RETURN
```

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NAME THAT MONSTER!

BY JOEY LATIMER

Before you reward your local witches and vampires with a treat on Halloween, give them a trick to solve! *Name That Monster!* is a word-scramble game that features five jumbled monster names and five hints. Players are graded on their total number of correct guesses. (Make sure to set your computer to all uppercase letters before **RUNNING** the program.)

So when the wind starts howling on the 31st and the moon disappears behind a black cloud, move your computer near your front door, type in *Name That Monster!*, and you'll be ready when the first werewolf calls!

(Note: It is easy to make substitutions or additions to our monster names by altering the information in the **DATA** lines, starting with line 1000. If you're substituting your own five monster names, be sure to keep the same line numbers and the word **DATA**. Follow this with an unscrambled monster name, a comma, a scrambled version of the same name, another comma, and a hint.

If you're adding extra monster names, follow the



same procedure, only add new line numbers. Then change **NW=5** in line 10 to reflect the new total of monster names. For example, if you've added three monster names to the program, it should read **NW=8**. **TI-99/4A** owners will also have to change the number 5 wherever it appears in line 20 to reflect this total. The above instructions won't work with the **Timex** version.)

Base Version (TRS-80 Color Computer)/Name That Monster!

```

9 REM --NW = NUMBER OF WORDS--
10 CLEAR 500:NW=5
20 DIM W$(NW),S$(NW),H$(NW)
29 REM --READ IN WORDS AND HINTS--
30 FOR X=1 TO NW
40 READ W$(X),S$(X),H$(X)
50 NEXT X
60 S=0
69 REM --PRINT TITLE AND INSTRUCTIONS--
70 CLS
80 PRINT TAB(7);"NAME THAT MONSTER!"
90 PRINT
100 PRINT "GUESS THE SCRAMBLED MONSTERS"
110 PRINT "AND GET A HALLOWEEN TREAT!"
120 PRINT "PRESS <RETURN> AFTER TYPING IN"
130 PRINT "YOUR GUESS."
140 PRINT
149 REM --DO MAIN LOOP ONCE FOR EACH WORD--
150 FOR X=1 TO NW
159 REM --DISPLAY SCRAMBLED WORD--
160 PRINT "MONSTER NUMBER";X;" IS ";S$(X);"."
170 PRINT

```

```

179 REM --GIVE A HINT--
180 PRINT "HINT:"
190 PRINT H$(X);"."
200 PRINT
209 REM --GET PLAYER'S GUESS--
210 INPUT "WHAT IS YOUR GUESS";G$
220 IF G$=W$(X) THEN 280
229 REM --RESPOND TO WRONG ANSWER--
230 PRINT
240 PRINT "WRONG! IT WAS ";W$(X);"."
250 PRINT "PRESS ANY KEY TO CONTINUE.";
260 K$=INKEY$
270 IF K$="" THEN 260 ELSE 330
279 REM --INCREASE SCORE & RESPOND TO CORRECT ANSWER--
280 S=S+1
290 CLS
300 FOR T=1 TO 120
310 PRINT "YOU GOT IT! ";
320 NEXT T
330 CLS
340 NEXT X
349 REM --PRINT SCORE AND GOOD-BYE MESSAGE--
350 PRINT "YOUR SCORE WAS";S;"OUT OF";NW;"--"
360 IF S=NW THEN PRINT "A 100% PERFECT SCORE!":GOTO 400
370 IF S>NW*.4 THEN PRINT "YOU REALLY KNOW YOUR MONSTERS!":GOTO 400
380 PRINT "YOU'D BETTER STUDY YOUR"
390 PRINT "MONSTERS."
400 PRINT
410 PRINT "THE TRICKS ARE OVER;"
420 PRINT "NOW YOU GET A TREAT!"
430 PRINT
440 PRINT "SEE YOU AGAIN NEXT YEAR!"
450 PRINT
460 PRINT "PRESS ANY KEY TO BEGIN AGAIN.";
469 REM --AFTER KEY IS PRESSED, BEGIN AGAIN--
470 K$=INKEY$
480 IF K$="" THEN 470 ELSE 60
1000 DATA WITCH,THWIC,USUALLY SEEN WITH A BROOM
1010 DATA VAMPIRE,RIPVAME,DON'T LET ONE KISS YOUR NECK
1020 DATA TROLL,LORLT,OFTEN LIVES UNDER A BRIDGE
1030 DATA GHOST,STOGH,DON'T CHASE ONE THROUGH A WALL
1040 DATA WEREWOLF,FLOWWEER,BARKING MAN IN NEED OF SHA
VE

```

ADAM/Name That Monster!

```

9 REM --SET NUMBER OF WORDS--
10 nw = 5
20 DIM w$(nw),s$(nw),h$(nw)
29 REM --READ IN WORDS AND HINTS--
30 FOR x = 1 TO nw
40 READ w$(x),s$(x),h$(x)
50 NEXT x
60 s = 0
69 REM --PRINT TITLE AND INSTRUCTIONS--
70 HOME
80 PRINT TAB(6);"NAME THAT MONSTER!"
90 PRINT
100 PRINT "Guess the scrambled monsters"
110 PRINT "and get a Halloween treat!"
120 PRINT
130 PRINT "Press <RETURN> after typing in"
140 PRINT "your guess."
150 PRINT
159 REM --DO MAIN LOOP ONCE FOR EACH WORD--
160 FOR x = 1 TO nw
169 REM --DISPLAY SCRAMBLED WORD--
170 PRINT "Monster number ";x;" is ";s$(x);"."
180 PRINT
189 REM --GIVE A HINT--
190 PRINT "Hint:"
200 PRINT h$(x);"."
210 PRINT
219 REM --GET PLAYER'S GUESS--

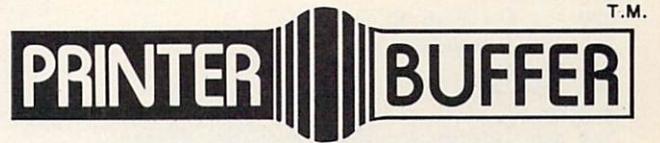
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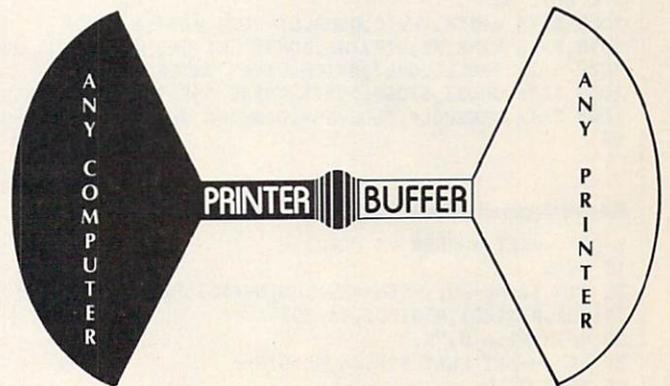
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AUTUMN PROGRAMS

```

220 INPUT "What is your guess?";g$
230 IF g$ = w$(x) THEN 300.-
239 REM --RESPOND TO WRONG ANSWER--
240 PRINT
250 PRINT "Wrong! It was ";w$(x);"."
260 PRINT
270 PRINT "Press any key to continue."
280 GET k$
290 GOTO 350
299 REM --INCREASE SCORE & RESPOND TO CORRECT ANSWER--
300 s = s+1
310 HOME
320 FOR t = 1 TO 80
330 PRINT "YOU GOT IT! ";
340 NEXT t
350 HOME
360 NEXT x
369 REM --PRINT SCORE AND GOOD-BYE MESSAGE--
370 PRINT "Your score was"
380 PRINT s;" out of ";nw;" --"
390 PRINT
400 IF s = nw THEN PRINT "a 100% perfect score!";GOTO
430
410 IF s > nw*.4 THEN PRINT "You really know your mons
ters!";GOTO 430
420 PRINT "Better study your monsters."
430 PRINT
440 PRINT "The tricks are over;"
450 PRINT "now you get a treat!"
460 PRINT
470 PRINT "See you again next year!"
480 PRINT
490 PRINT "Press any key to begin again."
499 REM --AFTER KEY IS PRESSED, BEGIN AGAIN--
500 GET k$
510 GOTO 60
1000 DATA WITCH,THWIC,USUALLY SEEN WITH A BROOM
1010 DATA VAMPIRE,RIPVAME,DON'T LET ONE KISS YOUR NECK
1020 DATA TROLL,LORLT,OFEN LIVES UNDER A BRIDGE
1030 DATA GHOST,STOGH,DON'T CHASE ONE THROUGH A WALL
1040 DATA WEREWOLF,FLOWWEER,BARKING MAN IN NEED OF SHA
VE

```

Atari/Name That Monster!

```

9 REM --SET NUMBER OF WORDS--
10 NW=5
20 DIM S$(NW*20),W$(NW*20),H$(NW*50),P(NW,4),SC$(20),R
1$(20),R2$(20),R3$(50),G$(20)
30 OPEN #1,4,0,"K:"
39 REM --SET LEFT SCREEN MARGIN--
40 POKE 82,0
49 REM --READ IN WORDS AND HINTS--
50 FOR X=1 TO NW
60 READ R1$,R2$,R3$
70 P(X,1)=LEN(W$)+1
80 P(X,2)=P(X,1)+LEN(R1$)-1
90 W$(P(X,1))=R1$
100 S$(P(X,1))=R2$
110 P(X,3)=LEN(H$)+1
120 P(X,4)=P(X,3)+LEN(R3$)-1
130 H$(P(X,3))=R3$
140 NEXT X
150 S=0
159 REM --PRINT TITLE AND INSTRUCTIONS--
160 PRINT CHR$(125)
170 POSITION 11,0
180 PRINT "NAME THAT MONSTER!"
190 PRINT
200 PRINT "GUESS THE SCRAMBLED MONSTERS"
210 PRINT "AND GET A HALLOWEEN TREAT!"
220 PRINT
230 PRINT "PRESS <RETURN> AFTER TYPING IN"
240 PRINT "YOUR GUESS."
250 PRINT
260 PRINT
269 REM --DO MAIN LOOP ONCE FOR EACH WORD--

```

```

270 FOR X=1 TO NW
279 REM --DISPLAY SCRAMBLED WORD--
280 PRINT "MONSTER NUMBER ";X;" IS ";S$(P(X,1),P(X,2))
;","
290 PRINT
299 REM --GIVE A HINT--
300 PRINT "HINT: ";H$(P(X,3),P(X,4));"."
310 PRINT
319 REM --GET PLAYER'S GUESS--
320 PRINT "WHAT IS YOUR GUESS";
330 INPUT G$
340 IF G$=W$(P(X,1),P(X,2)) THEN 410
349 REM --RESPOND TO WRONG ANSWER--
350 PRINT
360 PRINT "WRONG! IT WAS ";W$(P(X,1),P(X,2));"."
370 PRINT
380 PRINT "PRESS ANY KEY TO CONTINUE.";
390 GET #1,K
400 GOTO 460
409 REM --INCREASE SCORE & RESPOND TO CORRECT ANSWER--
410 S=S+1
420 PRINT CHR$(125);
430 FOR T=1 TO 75
440 PRINT "YOU GOT IT! ";
450 NEXT T
460 PRINT CHR$(125);
470 NEXT X
479 REM --PRINT SCORE AND GOOD-BYE MESSAGE--
480 PRINT "YOUR SCORE WAS ";S;" OUT OF ";NW;" --"
490 IF S=NW THEN PRINT "A 100% PERFECT SCORE!";GOTO 52
0
500 IF S>NW*.4 THEN PRINT "YOU REALLY KNOW YOUR MONST
ERS!";GOTO 520
510 PRINT "YOU'D BETTER STUDY YOUR MONSTERS."
520 PRINT
530 PRINT "THE TRICKS ARE OVER;"
540 PRINT "NOW YOU GET A TREAT!"
550 PRINT
560 PRINT "SEE YOU NEXT YEAR!"
570 PRINT
580 PRINT "PRESS ANY KEY TO BEGIN AGAIN."
589 REM --AFTER KEY IS PRESSED, BEGIN AGAIN--
590 GET #1,K
600 GOTO 150
1000 DATA WITCH,THWIC,USUALLY SEEN WITH A BROOM
1010 DATA VAMPIRE,RIPVAME,DON'T LET ONE KISS YOUR NECK
1020 DATA TROLL,LORLT,OFEN LIVES UNDER A BRIDGE
1030 DATA GHOST,STOGH,DON'T CHASE ONE THROUGH A WALL
1040 DATA WEREWOLF,FLOWWEER,BARKING MAN IN NEED OF SHA
VE

```

TI-99/4A/Name That Monster!

```

9 REM --SET NUMBER OF WORDS--
10 NW=5
20 DIM W$(5),S$(5),H$(5)
29 REM --READ IN WORDS AND HINTS--
30 FOR X=1 TO NW
40 READ W$(X),S$(X),H$(X)
50 NEXT X
60 S=0
69 REM --PRINT TITLE AND INSTRUCTIONS--
70 CALL CLEAR
80 PRINT TAB(6);"NAME THAT MONSTER!"
90 PRINT
100 PRINT "GUESS THE SCRAMBLED MONSTERS"
110 PRINT "AND GET A HALLOWEEN TREAT!"
120 PRINT
130 PRINT "PRESS <ENTER> AFTER TYPING"
140 PRINT "IN YOUR GUESS."
150 PRINT
159 REM --DO MAIN LOOP ONCE FOR EACH WORD--
160 FOR X=1 TO NW
169 REM --DISPLAY SCRAMBLED WORD--
170 PRINT "MONSTER NUMBER";X;"IS ";S$(X);"."
180 PRINT
189 REM --GIVE A HINT--

```

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AUTUMN PROGRAMS

```

190 PRINT "HINT: "
200 PRINT H$(X);"."
210 PRINT
219 REM --GET PLAYER'S GUESS--
220 INPUT "WHAT IS YOUR GUESS?":G$
230 IF G$=W$(X)THEN 300
239 REM --RESPOND TO WRONG ANSWER--
240 PRINT
250 PRINT "WRONG! IT WAS ";W$(X);"."
260 PRINT
270 PRINT "PRESS ANY KEY TO CONTINUE."
280 CALL KEY(O,K,R)
290 IF R=0 THEN 280 ELSE 350
299 REM --INCREASE SCORE & RESPOND TO CORRECT ANSWER--
300 S=S+1
310 CALL CLEAR
320 FOR T=1 TO 48
330 PRINT "YOU GOT IT! ";
340 NEXT T
350 CALL CLEAR
360 NEXT X
369 REM --PRINT SCORE AND GOOD-BYE MESSAGE--
370 PRINT "YOUR SCORE WAS";S;
380 PRINT "OUT OF";NW;"--"
390 PRINT
400 IF S<NW THEN 430
410 PRINT "A 100% PERFECT SCORE!"
420 GOTO 470
430 IF S<NW*0.4 THEN 460
440 PRINT "YOU SURE KNOW YOUR MONSTERS!"
450 GOTO 470
460 PRINT "BETTER STUDY YOUR MONSTERS."
470 PRINT
480 PRINT "THE TRICKS ARE OVER;";
490 PRINT "NOW YOU GET A TREAT!"
500 PRINT
510 PRINT "SEE YOU AGAIN NEXT YEAR!"
520 PRINT
530 PRINT "PRESS ANY KEY TO BEGIN","AGAIN."
539 REM --AFTER KEY IS PRESSED, BEGIN AGAIN--
540 CALL KEY(O,K,R)
550 IF R=0 THEN 540 ELSE 60
1000 DATA WITCH,THWIC,USUALLY SEEN WITH A BROOM
1010 DATA VAMPIRE,RIPVAME,DON'T LET ONE KISS YOU
1020 DATA TROLL,LORLT,OFTEN LIVES UNDER A BRIDGE
1030 DATA GHOST,STOGH,DON'T CHASE ONE INTO A WALL
1040 DATA WEREWOLF,FLOWWEER,BARKING MAN NEEDING A SHAV
E

```

Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/Name That Monster!

```

9 REM --SET NUMBER OF WORDS--
10 LET NW=5
20 FAST
30 DIM W(NW)
40 DIM S$(NW,8)
50 DIM W$(NW,8)
60 DIM H$(NW,32)
70 LET P1=6
80 LET P2=1
89 REM --WORD AND HINT DATA--
90 LET D$="THWIC,WITCH,USUALLY SEEN WITH A BROOM,RIPVA
ME,VAMPIRE,DO NOT LET ONE KISS YOUR NECK,LORLT,TROLL,O
FTEN LIVES UNDER A BRIDGE,STOGH,GHOST,DO NOT CHASE ONE
THROUGH A WALL,FLOWWEER,WEREWOLF,BARKING MAN IN NEED
OF SHAVE,"
99 REM --"READ" IN WORDS AND HINTS--
100 FOR X=1 TO NW
110 GOSUB 1000
120 LET S$(X)=V$
130 GOSUB 1000
140 LET W(X)=LEN V$
150 LET W$(X)=V$
160 GOSUB 1000
170 LET H$(X)=V$
180 NEXT X

```

```

190 SLOW
200 LET S=0
209 REM --PRINT TITLE AND INSTRUCTIONS--
210 PRINT TAB 6;"NAME THAT MONSTER."
220 PRINT
230 PRINT "GUESS THE SCRAMBLED MONSTERS"
240 PRINT "AND GET A HALLOWEEN TREAT."
250 PRINT
260 PRINT "PRESS <ENTER> AFTER TYPING IN"
270 PRINT "YOUR GUESS."
280 PRINT
289 REM --DO MAIN LOOP ONCE FOR EACH WORD--
290 FOR X=1 TO NW
299 REM --DISPLAY SCRAMBLED WORD--
300 PRINT "MONSTER NUMBER ";X;" IS ";S$(X, TO W(X));"."
"
310 PRINT
319 REM --GIVE A HINT--
320 PRINT "HINT:"
330 PRINT H$(X);"."
340 PRINT
349 REM --GET GUESS FROM PLAYER--
350 PRINT "WHAT IS YOUR GUESS?"
360 INPUT G$
370 IF W$(X, TO W(X))=G$ THEN GOTO 460
379 REM --RESPOND TO WRONG ANSWER--
380 PRINT
390 PRINT "WRONG. IT WAS ";W$(X, TO W(X));"."
400 PRINT
410 PRINT
420 PRINT "PRESS ANY KEY TO CONTINUE."
430 LET K$=INKEY$
440 IF K$="" THEN GOTO 430
450 GOTO 510
459 REM --INCREASE SCORE/RESPOND TO CORRECT ANSWER--
460 LET S=S+1
470 CLS
480 FOR T=1 TO 49
490 PRINT "YOU GOT IT ";
500 NEXT T
510 CLS
520 NEXT X
529 REM --PRINT SCORE AND GOOD-BYE MESSAGE--
530 PRINT "YOUR SCORE WAS ";S;" OUT OF ";NW;" --"
540 IF S<NW THEN GOTO 570
550 PRINT "A 100 PERCENT PERFECT SCORE."
560 GOTO 590
570 IF S>NW*0.4 THEN PRINT "YOU REALLY KNOW YOUR MONST
ERS."
580 IF S<=NW*0.4 THEN PRINT "YOU BETTER STUDY YOUR MON
STERS."
590 PRINT
600 PRINT
610 PRINT "THE TRICKS ARE OVER;";
620 PRINT "NOW YOU GET A TREAT."
630 PRINT
640 PRINT "SEE YOU AGAIN NEXT YEAR."
650 PRINT
660 PRINT "PRESS ANY KEY TO BEGIN AGAIN."
669 REM --AFTER KEY IS PRESSED, BEGIN AGAIN.--
670 LET K$=INKEY$
680 IF K$="" THEN GOTO 670
690 CLS
700 GOTO 200
999 REM --SIMULATED READ STATEMENT--
1000 IF D$(P1)="" THEN GOTO 1030
1010 LET P1=P1+1
1020 GOTO 1000
1030 LET V$=D$(P2 TO P1-1)
1040 LET P2=P1+1
1050 LET P1=P2+1
1060 RETURN

```

VIC-20/Name That Monster!

```

9 REM --SET NUMBER OF WORDS--
10 NW=5

```



Help Agent U.S.A. stop the fuzz plague. And you can win a trip to Washington, D.C.

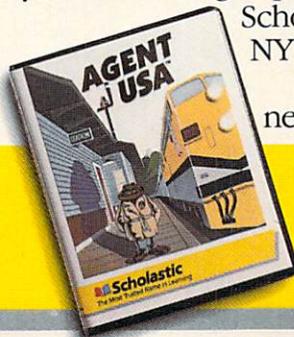
The FuzzBomb is turning millions of men, women and children into mindless fuzzbodies. And Agent U.S.A. can't stop the devious plague spreader without your help.

But don't accept the assignment unless you're really prepared to stretch your mind. Because sharp eyes and quick reflexes aren't enough to stop the fuzz plague. You'll have to outthink and outplan the FuzzBomb as you pursue him around the country in super-fast rocket trains. And you'll have to remember state capitals, learn the time zones and figure out the quickest routes across the nation. If you don't, the fuzzbodies will turn you into one of them.

Become one of the few super-agents to defeat the FuzzBomb and you may win a trip to intelligence headquarters in Washington, D.C. What's more, even if you never catch the evil one, tell us what you like about the game and you can become an instant winner of an Agent U.S.A. knapsack (see package for contest details).

Agent U.S.A. needs you now. So sign up where you usually buy your software. Or write to Scholastic Inc., Dept. EW, 730 Broadway, New York, NY 10003.

Do it before the fuzz plague comes to your neighborhood!



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AUTUMN PROGRAMS

```
20 DIM W$(NW),S$(NW),H$(NW)
29 REM --READ IN WORDS AND HINTS--
30 FOR X=1 TO NW
40 READ W$(X),S$(X),H$(X)
50 NEXT X
60 S=0
69 REM --PRINT TITLE AND INSTRUCTIONS--
70 PRINT CHR$(147);TAB(2);"NAME THAT MONSTER!"
80 PRINT
90 PRINT "GUESS THE SCRAMBLED"
100 PRINT "WORDS AND GET A"
110 PRINT "HALLOWEEN TREAT!"
120 PRINT
130 PRINT "PRESS <RETURN> AFTER"
140 PRINT "TYPING IN YOUR GUESS."
150 PRINT
159 REM --DO MAIN LOOP ONCE FOR EACH WORD--
160 FOR X=1 TO NW
169 REM --DISPLAY SCRAMBLED WORD--
170 PRINT "MONSTER NUMBER";X
180 PRINT "IS ";S$(X);"."
190 PRINT
199 REM --GIVE A HINT--
200 PRINT "HINT:"
210 PRINT H$(X);"."
220 PRINT
229 REM --GET PLAYER'S GUESS--
230 PRINT "WHAT IS YOUR"
240 INPUT "GUESS";G$
250 IF G$=W$(X) THEN 350
259 REM --RESPOND TO WRONG ANSWER--
260 PRINT
270 PRINT "WRONG! IT WAS"
280 PRINT W$(X);"."
290 PRINT
300 PRINT "PRESS ANY KEY TO"
310 PRINT "CONTINUE.";
320 GET K$
330 IF K$="" THEN 320
340 GOTO 400
349 REM --INCREASE SCORE & RESPOND TO CORRECT ANSWER--
350 S=S+1
360 PRINT CHR$(147);
370 FOR T=1 TO 90
380 PRINT "YOU GOT IT! ";
390 NEXT T
400 PRINT CHR$(147);
410 NEXT X
419 REM --PRINT SCORE AND GOOD-BYE MESSAGE--
420 PRINT "YOUR SCORE WAS";S
430 PRINT "OUT OF";NW;"--"
440 PRINT
450 IF S=NW THEN PRINT "A 100% PERFECT SCORE!":GOTO 490
460 IF S>NW*0.45 THEN PRINT "YOU REALLY KNOW YOUR":PRINT "MONSTERS!":GOTO 490
470 PRINT "YOU'D BETTER STUDY"
480 PRINT "YOUR MONSTERS."
490 PRINT
500 PRINT "THE TRICKS ARE OVER;"
510 PRINT "NOW YOU GET A TREAT!"
520 PRINT
530 PRINT "SEE YOU AGAIN NEXT"
540 PRINT "YEAR!"
550 PRINT
560 PRINT "PRESS ANY KEY TO"
570 PRINT "BEGIN AGAIN."
579 REM --AFTER KEY IS PRESSED, BEGIN AGAIN--
580 GET K$
590 IF K$="" THEN 580
600 GOTO 60
1000 DATA WITCH,THWIC,USUALLY HAS A BROOM
1010 DATA VAMPIRE,RIPVAME,AVOID KISSING HIM
1020 DATA TROLL,LORLT,LIVES UNDER A BRIDGE
1030 DATA GHOST,STOGH,FLOATS THROUGH WALLS
1040 DATA WEREWOLF,FLOWWEER,HE BARKS AT THE MOON
```

MODIFICATIONS FOR OTHER COMPUTERS

Apple/Name That Monster!

Use the ADAM version, changing all characters to uppercase. Change line 340 to read:

```
340 FOR T = 1 TO 120
```

Commodore 64/Name That Monster!

Use the VIC-20 version, except change line 370 to read:

```
370 FOR T=1 TO 120
```

IBM PC & PCjr/Name That Monster!

Use the base version, except change lines 10, 80, and 300 to read:

```
10 WIDTH 40:NW=5
```

```
80 PRINT TAB(12);"NAME THAT MONSTER!"
```

```
300 FOR T=1 TO 120
```

TRS-80 Model III/Name That Monster!

Use the base version, except change lines 80 and 300 to read:

```
80 PRINT TAB(23);"NAME THAT MONSTER!"
```

```
300 FOR T=1 TO 140
```

PROGRAMMING P.S.

Corrections to previous months' programs

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

By changing lines 100 and 720 to read as shown below, you can improve the way the program looks on the screen. The change to line 540 will avoid frustration for some people who don't follow the program's instructions.

```
100 PRINT "What is your code name";
```

```
540 IF a$ <> CHR$(13) THEN 530
```

```
720 VTAB 5
```

Commodore 64/Brain Terrain (August, pages 89, 90)

Line 120 is longer than the maximum length the Commodore will accept for a program line. To solve this problem, divide it into two lines:

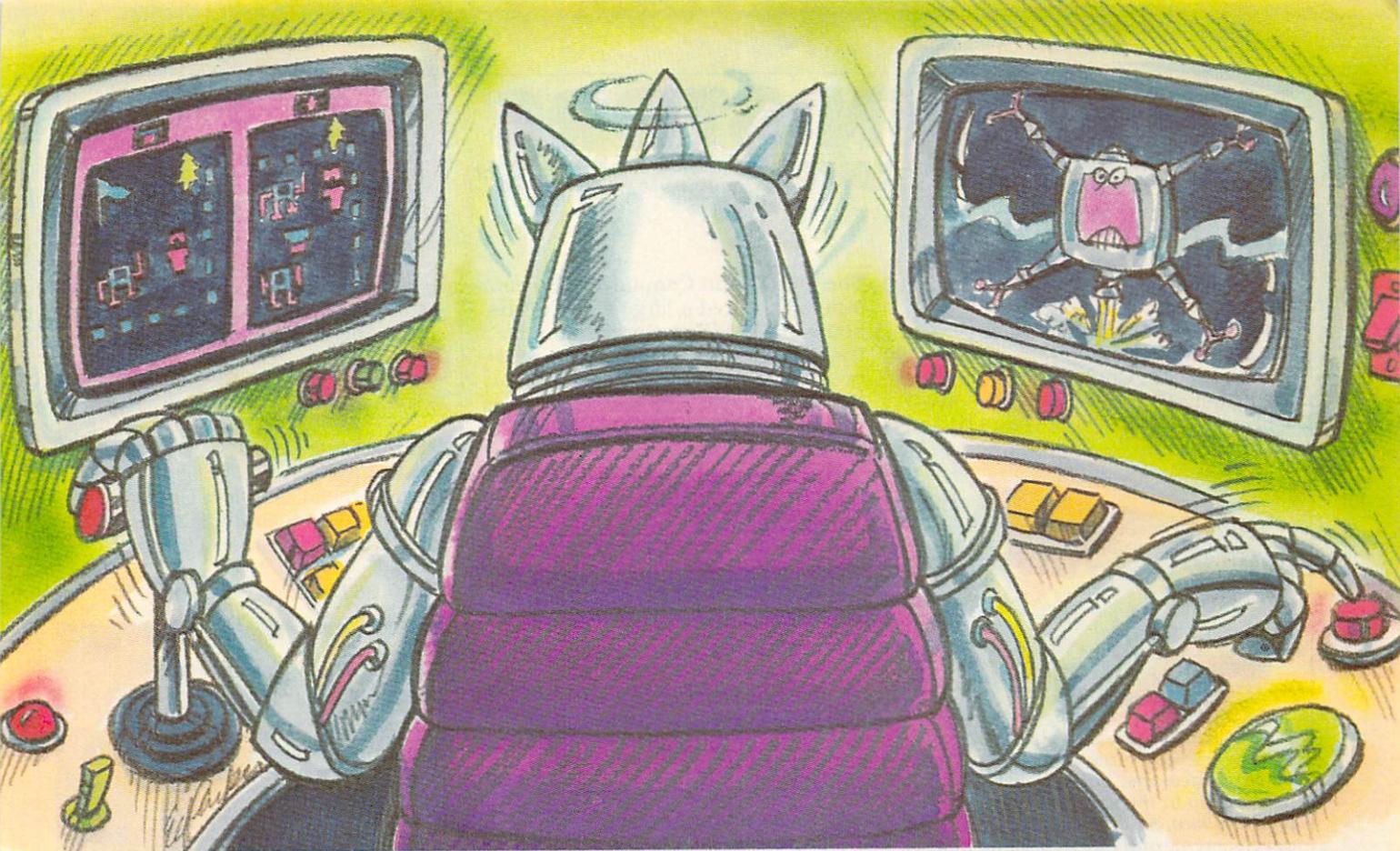
```
120 PRINT
```

```
125 R$="PRESS A ZONE KEY (A, B, C, E, F, M, P, S, T, O R V) TO ACCESS MEMORY"
```

TI-99/4A/Brain Terrain (August, pages 86, 88)

Line 230 is incorrect as published. It should read as follows:

```
230 R$="PRESS A ZONE KEY (A, B, C, E, F, M, P, S, T, O R V) TO ACCESS MEMORY"
```



Show us the face of Max the Master Robot. And you may win your own talking robot.

Team up with a friend to defeat Max and his robot raiders in Bannercatch.

Only a handful of people have ever seen the face of the robot leader Max. Defeat Max and his demon robots and you'll join this elite group. And you and your teammate can win two walking, talking robots you can program yourself.

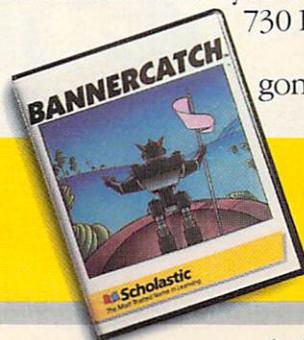
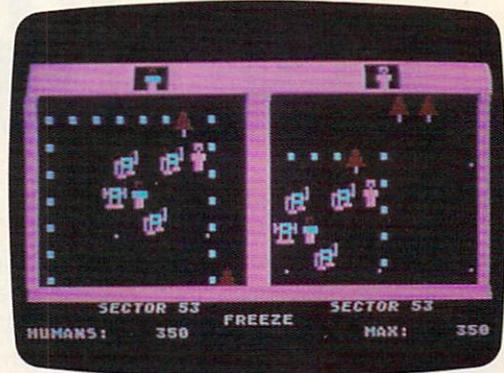
You'll battle Max and his robot marauders in a field bigger than any you've ever seen. Your team must invade robot territory and grab their flag before they take yours. But be careful; Max has devised a fiendish strategy against you. And, of course, you can't expect mercy from robots.

To make things even tougher, Max has taken a vow not to reveal his face until you conquer all his robots. Including Zweli the Invisible.

You'll need to learn binary numbers, map reading and, above all, how to work with your teammate if you want to win. But even if you go down to defeat, you may win two tickets to your favorite local sports event. See the package for contest details.

You can pick up Bannercatch where you buy software. Or write to Scholastic Inc., Dept. EW, 730 Broadway, New York, NY 10003.

But please remember, only a handful of people have gone face-to-face against Max and survived.



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WHAT'S IN STORE

NEW HARDWARE ANNOUNCEMENTS*

COMPUTERS

Commodore Plus/4 and Commodore 16

MANUFACTURER: Commodore Computer Systems, 1200 Wilson Drive, West Chester, PA 19380; (215) 431-9100
APPROXIMATE PRICE: \$300 (Plus/4); \$100 (Commodore 16).



**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.*

The VIC-20 and Commodore 64 computers captured a large share of the home market. Now Commodore is trying to solidify that position with two new machines, the Plus/4 and the 16. However, the new computers will not run VIC-20 or Commodore 64 software.

The Plus/4 is being billed as a "productivity machine," aimed at people who need applications software such as word processing and data management. Four programs are built into the 64K computer—word processing, spreadsheet, data base, and graphics.

The Commodore BASIC has been revised, with more than 75 commands available on the new model, including 11 for graphics applications. The keyboard has a HELP key and four cursor keys.

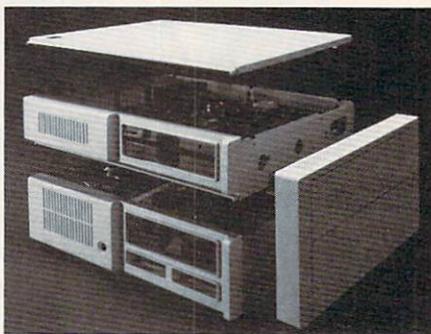
The Commodore 16 is the company's new "entry-level" machine designed to promote computer literacy. It has 16K of memory and uses the same revised BASIC as the Plus/4. A

new library of software is being developed with an emphasis on educational and recreational programs.

MISCELLANEOUS

Drive Two Enhancement Package

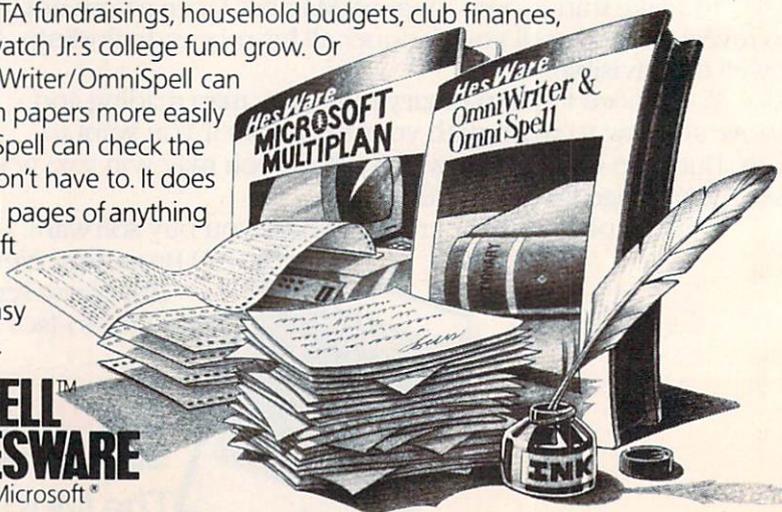
MANUFACTURER: Rapport Corp., 80 S. Redwood Road, Suite 213, N. Salt Lake City, UT 84054; (801) 292-9454
PRICE: \$675



HERE'S TWO IDEAS FOR A GREAT FAMILY BUSINESS.

Now your family can get into business for themselves without a major investment. With the OmniWriter/OmniSpell and Microsoft award winning Multiplan software programs from HesWare. Multiplan can help Mom keep track of such things as PTA fundraisings, household budgets, club finances, even little league stats. It can help Dad watch Jr.'s college fund grow. Or even his apartment buildings. And OmniWriter/OmniSpell can help your children do homework or term papers more easily and efficiently. In fact, OmniWriter/OmniSpell can check the spelling on over 30,000 words. So you don't have to. It does resumes, personal letters and pages and pages of anything you might want to write. So get Microsoft Multiplan and OmniWriter/OmniSpell working for your family. And see how easy it is to get into your own family business.

**OMNIWRITER™/OMNISPELL™
AND MULTIPLAN™ BY HESWARE**
Commodore 64 Multiplan™ is licensed for Microsoft*



If you've been wondering how to beef up your PCjr for business or professional use, the Rapport enhancement package may be what you've been looking for.

The Drive Two Enhancement Package is a snap-on expansion kit that adds a second disk drive to the PCjr and allows it to accept an optional memory expander that will increase RAM to 512K. This expansion enables nearly all PC software to run on the PCjr. The kit includes a parallel printer port and a clock/calendar with battery backup.

The company claims the second drive can be installed in 10 minutes with a flat-head screw driver.

With the additional memory package (\$275), the PCjr becomes a PC at the flip of a switch. But it can still be used to run software specifically designed for the PCjr. The expansion kit is also designed to fit right in with the look of the PCjr. The original top and side panels snap back on to the new unit after it is installed.

Incredible Musical Keyboard (Commodore 64)

MANUFACTURER: Sight & Sound Music Software, Inc., 3200 S. 166 St., New Berlin, WI 53151; (414) 784-5850
PRICE: \$39

There are a number of very good music programs for the Commodore 64 on the market, but most work off the computer's keyboard. Sight & Sound, however, has brought its software/hardware music package closer to the feel of a real instrument.

The Incredible Musical Keyboard has a plastic adapter that fits on top of the regular Commodore keyboard and simulates the keys of a piano.

With its own software and instruction set, the keyboard provides music lessons and can reproduce piano, guitar, synthesizer, and other musical sounds.

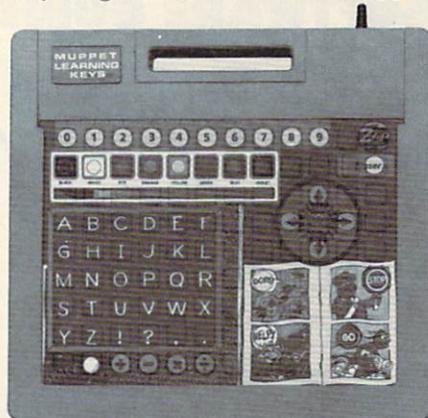
Note stickers are provided along with a song book that contains 26 easy-to-play tunes.

Muppet Learning Keys

MANUFACTURER: Koala Technologies Corp., 3100 Patrick Henry Drive, Santa Clara, CA 95052-8100; (408) 986-8866
PRICE: \$79

A computer keyboard can be a tough thing to learn your way around, and it's even tougher for young children who are just learning their numbers and ABC's. That's why Koala Technologies has introduced the Muppet Learning Keys.

Specifically designed for children as young as 3 years old, the Muppet



Learning Keys are meant to resemble a child's school desk. Graphics of a ruler, watercolor set, alphabet slate, eraser, and comic book denote the touch-sensitive keys.

Koala says the new keyboard is designed to allow kids to learn letters, numbers, and colors, as well as some computer basics, without getting frustrated.

Muppet Learning Keys connect to a paddle port on the Apple IIc or IIe, or the joystick port on the Commodore 64. Future software plans call for more challenging activities to assist the child's learning growth. [E]

Grolier helps your computer become a friend of the family.

Now two of the most popular types of business programs are available for the home. Created by the co-developer of the best-selling Bank Street Writer, these programs use simple menus and prompts instead of commands. Plus an exciting new breakthrough "learn-by-practicing" technique to teach both students and adults practical computer literacy skills.

Grolier FRIENDLY FILER™ lets you create timesaving address, phone, or other lists, organize your record collection, or research a homework paper, etc., while it teaches you database management. Disk with resource manual: \$39.95.

Grolier FRIENDLY FILES™ 3 database disks for *Friendly Filer*, lets kids and adults research fascinating facts on Olympic medal winners, countries of the world, plants, minerals, wine, and more. \$14.95 each.

Grolier EASY GRAPH™ lets you create colorful bar graphs and pie charts and pictographs for learning social studies, math, and many other subjects — or design impressive business presentations. Just type in words and numbers — it's that easy! Disk with resource manual: \$39.95.

Announcing: adventure games that encourage young children to read and explore books.

Grolier TREASURE HUNTER™ takes the whole family on an educational treasure-finding adventure with help from the *Explorers and Discovery* book, included with the software. Disk with book and manual: \$39.95.

Grolier SECRETS OF SCIENCE ISLAND™ guides you on a race against time to build a shelter before a hurricane strikes. The *Science Facts You Won't Believe* book is included to help you find the facts you need to survive. Disk with book and manual: \$39.95.

Software that teaches the whole family.



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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 Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
CODEWRITER CodeWriter Corp. 7847 N. Caldwell Ave. Niles, IL 60648 (312) 470-0700 \$199 (Apple, IBM PCjr) \$99 (C 64) \$249 (IBM PC) ©1982	Nonprogrammers design and write their own "information-handling" systems to take care of tasks like billing, inventory control, and mailing lists.† —WILSON	Reviewed on Apple II series, 48K (d.). Also for Atari 800/XL series, 48K (d.); C 64 (d.); IBM PC, 128K/PCjr, 64K (d.).	1-year warranty; \$15 fee for backup or if user-damaged.	★ ★	★	★	N/A	D	★ ★ ★
CREATIVE WRITER Creative Software 230 E. Caribbean Drive Sunnyvale, CA 94089 (408) 745-1655 \$49.95 ©1984	Word-processing program lets you SEARCH AND REPLACE, COPY, and MOVE text, justify right-hand margin, and preview work to see how your report, letter, or newsletter will appear on the page.† —ODISIO	C 64 (d.). Also for Apple II plus/IIe/IIc, 64K (d.); IBM PC/PCjr, 64K (d.).	90-day warranty; \$9.95 (plus \$1.50 postage and handling) fee thereafter or for backup copy.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	E	★ ★ ★ ★
FINANCIAL COOKBOOK Electronic Arts 2755 Campus Drive San Mateo, CA 94403 (415) 571-7171 \$50 ©1984	Enter info about your finances and current economic factors, like inflation rate; the computer responds with figures to help you make decisions about 32 commonly asked home-finance questions.† —LINCOLN	Apple II series, 48K (d.). Also for Atari Home Computers, 48K (d.); C 64 (d.); IBM PC/PCjr, 64K (d.).	90-day warranty; \$7.50 fee thereafter or if user-damaged.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	E	★ ★ ★ ★
HOMEWORD SPELLER Sierra Inc. P.O. Box 485 Coarsegold, CA 93614 (209) 683-6858 \$49.95 ©1984	Add up to 5,000 words to 28,000-word dictionary of this spelling checker that will proofread documents you create with <i>Homeword</i> , <i>Bank Street Writer</i> , <i>Cut and Paste</i> , and many other word processors. —WILSON	Reviewed on Apple II plus/IIe/IIc, 64K (d.). Versions planned for C 64; IBM PC/PCjr.	90-day warranty; \$5 fee thereafter; \$10 for backup copy.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	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

COMMODORE 64

(more power than Apple II at 1/3 the price)

\$188.00*

- 80 COLUMN
 - TRACTION FRICTION PRINTER \$169.00*
 - 14" HI-RES COLOR MONITOR \$229.00*
- * less coupon discounts

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COMMODORE 16

(the new learning computer)

\$99.00

- COM-64 POWER FOR VIC-20 \$79.00
- NEW VOICE SYNTHESIZER \$59.00 (Com-64 or VIC-20)

* COMMODORE 64 COMPUTER \$188.00

You pay only \$188.00 when you order the powerful 84K COMMODORE 64 COMPUTER! LESS the value of the SPECIAL SOFTWARE COUPON we pack with your computer that allows you to SAVE OVER \$500 off software sale prices!! With only \$100 of savings applied, your net computer cost is \$88.00!!

80 COLUMN

* TRACTION FRICTION PRINTER \$169.00

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You pay only \$229.00 when you order this 14" COLOR MONITOR with sharper and clearer resolution than any other color monitors we have tested! LESS the value of the SPECIAL DISCOUNT COUPON we pack with your monitor that allows you to save over \$500.00 off software sale prices!! with only \$100.00 of savings applied your net color monitor cost is only \$129.00

* 12" HI-RES AMBER MONITOR \$119.00

This is a 1000 LINE, 80 COLUMN, HIGH RESOLUTION MONITOR with crisp clear amber text that is easy to read, a must for word processing! Includes SPECIAL SOFTWARE DISCOUNT COUPON!!

80 COLUMN BOARD \$99.00

Now you program 80 COLUMNS on the screen at one time! Converts your Commodore 64 to 80 COLUMNS when you plug in the 80 COLUMN EXPANSION BOARD!! PLUS—you can get an 80 COLUMN BOARD WORD PROCESSOR with mail merge, terminal emulator, ELECTRONIC SPREAD SHEET. List \$59.00 SALE \$24.95 if purchased with 80 COLUMN BOARD!! (Tape, or Disk)

80 COLUMNS IN COLOR

EXECUTIVE WORD PROCESSOR \$59.00

This EXECUTIVE WORD PROCESSOR is the finest available for the COMMODORE 64 computer! The ULTIMATE for PROFESSIONAL Word-processing application! DISPLAYS 40 OR 80 COLUMNS IN COLOR or Black and White! Simple to operate, powerful text editing with a 250 WORD DICTIONARY, complete cursor and insert/delete key controls line and paragraph insertion, automatic deletion, centering, margin settings and output to all printers! Includes a powerful mail merge, 20,000 WORD DICTIONARY - List \$24.95 SALE \$19.95. EXECUTIVE DATA BASE - List \$69.00 SALE \$39.00 (Disk)

SPECIAL SOFTWARE COUPON

We pack a SPECIAL SOFTWARE DISCOUNT COUPON with every COMMODORE 64 COMPUTER DISK DRIVE-PRINTER-MONITOR we sell! This coupon allows you to SAVE OVER \$500 OFF SALE PRICES!!

(Examples)

PROFESSIONAL SOFTWARE COMMODORE 64

Name	List	Sale	Coupon
Executive Word Processor	\$99.00	\$59.00	\$49.00
Executive Data Base	\$69.00	\$39.00	\$29.00
20,000 Word Dictionary	\$24.95	\$19.95	\$12.50
Electronic Spreadsheet	\$59.95	\$49.00	\$39.00
Accounting Pack	\$49.00	\$39.00	\$29.00
Total 5/2			
Word Processor			
Tape	\$69.00	\$49.00	\$34.00
Disk	\$79.95	\$59.00	\$39.00
Total Text 2/6			
Word Processor			
Disk	\$49.00	\$39.00	\$27.00
Total Label 2/6			
Tape	\$24.95	\$18.00	\$12.00
Disk	\$29.95	\$23.00	\$15.00
Programmers			
Helper (Disk)	\$59.00	\$39.95	\$29.95
80 Column Screen (Disk)	\$59.95	\$39.95	\$29.95
Crush-Crumble-Chomp (Tape/Disk)	\$29.95	\$24.95	\$19.95
Pitstop (Cartridge)	\$39.95	\$29.95	\$24.95
Typing Teacher (Tape/Disk)	\$29.95	\$24.95	\$15.00
Sprite Designer (Tape/Disk)	\$16.95	\$14.95	\$10.00
Fireball Joy Stick	\$24.95	\$15.95	\$10.00
Light Pen	\$39.95	\$16.95	\$14.95
Dust Cover	\$ 8.95	\$ 6.95	\$ 4.60

(See 100 coupon items in our catalog!)

Write or call for

Sample SPECIAL SOFTWARE COUPON!

EXECUTIVE QUALITY PROFESSIONAL BUSINESS SOFTWARE

The Cadillac of business programs for Commodore 64 Computers

Item	List	*SALE	Coupon
Inventory Management	\$99.00	\$59.00	\$49.00
Accounts Receivable	\$99.00	\$59.00	\$49.00
Accounts Payable	\$99.00	\$59.00	\$49.00
Payroll	\$99.00	\$59.00	\$49.00
General Ledger	\$99.00	\$59.00	\$49.00

COMMODORE 16 COMPUTER \$99.00

This new LEARNING COMPUTER has 48K total memory (32K ROM and 16K RAM) 40 columns, 25 lines, 128 colors, 8 sound levels, upper-lower case. High resolution graphics, 66 typewriter keys, extended 3.5 MICROSOFT BASIC with over 75 commands, machine language monitor, 12K useable RAM, FANTASTIC FOR PROGRAMMERS AND STUDENTS!!!

COM-64 POWER FOR VIC-20 \$79.00

Just plug in our 32K RAM MEMORY EXPANDER and you get as much usable programming power as the Commodore-64 computer!! Master control switches on cover, Gold Edge connectors, five year warranty (FREE \$29.95; CARTRIDGE GAME)

NEW VOICE SYNTHESIZER \$59.00

For Com-64 or VIC-20 computers. Just plug it in and you can program words and sentences, adjust volume and pitch, make talking adventure games, sound action games and customized talkies!! FOR ONLY \$19.95 you can add TEXT TO SPEECH, just type a word and hear your computer talk—ADD SOUND TO "ZORK," SCOTT ADAMS AND AARDVARK ADVENTURE GAMES!! (Disk or tape).

16K RAM CARTRIDGE \$49.00

Increases VIC-20 programming power 4 times. Expands total memory to 41K (41,000 bytes). Memory block switches are an outside cover!! CARDCO Includes FREE \$29.95 game!!

8K RAM CARTRIDGE \$34.95

Increases VIC-20 programming power 2 1/2 times. Expands total memory to 33K (33,000 bytes). Includes FREE \$16.95 game.

3 SLOT SWITCHABLE EXPANDER \$24.95

Allows you to add 3 cartridges at one time—switch select to turn slots on or off—PLUS reset button. A must for your VIC-20 computer!!

9" GREEN SCREEN MONITOR \$69.00

Excellent quality SANYO, easy to read, 80 columns x 24 lines, Green Phosphorous screen with anti-glare, metal cabinet! Saves your T.V. PLUS \$9.95 for connecting cable. Com-64 or VIC-20.

12" GREEN OR AMBER MONITOR \$99.00

Your choice of green or amber screen monitor top quality, SANYO, 80 columns x 24 lines, easy to read, anti-glare, faster scanning! PLUS \$9.95 for connecting cable. Com-64 or VIC-20.

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EDUCATION/FUN LEARNING

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings						
				O	D	EH	GQ	EU	V	
ADDITION MAGICIAN The Learning Company 545 Middlefield Road, Suite 170 Menlo Park, CA 94025 (415) 328-5412 \$34.95 ©1984	Ages 6-10 practice addition by grouping numbers together that add up to certain sums, racing against the clock (if they desire) and racking up points. † —FRANK	Apple II series, 48K (d.). Also for Atari Home Computers, 48K (d.); C 64 (d.); IBM PC/PCjr, 48K (d.).	90-day warranty; \$10 fee thereafter or if user-damaged.	★	★	★	★	★	A	★
GRANDMA'S HOUSE Spinnaker Software Corp. 1 Kendall Square Cambridge, MA 02139 (617) 494-1200 \$39.95 ©1984	Kids 4-8 and over select creatures and furnishings from several environments, "pasting" them anywhere in the rooms of a vacant old house. † —ELTGROTH	Apple II series, 48K (d.). Also for C 64 (d.). Joystick (mouse for IIc).	30-day warranty; \$5 fee thereafter or if user-damaged.	★	★	★	★	★	E	★
GROVER'S NUMBER ROVER Children's Television Workshop/available from Radio Shack 1800 One Tandy Center Fort Worth, TX 76102 (817) 390-3300 \$19.95 ©1984	Six games teach and/or reinforce basic addition and subtraction concepts and number identification at two different levels involving familiar "Sesame Street" friend, Grover. —HYER	TRS-80 CoCo, 16K (cass.).	30-day warranty.	★	★	★	★	★	E	★
MICROSPEEDREAD CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2500 \$125 ©1984	Increase reading speed and comprehension with effective program that acts as timer, as well as trains users in various reading and comprehension techniques. † —MORRIS	Apple II plus/IIe/IIc, 48K (d.). Version planned for IBM PC/PCjr.	90-day warranty; \$5 fee thereafter or if user-damaged.	★	★	★	N/A	★	A	★
NUMBER FARM Developmental Learning Materials One DLM Park, P.O. Box 4000, Allen, TX 75002 (800) 527-4747 \$29.95 ©1984	Kindergartners and preschoolers learn and practice number concepts and counting in series of six activities that utilize sound as well as visuals. (Kids count number of farm animal noises.) —BUMGARNER	Apple II series, 48K (d.). Version planned for C 64.	6-month warranty; \$15 fee thereafter, if user-damaged, or for backup copy.	★	★	★	★	★	E	★
SHAPE AND COLOR RODEO Developmental Learning Materials One DLM Park, P.O. Box 4000, Allen, TX 75002 (800) 527-4747 \$29.95 ©1984	Kindergartners and preschoolers play with shapes and colors in activities that build visual perception, shape discrimination, and familiarity with primary and secondary colors. Music and dancing cowhands delight kids. —BUMGARNER	Apple II series, 48K (d.). Version planned for C 64.	6-month warranty; \$15 fee thereafter, if user-damaged, or for backup copy.	★	★	★	★	★	A	★
SUCCESS WITH MATH: FRACTIONS: 1) ADDITION AND SUBTRACTION and 2) MULTIPLICATION AND DIVISION CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2500 \$24.95 each ©1983/1984	Two no-nonsense tutorial packages provide training and practice in adding, subtracting, dividing, and multiplying fractions. Errors are diagnosed and explained as the student proceeds. More than drill and practice, these packages actually teach, step-by-step, how to solve problems. —MORRIS	Apple II plus/IIe/IIc, 48K (d.). Also for Atari Home Computers, 32K (d. and cass.); C 64 (d. and cass.).	90-day warranty; \$5 fee thereafter or if user-damaged.	★	★	★	N/A	★	E	★
TAXI Children's Television Workshop/available from Radio Shack 1800 One Tandy Center Fort Worth, TX 76102 (817) 390-3300 \$19.95 ©1984	Ages 7 and up pick up riders and deposit them at specified locations in six different cities around the world. Program uses bird's-eye maps and pictures of various sights to show differences in cities and encourage curiosity. —HYER	TRS-80 CoCo, 16K (cass.). Joystick.	30-day warranty.	★	★	★	★	★	A	★
WORD SPINNER Learning Company 545 Middlefield Road, Suite 170 Menlo Park, CA 94025 (415) 328-5412 \$34.95 ©1984	Select any letter or letters that make a real word out of the letters and blanks that appear on screen. Try to rack up points and presents in challenging, fun word game for early readers and word lovers 6-10 and over. † —FRANK	Apple II series, 48K (d.). Also for Atari Home Computers, 48K (d.); C 64 (d.); IBM PC/PCjr, 48K (d.).	90-day warranty; \$10 fee if user-damaged.	★	★	★	★	★	E	★

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

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Mega Plus	from \$299.00
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1025 Dot Matrix Printer	\$249.00
1027 Letter Quality Printer	\$269.00
1030 Direct Connect Modem	\$99.99
1050 Disk Drive	\$329.00
1064 Memory Module	\$125.00
CX 30 Paddles	\$11.99
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Commodore

Call for CBM 4 plus

8X-64 Portable	\$839.00
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C1541 Disk Drive	\$249.00
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C1520 Color Printer/Plotter	\$129.99
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C1702 Color Monitor	\$259.00
C1311 Joystick	\$4.99
C1312 Paddles	\$11.99
C1600 VIC Modem	\$59.99
C1650 Auto Modem	\$89.99
MCS 801 Color Printer	\$499.00
DPS 1101 Daisy Printer	\$459.00
Magic Voice Speech Module	\$54.99
Desk Organizer Lock	\$49.99
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MSD DRIVES

MSD 1	\$349.00
MSD 2	\$599.00

Symphony	LOTUS	\$499.00
Open Access	SPI	\$449.00
MAI	MAI	CALL
WordStar Professional Pack	MICROPRO	\$369.00
R.Base 4000	MICROMIM	\$329.00
Multi Mate	MULTIMATE INT.	\$289.00
Crosstalk XVI	MICROSTUF	\$105.00
MultiPlan	MICROSOFT	\$139.00
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dBASE III		\$429.00
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VisiWord +		\$249.00
Visi-on 'Series'		CALL
Optical Mouse		\$189.99

ATARI

600XL.....CALL
800XL.....CALL
WHILE SUPPLYS LAST
1200XL.....CALL

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4018 Pilot (Home)	\$57.99
8036 Atari Writer	\$77.99
5049 VisiCalc	\$129.99
488 Communicator II	\$119.00

ATARI DRIVES

Indus GT	\$379.00
Rana 1000	\$299.00
Trak AT-D2	\$389.00
Trak AT-D4	\$539.00

FRANKLIN

ACE 1000 Color Computer	CALL
ACE PRO PLUS System	CALL
ACE 1200 Mgmt. System	CALL
ACE PORTABLES	CALL

APPLE/FRANKLIN DISK DRIVES

MICRO-SCI	
A2	\$199.00
A20	CALL
A40	\$299.00
A70	\$319.00

RANA

Elite 1	\$279.00
Elite 2	\$389.00
Elite 3	\$569.00

APPLE

APPLE IIe STARTER PACK	CALL
APPLE IIe	CALL
MACINTOSH	CALL

PRINTERS

AXIOM		MANNESMAN TALLY	
AT-100 Atari Interface Printer	\$199.00	160L	\$589.00
GP-100 Parallel Interface	\$189.00	180L	\$799.00
GP-550 Atari Bidirectional	\$319.00	Spirit 80	\$289.00
GP-700 Atari Color Printer	\$489.00		
GP-550 Parallel Printer	\$289.00	NEC	
401 Letter Quality	\$589.00	2010/15/30	\$749.00
BX-80 Dot Matrix	\$289.00	3510/15/30	\$1369.00
		7710/15/30	\$1799.00
C.ITOH		Pinwriter	CALL
Gorilla Banana	\$149.00	OKIDATA	
Prowriter 8610P	\$379.00	82, 83, 84, 92, 93, 2350, 2410	CALL
Prowriter 1550P	\$599.00	OLYMPIA	
A10 (18 cps) Son of Starwriter	\$569.00	Compact 2	\$489.00
Hot Dot Matrix	CALL	Compact R0	\$499.00
F10-40 Starwriter	\$999.00	ESW 3000	\$1399.00
F10-55 Printmaster	\$1349.00	SMITH CORONA	
COMREX		TP-1000	\$449.00
ComWriterII Letter Quality	\$449.00	Tractor Feed	\$119.00
DIABLO		SILVER REED	
620 Letter Quality	\$949.00	500 Letter Quality	\$399.00
630 Letter Quality	\$1749.00	550 Letter Quality	\$469.00
		770 Letter Quality	\$869.00
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2000	\$949.00	Gemini 10X/I	\$279.00
EPSON		Gemini 15X/I	\$389.00
RX-80, RX-80FT, RX-100	CALL	Serial Board	\$75.00
FX-80, FX-100	CALL	Radix 10/I	\$599.00
LQ 1500	CALL	Radix 15/I	\$699.00
IDS		TOSHIBA	
Prism 80...For Configuration	CALL	1340	\$829.00
Prism 32...For Configuration	CALL	1351	\$1449.00
		TRANSTAR	
6100	\$469.00	120P	\$469.00
		130P	\$649.00
		315 Color	\$459.00

MODEMS

ANCHOR		NOVATION	
Volkmodem	\$59.99	J-Cat	\$99.99
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Mark VII (Auto Ans/Auto Dial)	\$99.99	Smart Cat 103	\$179.00
Mark XII (1200 Baud)	\$269.99	Smart Cat 103/212	\$399.00
Mark TR8-80	\$99.99	AutoCat	\$219.00
9 Volt Power Supply	\$9.99	212 AutoCat	\$549.00
HAYES		Apple Cat II	\$249.00
Smartmodem 300	\$199.00	212 Apple Cat	\$449.00
Smartmodem 1200	\$489.00	Apple Cat 212 Upgrade	\$259.00
Smartmodem 1200B	\$449.00	Smart Cat Plus	\$369.00
Micromodem IIe	\$269.00	ZENITH	
Micromodem 100	\$299.00	ZT-1	\$339.00
Smart Com II	\$89.99	ZT-10	\$309.00
Chronograph	\$199.00	ZT-11	\$369.00

MONITORS

AMDEK		SAKATA	
300 Green	\$149.00	SG-1000 Color	\$269.00
300 Amber	\$159.00	SG-1000 Green	\$129.00
300 Color/Audio	\$289.00	SA-1000 Amber	\$139.00
310 Amber	\$169.00	TAXAN	
500 Color Composite/RGB/VCR	\$399.00	121 IBM Green	\$149.00
BMC		122 IBM Amber	\$159.00
1201 (12" Green)	\$86.99	210 Color RGB	\$269.00
1201 Plus (12" Green Hi-Res)	\$98.99	400 Med-Res RGB	\$319.00
9191 Plus	\$249.00	415 Hi-Res RGB	\$439.00
		420 Hi-Res RGB (IBM)	\$469.00
GORILLA		100 12" Green	\$125.00
12" Green	\$88.99	105 12" Amber	\$135.00
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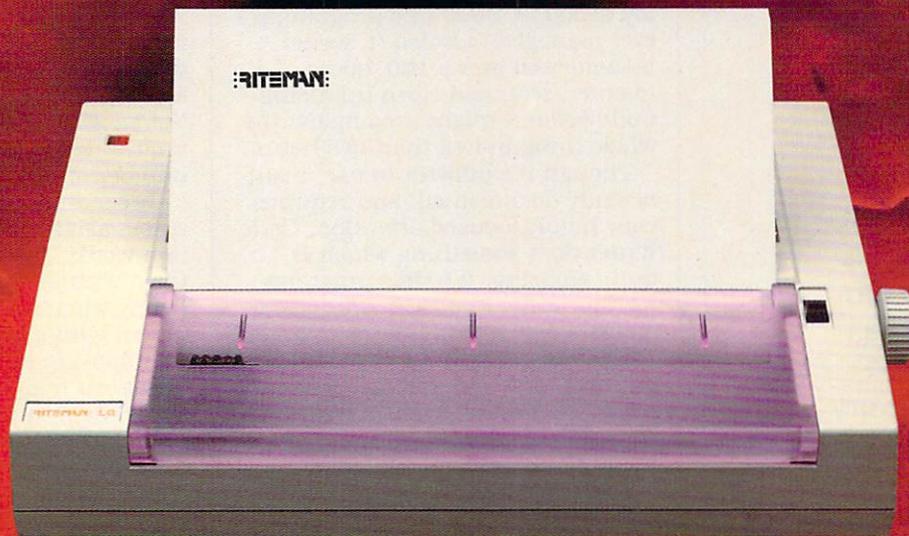
GAMES REVIEWS BY JAMES DELSON

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	PS	GQ	EU	V
BATTLE FOR NORMANDY Strategic Simulations, Inc. 883 Stierlin Road, Bldg. A-200 Mountain View, CA 94043 (415) 964-1353 \$39.95 ©1982	Recreate dramatic D-day battles in complex war game in which players invade beaches and fight against entrenched German units. Use air and naval power in game for intermediate and advanced players, ages 12+ .†	Reviewed on C 64 (d.). Also for Apple II series, 48K (d.); Atari Home Computers, 48K (d.), 32K (cass.).	30-day warranty; \$10 (plus \$2 shipping) fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
BEYOND CASTLE WOLFENSTEIN Muse Software 347 N. Charles St. Baltimore, MD 21201 (301) 659-7212 \$34.95 ©1984	Steal through corridors of Hitler's bunker, finding weapons, opening locks. Locate and detonate a bomb, escaping from the bunker before it explodes. Requires practice, for ages 10+ .†	Reviewed on C 64 (d.). Also for Apple II series, 48K (d.).	30-day warranty; \$10 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
CONGLOMERATES COLLIDE RockRoy, Inc. 7741 E. Gray Road, Suite 6 Scottsdale, AZ 85260 (602) 998-1577 \$39.95 ©1981	Fast-moving simulation of corporate wheeling and dealing pits you against businesses played by computer or people. Purchase and manipulate firms and stocks in short-playing game, for ages 12+ .†	Apple II/II plus/IIe, 48K (d.).	30-day warranty; \$8.50 fee thereafter or if user-damaged.	★ ★	★ ★	★ ★	★ ★	A	★ ★
GEOLOGIQUE 1990 Strategic Simulations, Inc. 883 Stierlin Road, Bldg. A-200 Mountain View, CA 94043 (415) 964-1353 \$39.95 ©1983	Take on computerized U.S.S.R. foe to achieve economic and military superiority in one of several different world scenarios you preset yourself. Serious simulation for dedicated gamers, for ages 12+ .†	Reviewed on C 64, 64K (d.). Also for Apple II series, 48K (d.).	30-day warranty; \$10 (plus \$2 shipping) fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
KAIV Screenplay P.O. Box 3558 Chapel Hill, NC 27514 (800) 334-5470 \$39.95 ©1982	Acquire fortune and fame on the way to locating treasure buried in a multileveled cavern filled with enemies and danger. Best for players, 10+ , who prefer single-person quests.	Apple II/II plus/IIe, 48K (d.). Also for Atari Home Computers, 48K (d. and cass.); C 64 (d.).	90-day warranty; \$5 fee thereafter or for backup copy.	★ ★ ★	★ ★ ★	★ ★	★ ★	A	★ ★ ★
MINNESOTA FATS' POOL CHALLENGE HesWare 150 N. Hill Drive Brisbane, CA 94005 (415) 468-4111 \$19.95 ©1984	Pocket-billiards simulation lets newcomers learn while seasoned players improve their statistical averages. Main problem: Instead of 15 balls, you play with six. For ages 6+ .	C 64 (cart.). Joystick.	180-day warranty; \$2 fee thereafter for disks/cassettes, \$6 fee for cartridges.	★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
RICOCHET Epyx 1043 Kiel Court Sunnyvale, CA 94089 (408) 745-0700 \$19.95 ©1981	Score points by shooting balls into other player's goal while defending your own with shields. Strategy-arcade game is good for kids and novices as well as experienced players, ages 8+ .	Reviewed on Apple II series, 48K (d.). Also for Atari Home Computers, 32K (d.), 16K (cass.); VIC-20, 8K (cass.).	90-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
SPACE TAXI Muse Software 347 N. Charles St. Baltimore, MD 21201 (301) 659-7212 \$29.95 ©1984	Learn to "drive" an outer-space cab in increasingly complex environments with different obstacles and gravity fields. Colorful, offbeat arcade game has a weightless feel to it, great for family play, ages 7+ .	C 64 (d.). Joystick.	30-day warranty; \$10 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
SUNDOG: FROZEN LEGACY FTL Games 7907 Ostrow St., Suite F San Diego, CA 92111 (619) 279-5711 \$39.95 ©1984	You've inherited an armed space-cargo vessel. Repair and fly it to complete the responsibility that came with it: to assist in the colonization of a planet. Absorbing role-playing adventure, good for ages 12+ .†	Apple II series, 64K (d.). Joystick.	90-day warranty; \$6 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
TRIVIA I Cymbal Software 250 Don Park Road, Unit 17 Markham, Ontario L3R 2V1 (416) 475-2722 \$39.95 ©1984	Teams of as many as six players quiz each other using excellent questions in trivia game; recommended for ages 12+ who enjoy "College Bowl"-type challenges.	C 64 (d.).	Unlimited warranty (\$2 fee for postage).	★ ★	★	★	N/A	E	★ ★

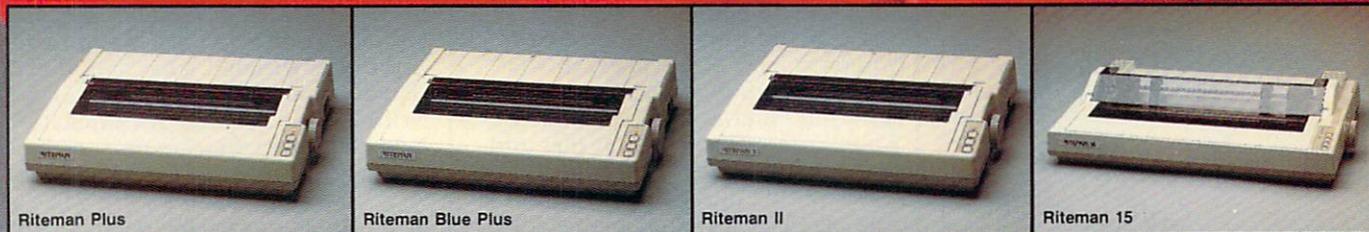
RATINGS KEY O Overall performance; D Documentation; PS Play system; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

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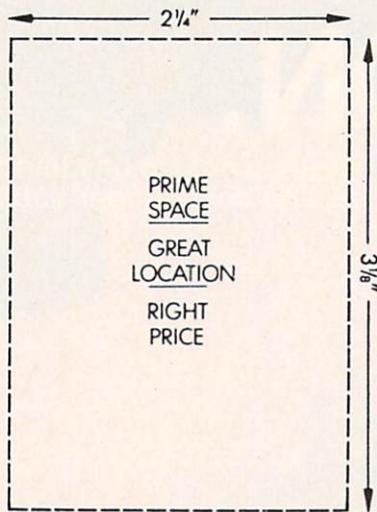
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WHAT'S IN STORE SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 94 for information such as backup policies and addresses of software manufacturers.

HOME BUSINESS/HOME MANAGEMENT

CodeWriter

HARDWARE REQUIREMENTS: Apple II plus/IIe/IIc, 48K (disk). Also for Atari Home Computers; Commodore 64; IBM PC/PCjr.

MANUFACTURER: Dynatech Microsoftware

PRICE: \$199 (Apple, IBM PCjr); \$99 (Atari, Commodore); \$249 (IBM PC)

I'm no great shakes as a programmer. When embarking on the task of writing my own filing or calculating program, I often run out of steam (as witnessed by all the partially written programs floating around on my disks). A 1,000-line program, if I ever managed to finish it, would take me well over a 100 hours to enter, test, and clean up. Using *CodeWriter*, I might accomplish the whole thing in less than two hours.

Though it's difficult to use, insufficiently documented, and requires your highly focused attention, *CodeWriter* does something which is quite amazing. It writes programs for you in the Applesoft BASIC language. I watched in awe as it wrote a 1,000-line program in less than 20 minutes, creating a filing system for me. What's more, when it was complete, I could see the various lines of the program and change them at will.

To use *CodeWriter*, you must first think of what you want your program to do—sort invoices for your mail-order business, for instance, or calculate the performance of stocks you've been following. You have to take time to figure out how you want the information presented to you on screen. Remember, this is your program. You decide how the data you enter is to be calculated. *CodeWriter* asks you what text and prompts to display on screen.

Use of this miraculous program is hampered by its cumbersome editing features. During some procedures, making a mistake means you will have to reenter much of your information, thereby running the risk of making still more errors before

you can correct the original one.

Also, beware of manuals that tell you how wonderful they are, as this one does. It is on the skimpy side and does not contain a substantial reference section.

If you think you need a program that writes programs for you, *CodeWriter* warrants your examination.

—DAVID WILSON

EDITOR'S NOTE: A less expensive version, *FileWriter*, is available from the manufacturer. This lets you write your own filing programs but not restructure or reorder the data filed. For this task, you'll need *ReportWriter*. For Atari and C 64 (\$60 each disk); Apple and IBM PCjr (\$70 each disk); and IBM PC (\$90 each disk).

Creative Writer

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II plus/IIe/IIc; IBM PC/PCjr.

MANUFACTURER: Creative Software
PRICE: \$49.95

Word-processing programs are a varied lot. The most powerful ones traditionally take some time to learn and a pretty big budget to afford. Not so with *Creative Writer*. It's a multifunctioned program with a number of useful features.

One feature, called SEARCH AND REPLACE, allows you to SEARCH for certain words in a text and REPLACE them with others. (This comes in handy when editing or typing a document with a long phrase or word that appears regularly. You can abbreviate a frequently used word or name the first time around, and then replace it in the final draft with the full word.) You can copy and move up to 20 lines of text at a time. For a letter or essay with a more professional feel, the program will print out your document with justified right margins.

Above all, *Creative Writer* is simple to use. Features, functions, and operations are reached by one or two keystrokes through a list of options that alternates with the text you're writing on the screen. An explicit help dictionary appears on-screen whenever you get into trouble. Preview how your finished work will look printed out on the page. Indent and center lines of writing within your text. And compared to most Commodore programs, this one operates rather quickly.

Busy parents who haven't the time

to spend remembering commands, students who want a powerful word processor for their papers, small businesses or organizations that require a package to take care of documents needing a special professional touch—these are the potential beneficiaries of this fast, efficient, and economical word-processing "work horse."
—NORMA ODISIO

Financial Cookbook

HARDWARE REQUIREMENTS: Apple II series, 64K (disk). Also for Atari Home Computers; Commodore 64; IBM PC/PCjr.

MANUFACTURER: Electronic Arts

PRICE: \$50

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WHAT'S IN STORE SOFTWARE REVIEWS

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Another recipe helps me determine what I can do with that fund once it matures—how long I can spend it at the rate of \$2,000 per month, for instance. News like this isn't always good news, by any means. However, it can help you plan and forecast for the future. *Financial Cookbook* offers the means to educate you about your financial possibilities and answer those difficult money questions that leave most of us baffled.

—JOHN LINCOLN

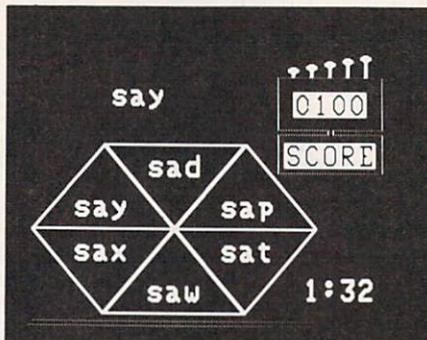
EDUCATION/FUN LEARNING

Addition Magician and Word Spinner

HARDWARE REQUIREMENTS: Apple II series, 48K (disk). Also for Atari Home Computers; Commodore 64; IBM PC/PCjr.

MANUFACTURER: The Learning Company
 PRICE: \$34.95 each

We know how fundamental arithmetic and spelling are. Yet it's tough to encourage our kids to practice building these skills at home. The Learning Company has taken these essentials and, with different degrees of



success, tried to make them into entertaining activities for your child.

Of the two, *Word Spinner* was the more inviting program for my family. Using the right and left arrow keys (on the Apple II's keyboard), you scroll through the alphabet find-

ing appropriate letters to make words out of a series of letters. How many words, for instance, can you make out of _ad or _l_t? Completed words go into one of six compartments in a hexagon. You create words to fill the hexagon, accumulating points and a potpourri of prizes.

Fun and imaginative, *Word Spinner* appealed to my fifth grader. My fourth grader liked creating words as much as she did collecting prizes. And after a 30-minute session with it, my second-grade neighbor left the house, proudly bearing a printed list of words he'd created.

The game moves quickly. The instructions, though by no means necessary to operating and playing the game, are well-written and include suggestions for alternative uses of the program. If you create a non-word, the program lets you know with a simple, nonthreatening colored arrow. That's important, because the game is more fun if you're not too conservative in your word-making. I learned five new words watching my kids play. Not that their vocabulary is larger than mine (not yet anyway), but they're willing to try different combinations. I was less adventurous than they.

Word Spinner comes across as an entertaining game, with only a slight resemblance to a reading drill. The learning potential here for a new or beginning reader is enormous. But even good readers will have fun and learn from it. I think the recommended 6–10 age range could be expanded to include older kids and word buffs.

In *Addition Magician*, a 3-by-3-inch square grid is filled with numbers from 1 to 10. Using the joystick or keyboard, your child sets up "walls" within the grid to separate groups of numbers so that each group adds up to the same sum—from 6 to 18. Lively music and a relentless timer accompany the challenge. (Both can be turned off.)

My reluctant fourth-grade mathematician switched the timer off, played a couple of games of one-on-one with me, then decided there were better things to do with her time. On the other hand, my fifth grader, who prefers math to most subjects, enjoyed playing it alone and with a friend. She found using the higher sums and the timer made for quite a challenge. Clear, easy instructions, the players' ability to change their minds and erase walls, and variable skill levels enhance the

program's value. The suggested age range, 6-10, seems on target to me.

In spite of its excellent concept—grouping different numbers so they add up to equal sums—the program lacks the pizzazz needed to stimulate long-term interest, especially among nonmath types like my younger one. Both joystick and keyboard movement is awkward, and I could never group the numbers as quickly as I wanted. My children grew frustrated; for a while they were able to plan how to group the numbers, but by the time they moved a wall into a correct position, they had forgotten where the other walls should go.

—CATHY FRANK

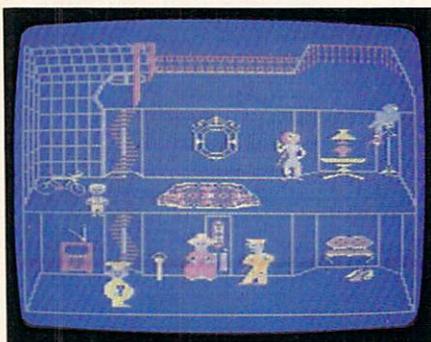
Grandma's House

HARDWARE REQUIREMENTS: Apple II series, 48K (disk). Also for Commodore 64. Joystick (mouse for IIc).

MANUFACTURER: Spinnaker

PRICE: \$39.95

I never know whether my 4-year-old daughter, Jamie, is more interested in sitting on my lap or playing with the computer when we start a new program. Ten minutes into *Grandma's House* she'd answered my question—by standing attentively in front of the monitor. Her brother, John, age 8, turned off the Saturday morning cartoons and quickly elbowed me out of the action, too.



One or two players use a joystick to select figures from a colorful cast of characters. *Grandma's house* needs furnishing. Players can go to the jungle, park, beach, furniture store, appliance store, or back to the screen full of characters, to find the right objects, animals, or people to fill the house. They can work together, or experiment with different kinds of furniture and creatures to create nonsense scenarios or furnish the house in an orderly fashion.

The kids had their own styles of play as they alternated turns. At first, Jamie collected one item at a time—a lamp here, a TV set there.

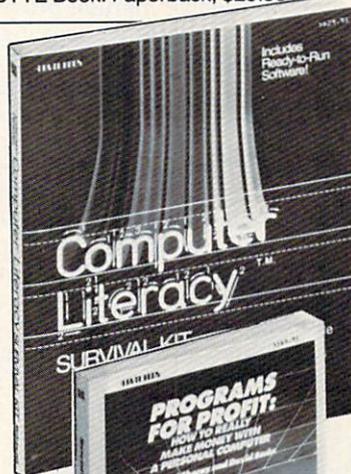
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WHAT'S IN STORE SOFTWARE REVIEWS

John, on the other hand, moved things around in the house before and after getting more items. By the third session, Jamie was rearranging furnishings on her own. John would have appreciated an option to let him clear the house in an instant. Jamie, on the other hand, didn't mind filling it and refilling it.

After several months as junior decorators, Jamie and John still delight in furnishing the house and filling it with unusual creatures and characters. It's helped Jamie grow more comfortable with the computer. She's at ease with the space bar and RETURN keys, and curious about the way in which her joystick controls what's happening on screen.

—BOB ELTGROTH

MicroSpeedRead

HARDWARE REQUIREMENTS: Apple II plus/IIe/IIc, 48K, (disk). Version planned for IBM PC/PCjr.

MANUFACTURER: CBS Software

PRICE: \$125

How long will it take you to read this review? One minute? Two minutes? More? Average readers have a speed

of about 250 words per minute.

That's a little over a minute for a review of this length.

After 10 hours or so with *MicroSpeedRead*, it should take you only about 35 seconds to read this review thoroughly and understand it; 8 seconds to read the review quickly and grasp about half of its points. Hard to believe? Our children increased their reading speed from 200 wpm to 800 wpm with no loss in comprehension, and can now skim-read at 3,000 wpm with about 50 percent comprehension!

MicroSpeedRead is a superb and effective program. The comprehensive 200-page manual provides detailed instructions, demonstrations, and material for practicing speed improvement. The computer calculates your reading speed periodically.

After you've timed your personal reading speed at three different paces—slow, medium, and fast—the program presents a number of techniques for reading more rapidly while retaining essential information. In part, the lessons teach eye-movement skills. But they also teach techniques for extracting meaning

and increasing your ability to remember key ideas. *MicroSpeedRead* also teaches you when to apply various speed techniques.

Our kids wholeheartedly approved of this package. They liked the clarity of the lessons. Completing each level and seeing their speeds increase made them feel really good.

The program's few drawbacks include the fact that you can easily start the timer too early or too late. Or the phone may ring in the midst of a timed session, which often makes for inaccurate results.

The package is pricey. But the materials are elaborate and they definitely work, so the cost winds up being less than most commercial speed-reading courses. —TONY MORRIS

GAMES

Battle for Normandy

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II series; Atari Home Computers.

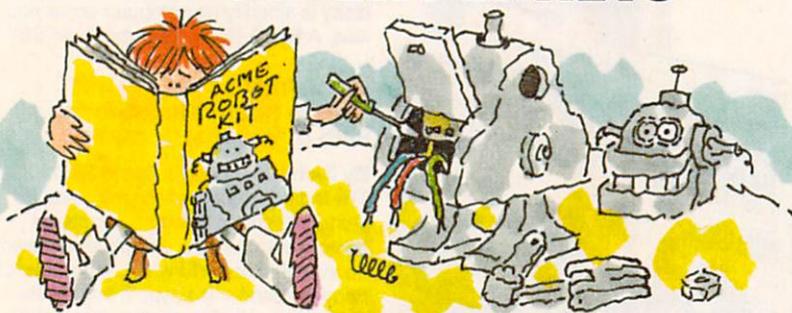
MANUFACTURER: Strategic Simulations
PRICE: \$39.95

June 6, 1944. D-day. Like many moments of great pain or triumph, or both—December 7, 1941, or July 4, 1776—it's a date etched into our collective national spirit. We had about 10,000 casualties that gray June morning as the greatest sea invasion force in history crashed ashore on five stretches of Atlantic beach along the Normandy coast of France. No one could have predicted the strength of the German defenses.

Last summer's 40th commemoration of the Normandy Invasion included some 20 hours of television footage and numerous newspaper and magazine stories on the dramatic encounter. *Battle for Normandy* is Strategic Simulations' solitaire/multiplayer game covering the invasion and the following three weeks—the Allies' attempt to secure deep-water ports to supply the huge army they'd landed on French soil to bring down Hitler's reich.

Using a complex play system, gamers may invade only specified beach areas, then try to fight their way past entrenched German units. Use air and naval power to help out the Allied ground forces. You'll have to adjust unit movement and combat for different terrains. This is a difficult program to learn, but it's flexible, offering gamers hundreds of different play balances.

HOW TO MAKE FRIENDS ON OTHER PLANETS



First, go to another planet. (That's easy if you're traveling through space in *PLANETFALL*, the great science fiction comedy from Infocom's interactive fiction line.)

Next, find a robot nobody's using. Then, to make him start up, type in your command: TURN ON THE MULTIPLE PURPOSE ROBOT... You've just made a robot friend who'll follow you anywhere.

And you'll be glad you have a faithful follower—there's no telling what will happen next in *PLANETFALL*. Because, like all of Infocom's interactive fiction, *PLANETFALL*'s designed



so that whatever you choose to do affects what will happen next. And there'll be plenty happening—it's an adventure filled with everything from dread diseases to mutant monsters, and it can last for weeks or even months.

Get the closest thing on a disk to really going into outer space. Get *PLANETFALL**. It's not just a great adventure—it's a great way to make friends!

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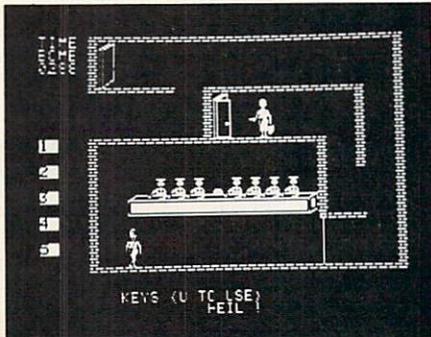
*It's compatible with almost every popular home computer. *PLANETFALL* is a trademark of Infocom, Inc.

The German units seem overpowering at first. But SSI's games all allow you to readjust opponents' abilities. We took care of that imbalance by lowering German strength before later play sessions. We tried several scenario variations, including early arrival of German reinforcements, which Hitler is said to have vetoed in real life on the advice of his astrologer. A tough, long (20-hour) game which demands careful attention, *Battle for Normandy* is for intermediate and advanced players, ages 12 and up, younger with adult supervision.

Beyond Castle Wolfenstein

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II series.
MANUFACTURER: Muse Software
PRICE: \$34.95

Last year's *Castle Wolfenstein*, a role-playing arcade adventure in which you escape from a Nazi-occupied fortress, stealing secret plans en route, was a ground-breaker. Requiring the evading and shooting



skills of arcade hits like *Berserk*, plus the intellectual skills of an Infocom text adventure, it left players (and reviewers) wanting more. We got it with *Beyond Castle Wolfenstein*.

You'll encounter even more difficult challenges as you tread through the multistoried, mazelike corridors and rooms of Adolf Hitler's famous Berlin Bunker. Get past fearsome Nazi guards with appropriate passes. Use a variety of weapons to kill those who get in your way. Hide bodies to prevent detection and open locks by deducing combinations. Or bribe guards for mercy.

You see, last time around, all you had to do was escape. This time, you must break in, locate a bomb left for you by the resistance, find your way down to Hitler's sub-sub-sub-sub-basement, set the bomb, and escape

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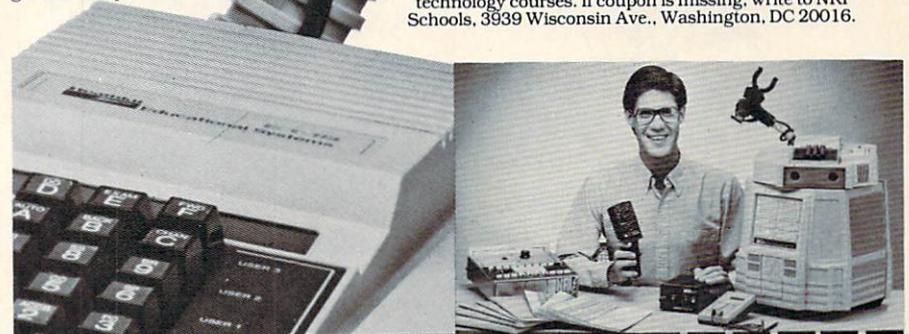


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WHAT'S IN STORE SOFTWARE REVIEWS

in time. Quite a game, though like its predecessor, its graphics still don't do justice to its play system. And there's still an infuriatingly long loading time. These drawbacks pale in comparison to the numerous special touches—the sense of humor (you can't steal some paintings because they're "too surrealistic"), ingenious use of sound effects, including blood-curdling screams and computer-generated German voices, and the same sort of edge-of-your-seat excitement found in the first game. Success takes practice, but playtesters ages 10 and up didn't object to 6-hour sessions.

Conglomerates Collide

HARDWARE REQUIREMENTS: Apple II/II plus/IIe, 48K (disk).
MANUFACTURER: RockRoy, Inc.
PRICE: \$39.95

One of my playtesters, a high-school senior whose computer game interests generally run to Infocom text adventures, introduced me to this one. He and his friends came over to play *Conglomerates Collide* between regular playtesting sessions, and I couldn't resist watching over their

shoulders. Within 10 minutes I understood enough to play along.

This is the most accessible financial game we've tested to date, an easy-to-understand, fast-moving simulation of big-time corporate finance. You start out with one company. Purchase and manipulate other firms, get loans from the bank, buy and sell stocks, try to forecast market trends—all to accumulate more wealth than the other human or computer players by the game's end (when all remaining companies have been bought up).

Conglomerates avoids the lengthy rule books, long turns, and complex play systems of games such as *Cartels and Cutthroats* or *Oil Barons*. As a result, this is the first game we've seen that doesn't require all but an MBA to play. The trick is in its simplification of the corporate scramble into an easy-to-follow series of set moves, an approach which allows financial analysts to enjoy it, and newcomers 10 and up to play and learn.

Like other financial games, *Conglomerates'* excitement lies in players' manipulation of huge sums of

money. You're dealing with the green stuff, not spaceships or six-shooters. It's an intellectual exercise, but manageable because it takes only a couple of hours to play. For the most part, graphics are restricted to lists of companies and their varying price/earnings ratios, and general, variable economic factors, like the prime rate. While it doesn't offer the excitement and graphics of other computer games, it's one of the most appealing financial games around.

SunDog: Frozen Legacy

HARDWARE REQUIREMENTS: Apple II series, 64K (disk). Joystick.
MANUFACTURER: FTL Games
PRICE: \$39.95

SunDog: Frozen Legacy is a compelling and absolutely enchanting program, a new kind of role-playing adventure which combines text, animated graphics, and arcade skills in one of the most absorbing games on the market today.

You're a future hero invaluable to a human colony that's being founded on a distant planet. Having inherited an armed cargo vessel from an uncle who died under mysterious circumstances, you must complete the work he started, delivering goods, and colonists who are frozen in suspended animation, to the outpost.

HOW TO BLOW UP A RUBBER RAFT



First, you need a reason to use a rubber raft. (That's a snap if you've got ZORK® I, the classic fantasy story from Infocom's interactive fiction line. Because you'll be hunting twenty fabulous treasures while dodging every kind of evil under the earth.)

Next, type in your command: BLOW UP THE RUBBER RAFT WITH THE AIR PUMP. . . But watch it, or you might just blow up the raft until you blow yourself to smithereens!

There's no telling what will happen next in ZORK I—because, like all of Infocom's interactive fiction, ZORK's

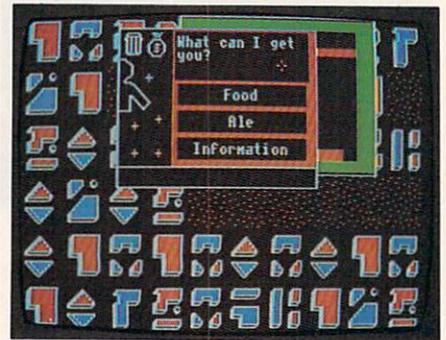


designed so that whatever you choose to do makes the next thing happen. And you won't run out of things to do, either. The underground empire of ZORK is so huge, your adventure can last for weeks or even months.

So if you want the closest thing on a disk to really exploring an underground world, get ZORK I*. But brace yourself for the action—it'll blow you away!

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*It's compatible with almost every popular home computer. ZORK is a registered trademark of Infocom, Inc.



Success in this tough, one-player adventure requires a combination of analytical skills and patience. You'll have to navigate around several solar systems, trade skillfully in a variety of alien markets, exercise good judgement on the quality and value of interstellar trade goods, and charm unscrupulous alien purveyors of "hot" merchandise and information. Stay out of trouble when possible, but be prepared to shoot skillfully in situations in which there's no choice. All this on top of the fact that you have no prior starship-flying experience.

All in all it's a long interstellar route, but one I guarantee will keep

you punching buttons and twirling that joystick for months to come. *SunDog* is one of the year's best games, wildly applauded by playtesters over age 12, who were hooked as soon as they realized how many different stages, activities, and processes it entailed. Though designed as a solitaire game, it made an ideal group effort; we designated different players as crew members, and coordinated their efforts through a "Captain."

Geopolitique 1990

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II series.
MANUFACTURER: Strategic Simulations
PRICE: \$39.95

Until *Geopolitique 1990* came along, I couldn't name a computer game that adequately and accurately captured the complexities of world political situations. This complex simulation of big-power politics pits the U.S. human player against a computer-controlled Soviet Union in a race to dominate the world by all means except direct military confrontation (unless one side feels its cause will be lost without it).

The contest begins with a list of options that lets you adjust the initial situation. A scenario may represent a balance of power weighted strongly in favor of either the U.S. or U.S.S.R. It may depict the emergence of a militaristic, expansionist American or Russian policy, the rise of a Third World power, or other situations, each of which requires players to rethink their strategies in order to prevail. The human and computer opponents attempt to isolate each other and dominate the globe through a variety of means: threat of military might; actual invasions of minor powers; economic, political, and military pacts; and the placement of strategic fleets to reinforce their presence in the world.

Unanimously approved by playtesters serious enough to learn the rules, this is without question one of the most important game programs devised, and, as suggested in the extensive rulebook, should prove of lasting use in schools as a teaching tool. More an in-depth study of international relations than a war game (though the more fanatical gamers out there may play just the war scenario) this one requires a lot of time to learn, but is a must for thinking players everywhere, ages 12 and up.

—REVIEWS BY JAMES DELSON

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	Price	Price
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THE PRIMER / THE WORDS

The Words is a glossary of commonly used computer terms. Some are well-known English words, such as *read* and *write*, that have been incorporated into computer language and given different meanings. (Note: All italicized words in the definitions are defined in full elsewhere in the glossary.) Other terms that refer to a computer's inner workings are not often used in common speech, but are important because they are used in manufacturers' specifications and ads. Don't be awed by them. Remember the delight with which Americans took to the new NASA language over 20 years ago, when John Glenn first orbited the globe.

Access

To retrieve *data* from a storage place in the computer system. Access time is the amount of time it takes to obtain the *data*. Also refers to the action of connecting a terminal to a remote computer, as in: "I use my computer to access CompuServe."

Address

A specific location in the computer's *memory* where a piece of information is stored. Each address is identified by a number.

Bank-switching

The ability of a computer's *microprocessor* to address two *memory* banks, though not at the same time. For example, some 64K RAM computers can use bank-switching to access 128K RAM, but only 64K at a time. Bank-switching allows you to run more powerful *software*, and gives you a larger "work space" in *memory*.

BASIC

Beginner's All-purpose Symbolic Instruction

Code. A popular, easy-to-learn *programming language* widely used with microcomputers.

Baud

Bits per second. A unit of measurement that describes the rate at which *data* are transmitted from one device to another, such as computer to printer, or computer to computer.

Bit

The smallest unit of information a computer uses. A bit is either the digit "0" or "1." An "8-bit" processor ma-

nipulates *data* in clusters of 8 bits.

Board

Printed circuit board. A flat, thin, rectangular component of a computer that includes one or more layers of printed circuitry to which *chips* and other electronic parts are attached. As an add-on to an existing computer, sometimes called a card.

Boot

Derived from "bootstrap." To start or restart a computer system by *reading* instructions from a storage device into the computer's *memory*.

Buffer

A temporary storage area to hold *data* during a transfer from one part of a computer system to another. The buffer may be in the computer, in the *peripheral* device, or it may be a separate, stand-alone unit.

Bug

An error in the logic of a

computer *program* that prevents it from running properly. Bugs can cause a program to "freeze up," that is, to repeat the same operation endlessly. Finding and correcting the error is called debugging.

Bulletin board

An area, reached by dialing a remote computer system via *modem*, where you can leave or read messages electronically. Bulletin boards are usually set up on computers in people's homes, or at information services such as The Source or CompuServe.

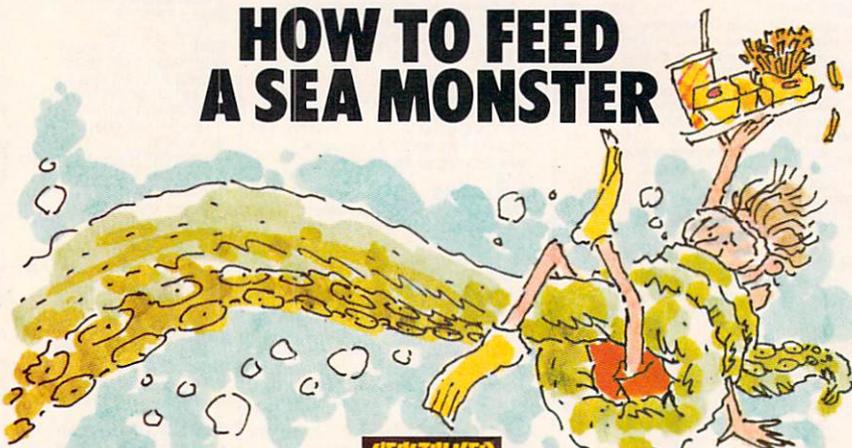
Byte

One byte contains eight *bits*, enough to stand for one character of English, or one number. Thus, it generally takes more than one byte to make up a word. "Cat," for instance, requires three bytes.

CAI

Computer-Assisted Instruction. A term ap-

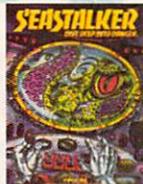
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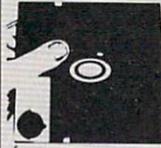
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plied to a wide range of instructional *software*, including drill-and-practice, simulation, and educational games.

Chip

A small component (about the size of a child's fingernail) that contains a large amount of electronic circuitry. Chips are the building blocks of a computer and perform various functions, such as doing arithmetic, serving as the computer's *memory*, or controlling other chips.

Compatibility

The ability of different devices, such as a computer and a printer, to work together; or the ability of a particular *program* to run on a given computer. In short, the ability of anything in a computer system to work with anything else.

CPU

Central Processing Unit. The "heart" of a computer, with components that control the inter-

pretation and execution of instructions.

CRT

Cathode-Ray Tube. A TV or TV-like monitor used to display information and pictures. Also called a computer screen.

Cursor

A moveable symbol, usually a flashing square, that indicates where the next character will appear on the *CRT* screen.

Daisy-wheel printer

A printer that produces fully formed letters with an impact mechanism, which is a daisy-shaped wheel with raised characters on individual "petals." The output is comparable to that of a good typewriter. Sometimes called "letter-quality," these printers are generally slower than *dot-matrix printers*.

Data

Information put into or taken out of a computer.

Data-base manager

A *program* that allows

the user to enter, organize, sort, and retrieve information.

Disk

A magnetic device for storing information and *programs* accessible by a computer. A disk can be either a rigid platter (hard disk) or a sheet of flexible plastic (floppy disk).

Disk drive

A device that *reads* information from a *disk* and copies it into the computer's *memory* so that it can be used by the computer, and that *writes* information from the computer's *memory* onto a *disk* so that it can be stored.

Documentation

The written instructions that explain how to use computer *hardware* or *software*. Also refers to all instructions and remarks used to describe procedures when *programming*.

DOS

Disk Operating System. See *operating system*.

Dot-matrix printer

A printer that forms letters from a rectangular arrangement of dots. The more dots in the matrix (9 x 24, for instance), the better the letter formation. Dot-matrix printers are very fast and versatile, affording a choice of many type and print styles.

Though there are two types of dot-matrix printers—*impact* and *thermal*—the term is generally used to refer to the impact type. See *thermal printer*.

Download

To receive a *file* from a remote computer system. Opposite of *upload*.

Electronic mail

The transmission of messages, documents, or other information from one computer user to another. This can be done over telephone lines using devices called *modems*.

File

A collection of *data* stored as a named unit.

Flow chart

A diagram on paper that shows all the logical steps necessary to write a *program*.

Format

To prepare a *disk* so that it can receive and store information. Until you perform this task, the *disk* will not be able to store any information. The word "initialize" is often used to mean the same thing as format.

Freeware

Software that can be used and copied without charge. However, freeware is copyrighted, and the copyright holder generally asks that the user send a donation if the *software* is to be used regularly. See *public domain software*.

Full-duplex

A *modem* setting that allows a computer to both transmit and receive *data* at the same time. When two computers communicate and both are operating in full-duplex, the resul-

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tant "echo" effect allows you to see on your video display exactly what the remote computer has received.

Function key

A special key on the computer's keyboard that has been or can be designated to perform a specific task.

Graphics tablet

A kind of electronic drawing board. With a graphics tablet and a special pen, whatever you draw will appear simultaneously on the CRT.

Half-duplex

A *modem* setting that allows a computer to either transmit or receive *data*, but not to do both at the same time (like a CB radio).

Hard copy

Information printed by the computer onto paper.

Hardware

The physical, nonchanging parts of a computer system. Contrasted with *software*, or *programs*, which can change.

Information services

Broad-based *data bases* that offer a variety of services, ranging from airline reservation information to stock market quotations. You need a *modem* to link up with such a service.

Input

Programs or *data* entered into the computer.

Interface

An electronic connector between two parts of a computer system.

K

Abbreviation for *kilo-byte*. Used to describe the amount of *memory*, or storage space, a computer has; it signifies 1,024 *bytes*. A computer with 16K of *memory*, for example, can store 16,384 *characters* of information at one time.

Logo

An educational *programming language* that allows the user to draw pictures on the screen. Logo is particularly good for teaching young children how to *program*.

Machine language

A binary code consisting of "0s" and "1s," which is the only language a computer understands. *Programs* written in any other language, such as *BASIC*, are translated by the computer into machine language for processing.

Memory

The place in a computer where *data* and *programs* are stored.

Microprocessor

A tiny processor on a single *chip*. The "brains" of all microcomputers, it is also found in many consumer products.

Modem

A contraction of Modulator/Demodulator. A device that makes it possible to transmit and receive computer *data* over telephone lines.

Monochrome monitor

A type of monitor that can display only one color or on a black background. They come in either white, green, or amber.

Mouse

A small device, connected by cable (its tail) to the computer, that can be moved around on a flat surface to cause a corresponding movement of a *cursor* or arrow on the monitor. By clicking a button on the mouse, the user can choose or implement functions, such as *EDIT* or *PRINT*, from a *menu*.

Operating system

A built-in *program* that controls the operation of a computer system, such as controlling signals to the *disk drive* or printer. When a computer system is turned on, the operating system is the first *program* executed. All subsequent *programs* are *loaded* and supervised by the operating system.

Originate/answer

Refers to the two basic modes required for communication via *modem*. When two computers linked to *modems* establish connections, one *modem* must be in the originate mode (the call-

er), and the other must be in the answer mode.

Output

Computer-generated information that is transferred to a monitor, *disk*, tape, or printer.

Parallel interface

An interface between two parts of a computer system, most often a computer and a printer, that transmits *data* eight *bits* (one *byte*) at a time, along separate, "parallel" wires. See *serial interface*.

Pascal

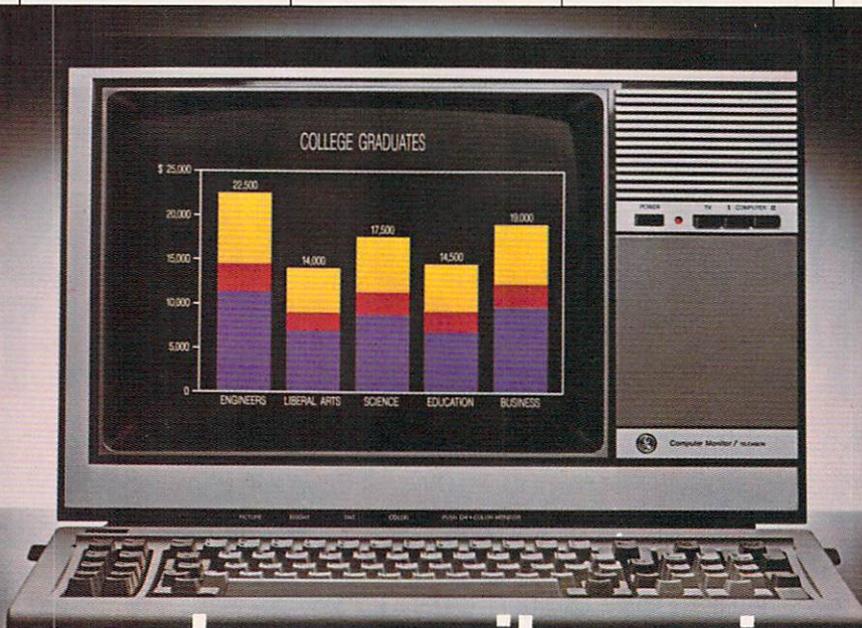
A *programming language* that can be used on many microcomputers. While it is considered more difficult to learn than *BASIC*, it can generate *programs* that run faster and use less *memory*.

Peripherals

Hardware accessories for a computer, such as a *disk drive*, printer, or *modem*.

Piracy

The unauthorized copying of copyrighted *software*.



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Pixel

Stands for "picture element." A single dot of light on a TV screen or computer monitor. These tiny elements are used to create electronic pictures, or graphics.

Plotter

A machine, attached to a computer, that prints lines or graphs on paper.

Port

A "female" socket on a computer where you can plug in peripherals, such as a printer or *modem*.

Program

A set of step-by-step instructions that tells a computer how to solve a given problem. Also, to prepare such a set of instructions.

Programming language

A language, with clearly defined rules, that can be used to express a computer program.

Public domain software

Software that is not

copyrighted and can thus be used and distributed freely. See *freeware*.

RAM

Random Access Memory. An area in the computer where information is stored. When called into this area, information can be changed, or edited. However, it will be lost when the computer's power is turned off, unless you first *save* the information.

Read

The process of copying information from a storage device (such as floppy disk or tape) into the computer's *memory*. Reading only copies, it does not erase the *data* from where it is stored.

Resolution

The sharpness of a picture on a CRT, usually described as "high" or "low." The higher the resolution, the sharper the picture. Resolution is expressed by the number of *pixels* in the display. For example,

512 × 342 is much sharper than 320 × 192.

RGB monitor

Red-Green-Blue. A color monitor that achieves a superior display by using three color beams instead of one (as regular "composite" color monitors do).

ROM

Read Only Memory. Permanent *memory* built into a computer by a manufacturer. The information stored here gives the computer operating instructions when it is first turned on. The user cannot change this *memory*.

Save

To store information from *memory* on tape or disk so that it can be used again.

Serial interface

An *interface* between two parts of a computer system that transmits *data* one *bit* at a time. Slower than a *parallel interface*.

SIG

Special Interest Group. A fraction of a larger group, such as a users' group, made up of members with common interests, e.g., a Stocks & Bonds SIG.

Software

Computer programs. Also, tapes and disks.

Sprites

Small, high-resolution objects that can be moved independently of other text or graphics on the monitor. They can change color and size and move in front of or behind other objects on the monitor. Used to create animated sequences. Called "players" and "missiles" on Atari computers.

Terminal software

Used in conjunction with a *modem*, this type of *software* is necessary to communicate with other computers and perform various functions, such as *upload* and *download data*.

Thermal printer

A type of *dot-matrix*

printer that works by "burning" dots into heat-sensitive paper. The printer is extremely quiet and does not require ribbons; the paper, however, is expensive and can be hard to find.

Upload

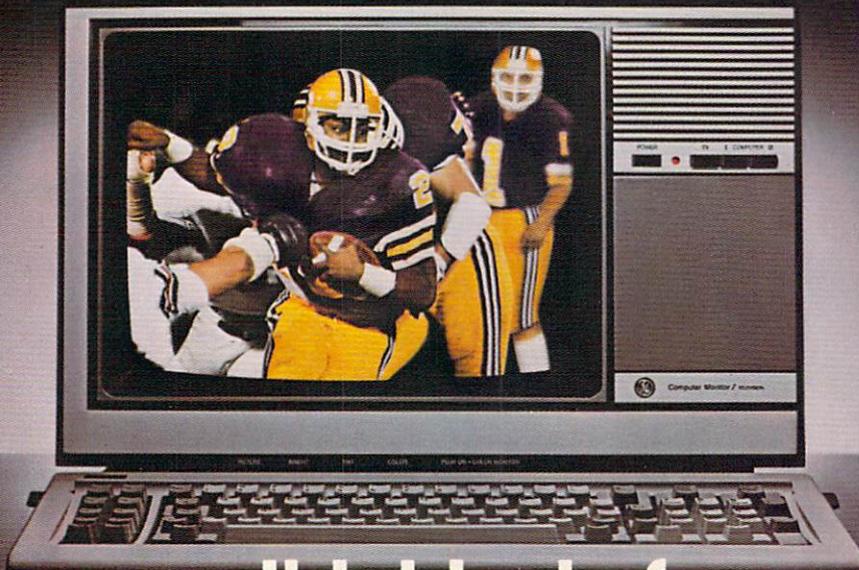
To transmit a *file* from your computer, via *modem*, to another computer.

Word processor

A program that allows the user to write, edit, or rewrite text. The text can be *saved* on a storage device and printed out. A word processor allows the user to make changes in the same text without retyping the whole page.

Write

The opposite of *read*. To transfer information from the computer's *memory* to a storage device such as a floppy disk. Write-protect is a procedure for preventing new information from being added to a disk.



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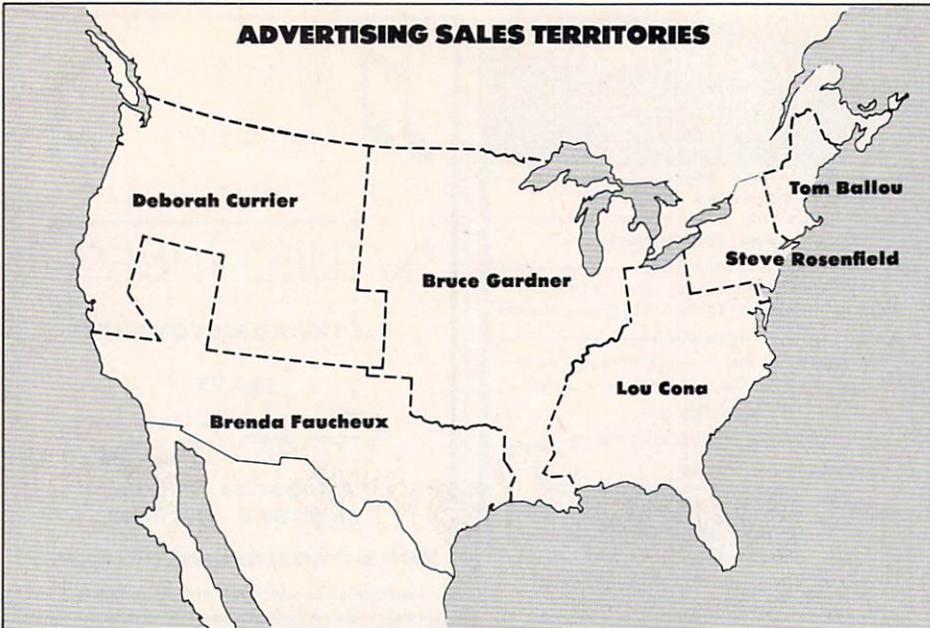
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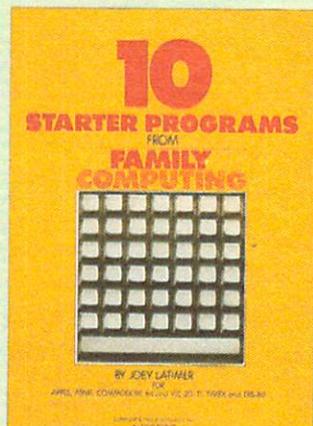
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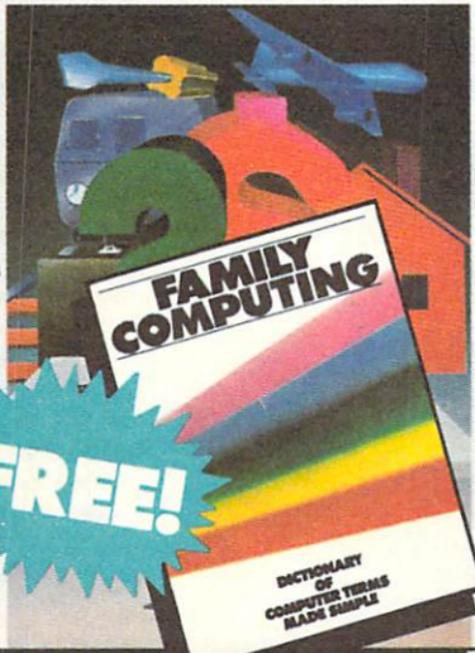
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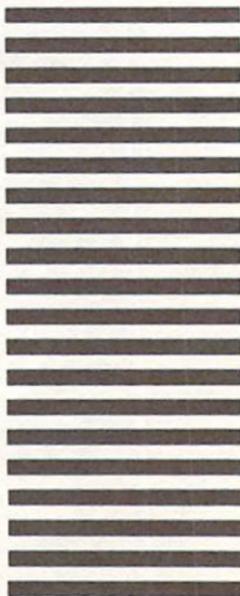
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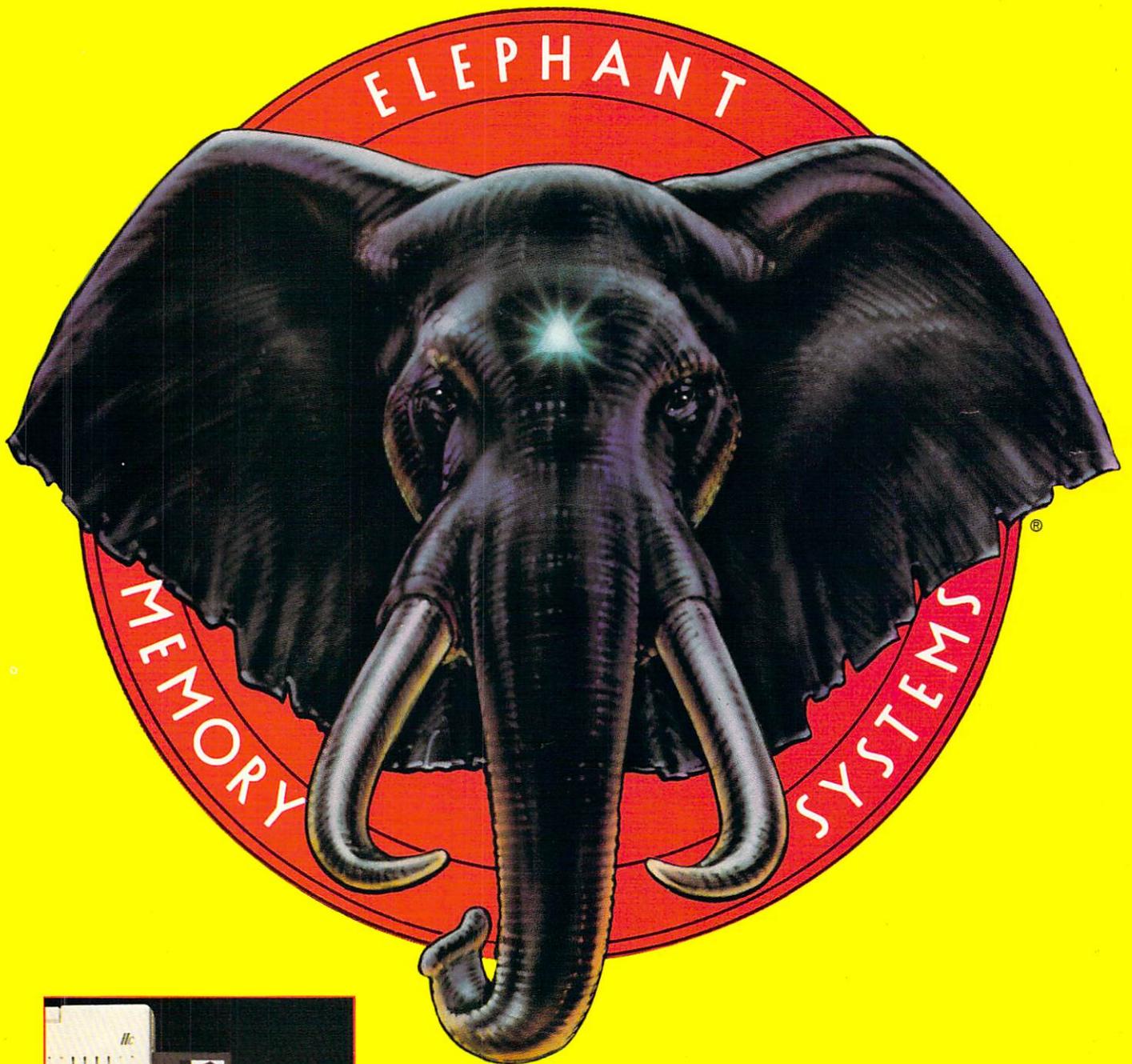
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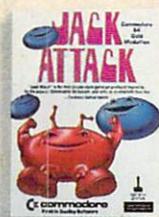
ELEPHANT™ NEVER FORGETS.

LOOK WHAT'S ON TELEVISION TONIGHT.

6:00

JACK ATTACK

(Gold Medallion Game) Cartoon animation plus strategic challenge. 64 different screens. A Commodore original, rated "must buy" by Electronics Game Magazine. (Cartridge)



7:30

SOLAR FOX

It's erase or be erased as you navigate spaceship over a grid of colorful pulsating entities, armed with laser. Unlimited levels. A BALLY MIDWAY original. (Cartridge)



9:00



MAGIC DESK I

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)

6:30

MATH FACTS

(Ages 5 to 10) (Micro School) Educational TV Practice in basic math facts. Several levels. (Easy to hard) (Diskette)



8:00



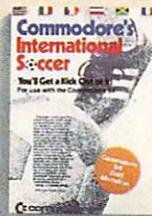
EASY SCRIPT

Our best wordprocessor. Displays 764 lines by 40 characters. Prints over 130 columns. Global/local search/replace/hunt/find. Super/subscripts. Insert/delete characters, lines, sentences, paragraphs. (Diskette)

9:30

INTERNATIONAL SOCCER

(Gold Medallion Game) Sports highlight. With passing, kicking, diving goalies, even trophies! Great color, 3-D realism. No locker room interviews. (Cartridge)



7:00



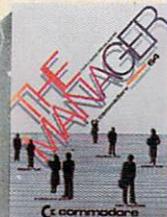
FRENZY/FLIP FLOP

(Ages 6 to 14) (Milliken Edulun) FRENZY (subtraction and division) The hungry gator arrives... save the fish... play the BONUS game... FLIP FLOP (transformed geometry) look at the two figures... do they need to flip, turn or slide? (Diskette)

8:30

THE MANAGER

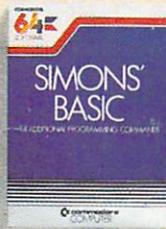
A powerful database management system. For business, educational or personal files. Not for Rockford's files. With four built-in applications. Or design your own. (Diskette)



10:00

SIMONS' BASIC

Rated PG. Expands Commodore BASIC by an additional 114 commands. Convenient programming commands such as RE-NUMBER and TRACE plus graphics plotting command. (Cartridge)



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COMMODORE 64

IT'S NOT HOW LITTLE IT COSTS, IT'S HOW MUCH YOU GET.

