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VOLUME 2
NUMBER 12

Buyer's Guide to Computer Systems

FAMILY COMPUTING™

A Preview: Tandy 1000

THE BEST-EVER SHOPPING GUIDE FOR COMPUTER LOVERS

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

A Galaxy of Gift Ideas $3 to $3,000

Special Software Buys

Some of the Greatest Graphics Software

Diary of an Undercover Shopper

WIN A TRIP TO A Club Med Computer Resort
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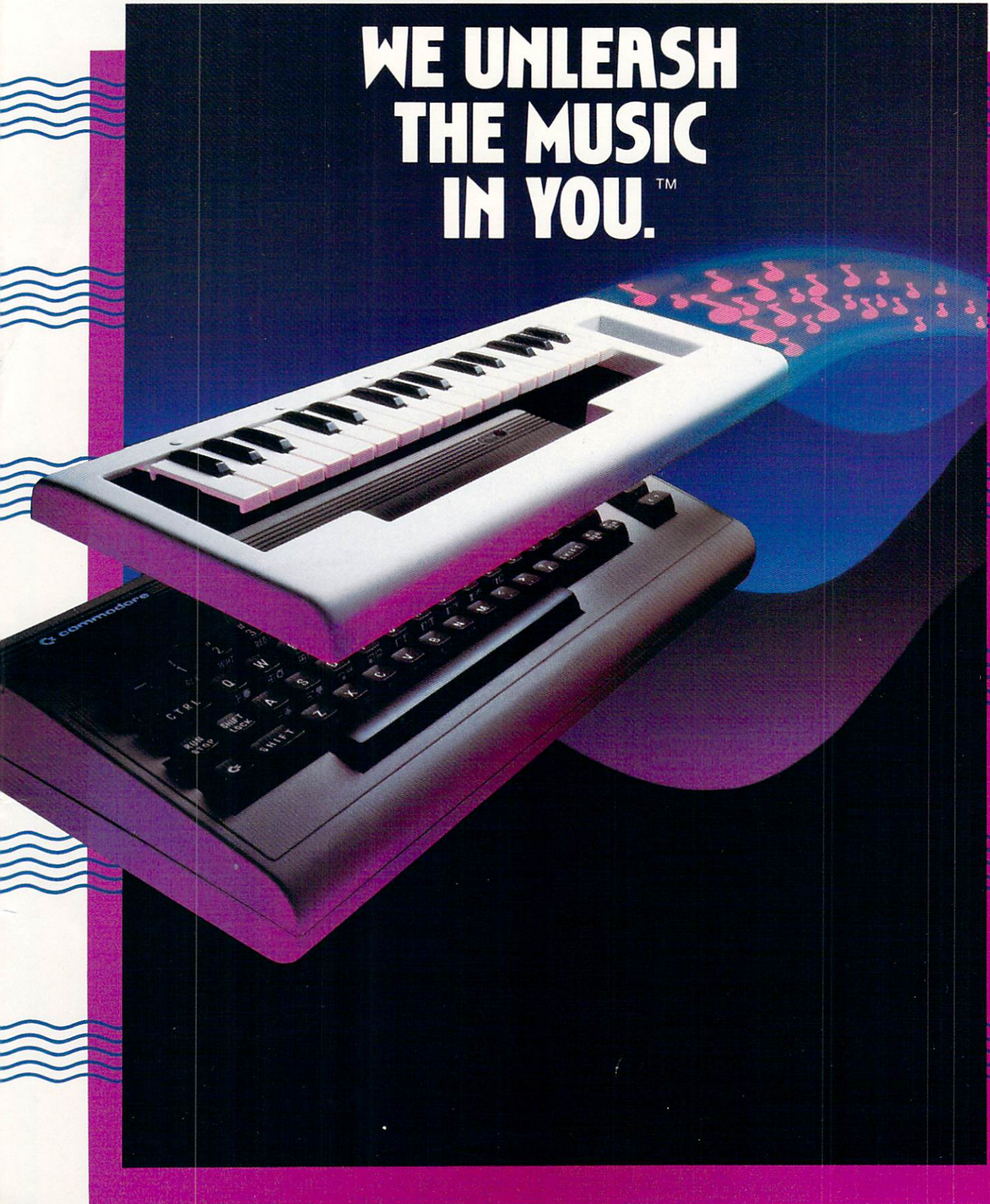
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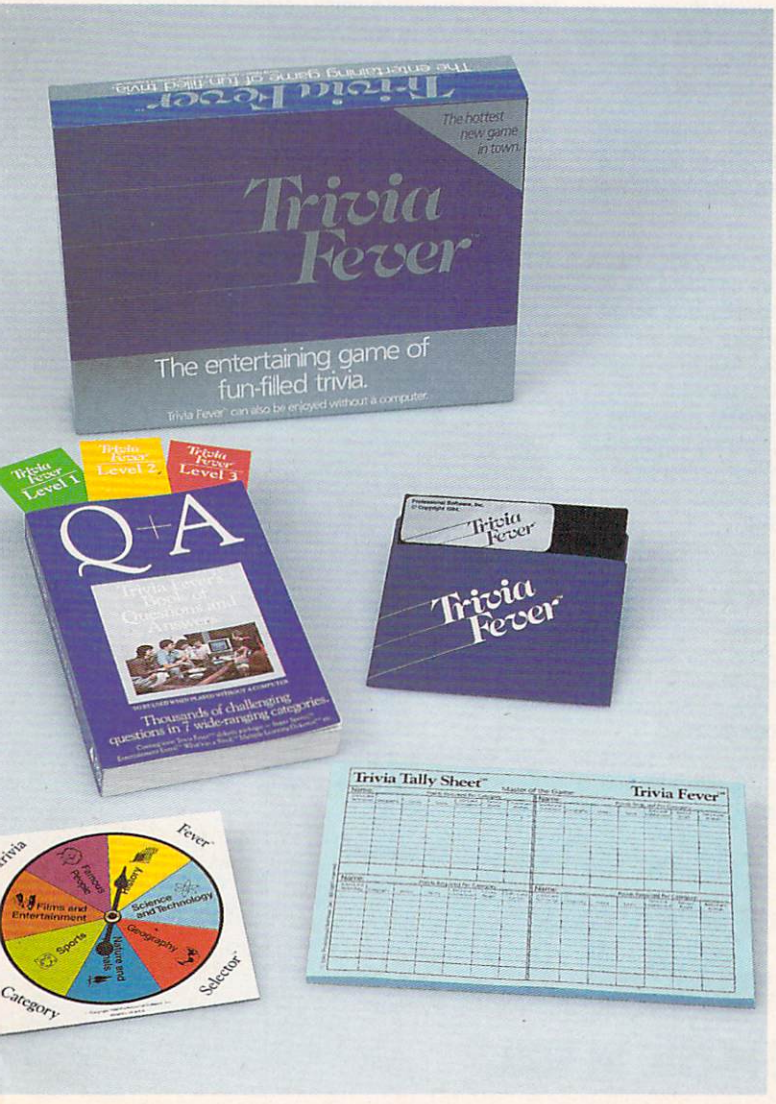
"The Hottest New Game In Town"



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Trivia Fever is absolutely unique — it's the only software entertainment package that can be enjoyed ***with*** or ***without*** a home computer! When played on your home computer, Trivia Fever is a refreshing alternative to all those shoot'em up games. An elected "Master of the Game" uses the computer to randomly select subject categories, handicap players, generate questions and answers, keep score automatically, and more! Instructive by its very nature, Trivia Fever can be enjoyed by up to 8 individuals or teams. And when played without a computer, Trivia Fever has all the best features of the "popular" trivia games plus more — all without the cumbersome board, cards, and little game pieces. You can play in a car, on vacation, anytime, anywhere! And Trivia Fever is by far the best Trivia game available anywhere. Here's why:

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DECEMBER
1984

FAMILY COMPUTING™

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NUMBER 12

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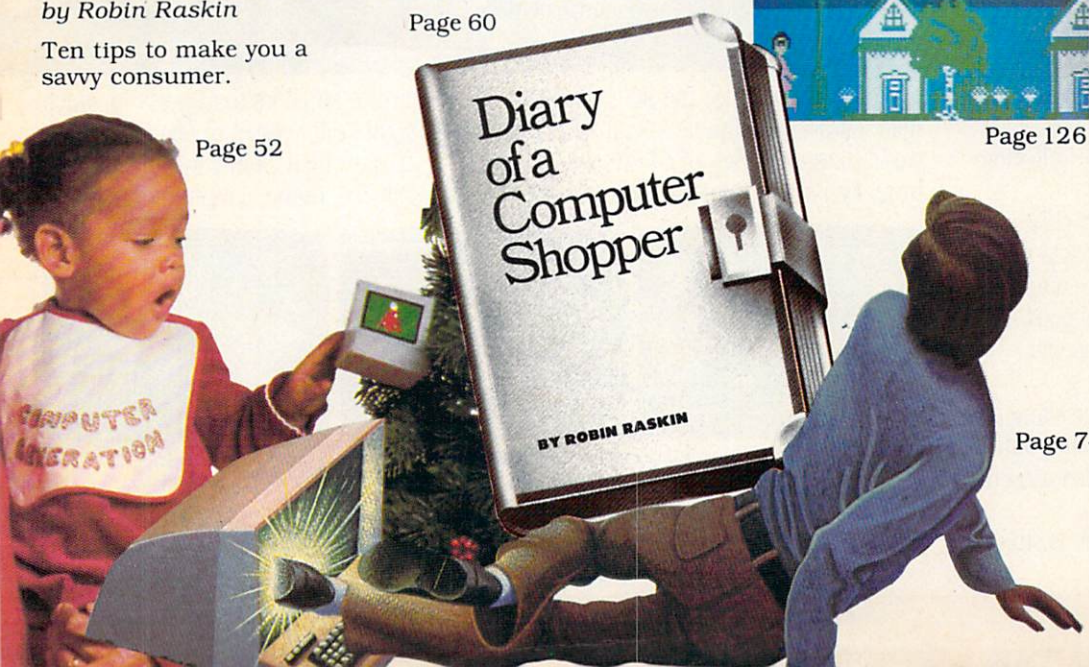

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Why every kid should ha

Today, there are more Apples in schools than any other computer.

Unfortunately, there are still more kids in schools than Apples.

So innocent youngsters (like your own) may have to fend off packs of bully nerds to get some time on a computer.

Which is why it makes good sense to buy them an Apple® IIc Personal Computer of their very own.

The IIc is just like the leading computer in education, the Apple IIe. Only smaller. About the size of a three-ring notebook, to be exact.

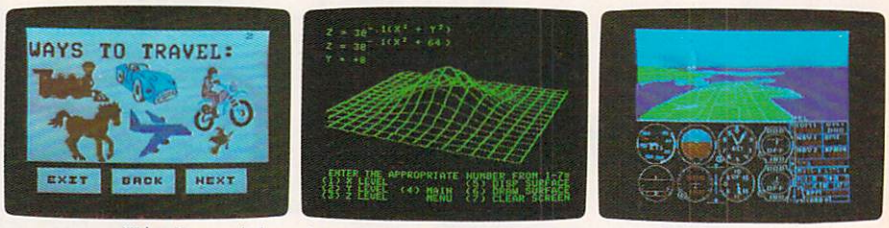
Even the price of the IIc is small—under $1100.*

Of course, since the IIc is the legitimate offspring of the IIe, it can access the world's largest library of educational software. Everything from Stickybear Shapes™ for preschoolers to SAT test preparation programs for college hopefuls.

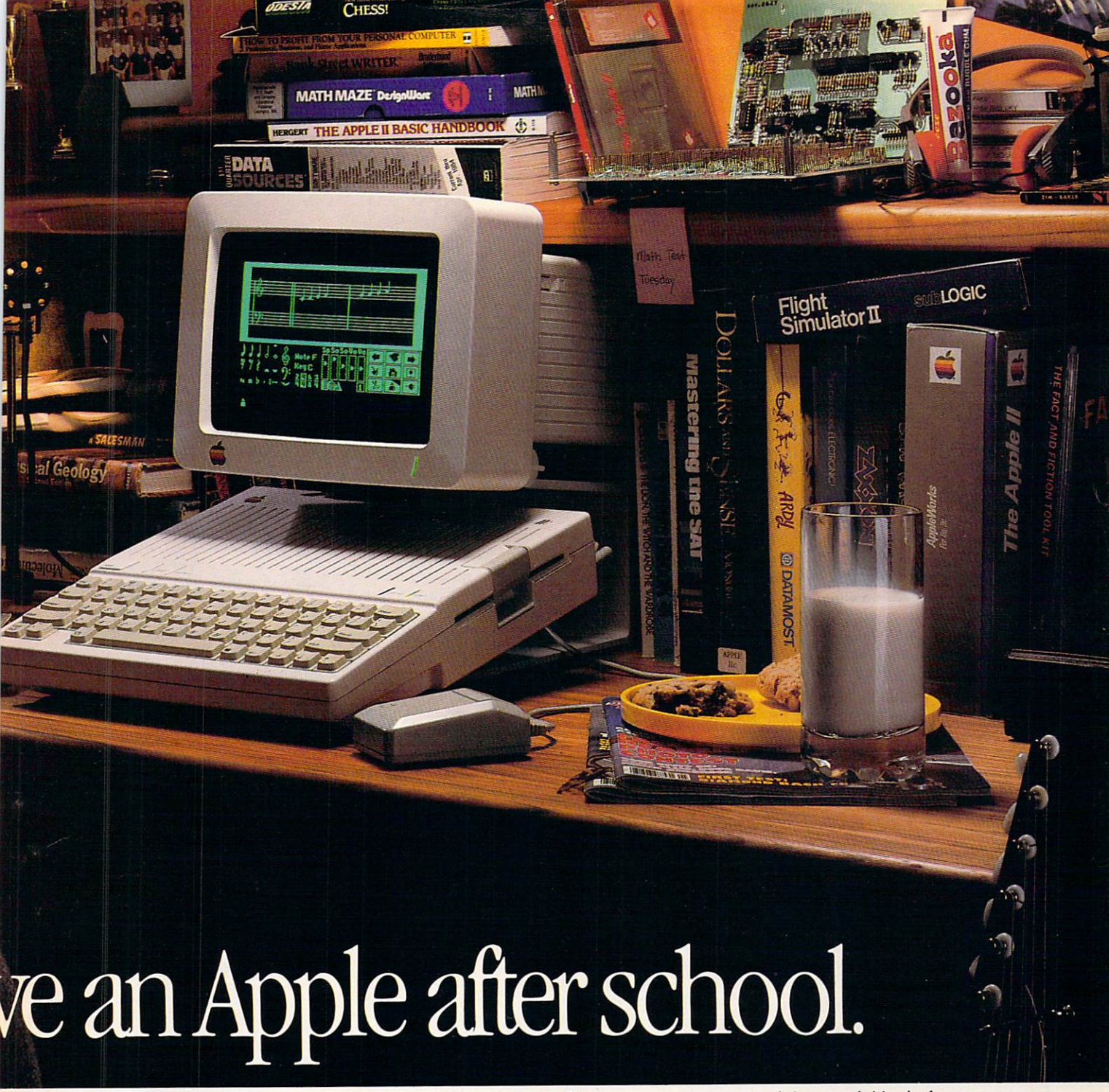
In fact, the IIc can run over 10,000 programs in all. More than a few of which you might be interested in yourself.

For example, 3-in-1 integrated business software. Home accounting and tax programs. Diet and fitness programs.

Not to mention fun programs for the whole family. Like "Genetic Mapping" and



With a IIc, your kid can do something constructive after school. Like learn to write stories. Or learn to fly. Or even learn something slightly more advanced. Like multivariable calculus.



ve an Apple after school.

"Enzyme Kinetics."

And the Apple IIc comes complete with everything you need to start computing in one box.

Including a free 4-diskette course to teach you how—when your kids get tired of your questions.

An RF modulator that can turn almost any TV into a monitor.

As well as a long list of built-in features that would add about $800 to the cost of a smaller-minded computer.

128K of internal memory—twice the power of the average office computer.

A built-in disk drive that would drive up the price of a less-senior machine.

And built-in electronics for adding accessories like a printer, a modem, an AppleMouse or an extra disk drive when the time comes.

In its optional carrying case, the IIc can even run away from home.

So while your children's shoe sizes and appetites continue to grow at an alarming rate, there's one thing you know can keep up with them. Their Apple IIc.

To learn more about it, visit any authorized Apple dealer. Or talk to your own computer experts.

As soon as they get home from school.

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EDITOR'S NOTE

THE BEST-EVER END TO SHOPPING BLUES

I've talked to several people who took one trip to the store and ended up more intimidated by shopping for a computer than by learning to use one. A single factor makes shopping so painful: lack of knowledge.

Editorial research we've conducted indicates that our readers most appreciate the basic kinds of help we provide to make buying decisions easier. That means easy-to-understand product information and articles that simulate the shopping situation, accompanied by guidelines to making the task a lot easier.

Since people are especially concerned with shopping during the holidays, we decided now was the time to put the emphasis there. So we worked especially hard this month to beat the boast on our cover. And we feel pretty secure that we've delivered on our promise—"The Best-Ever Shopping Guide"—to arm you with the understanding and the facts you need to make the right purchases. This issue will guide you in buying hardware, software, and a wide range of peripherals and computer accessories to consider as gifts.

Two bonus services that should also come in handy are "Diary of a Computer Shopper" (page 60), useful for both the novice and the out-of-practice or out-of-patience shopper, and our compilation of special software offers (page 55) that will help you find good software and good deals.

A first for us this month is "Murder at 220 Merrill" (page 74), a novel piece of computer fiction. We were beguiled by author Jeanie Ransom's unusual slant on adventure games (in her first piece of published fiction) when the manuscript reached our office, and hope that you share our enthusiasm.

When talking about "best-evers" it's impossible to overlook our staff. I'm glad I have this opportunity to thank them here for all they've done to make life at FAMILY COMPUTING the best working experience I can imagine. So thank you Vincent and James, Laura, Nick, June, Lance, John J., and John W., Joey (and Elaine and newborn Erin, in California), Sarah and Bill, Roxane, Linda and Kathryn, Karen and Suzie, and Annie, to round off our editorial and art staff. For running our business, thanks to Shirrel, Steve A., Glenn, Charlene, Harold, David and Michael, Deede, John S., Lisa and Pat, Robin, Virginia and Kay, and Lou, Bruce, Steve R., Deborah, and Brenda, Steve T., Millie, Susan, Marianne, Carol, Megan, and Anne.

And to all our contributing editors, who come through for us each month, thanks to Jamie, Peter, Chuck, Tony, Mindy and Becky, Jeff, and Robin, and to Joe and Steven. And I don't want to forget our regular contributors, our printer, Quad/Graphics, color separator, Impact Graphics, and typesetter, Cosmos.

Above all, a very special expression of thanks to the hundreds of thousands of readers whom we keep in mind every month as we create each issue, we hope the way you want it. You've been responsible for giving me FAMILY COMPUTING, the best present I've ever had—any season. Happy holidays to you all!

Claudia Cohl

CLAUDIA COHL
EDITOR-IN-CHIEF

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Now, **that's** natural selection!

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LETTERS

A TEACHER'S AIDE

I am writing to tell you how happy I am to have discovered FAMILY COMPUTING. I have recently bought a VIC-20 computer for use in my classroom. I have been dismayed at the lack of software available. Your April issue listed actual programs I can use with the VIC-20. Plus it offered an article that guided me toward two videolike games I can buy with confidence, and steered me clear of wasting money on less than perfect games.

MRS. SHEBAR
Freeport, New York

LOOKING FOR COMPETITION?

"The Secrets of Teenage Software Stars" (September 1984 issue) included entering computer competitions as a way of making a name for yourself in the computer industry. Recently, as contestants in the Apple Computer Clubs' Competition '84, more than 40 youngsters and computer club advisers made a name for themselves!

A panel of five judges, who are experts in educational computing, selected six projects as winners. More than $100,000 worth of computer equipment and prize money was awarded nationally.

I invite FAMILY COMPUTING readers associated with schools and youth organizations to form a computer club and join in the 1985 Apple Computer Clubs' Competition. For information and club guidelines, write to the Apple Computer Clubs, P.O. Box 948, Lowell, MA 01853. The 1985 competition promises to be even bigger and more exciting than the 1984 competition! Who knows, maybe a FAMILY COMPUTING readers' youth group will win $1000s worth of Apple computer hardware and software.

JOHN D. MARVELLE
Associate Director,
Apple Computer Clubs
Lowell, Massachusetts

A TOP 10 RATING

I guess you can say I enjoy computers and reading FAMILY COMPUTING. Your graphics programs entertain me for hours and hours. Your finest graphics program was *Portrait* (July 1984 issue). I have had so much fun drawing pictures. Whenever I get a magazine in the mail from your company, I am thrilled.

On a scale of 1 to 10, you're a fabulous "10." Keep up the good work guys.

ANTHONY TODD, *age 12*
San Jose, California

THE SOFTWARE BEHIND THE HARDWARE

I have enjoyed your magazine since it first appeared last year. Your articles have been interesting as well as informative. As I was reading the September Letters column, I took note of an item that hit close to home. In answer to a reader's question, you wrote that the Commodore 64 version of the KoalaPad is used to do the Basic Booth cartoon. While I was pleased to hear of its practical application, I feel that you told half the story. Behind every piece of great hardware is a great piece of software. In this case the software for

The computer monitor so ingenious,

If you're torn between buying a dedicated monitor and making do with your regular TV, there's a smarter alternative. The General Electric Monitor/TV.

First and foremost, it's a computer monitor.

Compatible with all major computer brands, it combines these advanced features to sharpen text and graphics and deliver a display that's easy-on-the-eyes: Direct and split video inputs; 320-line resolution via a comb filter; plus a computer grade, .5mm-pitch Neovision™ picture system.

For the name of your nearest dealer, call The GE Answer Center™ Information Service, 1-800-626-2000.

the Commodore 64 KoalaPad is *KoalaPainter*, written by Audio Light, Inc. Thank you for the opportunity to clarify a point.

PETER D. WICKMAN
Audio Light, Inc.
Los Gatos, California

IN SEARCH OF SOFTWARE

In your November 1983 issue, there was an article, "Software for Preschoolers." The software *Hodge Podge* was highly recommended. It was great, reasonably priced, and by Dynacomp. The only problem is, we still have not been able to locate this software, or the address of Dynacomp. Can you help us out? We have one Apple IIe and four preschoolers badly in need of programs designed for their age level.

MR. & MRS. HENRY A. KOCH
Richfield, Wisconsin

EDITOR'S NOTE: *You can write Dynacomp at 1064 Gravel Road, Webster, NY 14580, or call (716) 671-6160.*

HOOKED ON ADAM

OK, so it worked! I'm a proud owner of an ADAM computer. Because you and Coleco gave me four free issues of FAMILY COMPUTING, I'm hooked.

After getting my issues, I'm pretty sure I'll get a subscription. You have one of the best computing magazines around. A little of everything. In your August issue, I loved the *Hangman* and *Renegade Robot* programs. Please, more programs like these and less like *Ice Cream Cone*.

How about special sections for different computers (i.e. Apple, Atari, Commodore, TRS-80, TI, and of course, ADAM)? You could have the programs in each section and explain how they work and give programming hints.

JACK REEDY
Alto, Michigan

EDITOR'S NOTE: *Thanks for the compliment and the suggestions. We're thinking about them.*

THANKS FOR TELECOMPUTING

It was with much surprise and appreciation that I came across your section on telecomputing in the August issue. I am a novice when it comes to modem use and had, until recently, been looking for a medium which covered this rapidly expanding field. Few magazines cover telecommunications with the detail and clarity of FAMILY COMPUTING.

Again, my thanks for your decision to cover this exciting facet of the home computer. If I may, I would like to call your readers' attention to one of our local boards, Wizzardy, which can be reached at (713) 952-3210.

SEAN KUNEC
Houston, Texas

CORRECTIONS

In the October "Buyer's Guide to Printers," we incorrectly listed information on Smith-Corona's Fastext-80. The $259 printer has dot-matrix output. In addition, cassette ribbons can only be purchased in a dual pack for $18.95. In the same Buyer's Guide, the Brother HR-15 was listed incorrectly as a dot-matrix printer; it is a daisywheel.

BEHIND THE SCREENS

PEOPLE, NEWS, AND TRENDS

EDITED BY BILL CAMARDA

Reading, Writing, and . . . *Zork*?

Erving School students enjoy high-tech talk with Infocom game writers.

School's an adventure in Millers Falls, Massachusetts, where Micki Siegel and Mike Lipinski, fifth- and sixth-grade teachers at Erving Elementary School, use Infocom "interactive-fiction" games to teach reading, writing, and organizational skills.

In these games, a player takes the role of the main character, typing instructions—where to walk, what to pick up, etc. To solve them, you have to think logically, plan, and use ingenuity—plus, you have to use correct spelling and grammar.

"All the skills—mapping, directionality, reading for understanding—that the children would ordinarily learn by other methods can be done through the games," Lipinski said.

"You learn how to make your own decisions, how to do it on your own without the help of adults," said sixth-grader Cherie Willoughby. "You have to keep going back to places you've been and objects you've found, and asking yourself 'What's the purpose of that?' and then figuring out exactly how to use it."

When the Erving classes got stumped in figuring out one game, *Deadline*, they wrote to Infocom for hints. The company offered help, and also sent its first "junior adventure," *Seastalker*, which was still in the testing stage. "They sent evaluation forms for the kids to fill out—and the kids were very perceptive about what the game was lacking," said Siegel.

Infocom later invited the classes on a field trip to its Cambridge headquarters, where the students spent a day with the company's programmers. —LINDA WILLIAMS

Paperless Profits

Here's one company whose profits aren't only on paper. Intelligent Systems Corp., a Norcross, Georgia, manufacturer of PC add-ons, now offers its annual report on disk.

The disk includes spreadsheets and color graphics detailing how well each division performed last year, and describing the company's products. It also comes with market-research information that's rarely included in annual reports.

Leland Strange, Intelligent Systems' president, believes the disk-based annual report may itself be replaced soon, as companies begin to send their annual reports and financial updates via modem.

Intelligent Systems' annual report runs on the IBM PC (256K) or Apple II series (48K).

Taxing Requirements

Planning to write off a new computer at tax time? The rules have changed.

If you're using the computer strictly for business, you can still take advantage of both investment credits and depreciation. But if you use your computer for other things, too, the IRS is getting stingier.

To get an investment credit on the purchase of a new computer, you'll now have to show you're using the computer more than half the time for job-related tasks. Personal-business applications, such as home budgeting and investment analysis, won't count anymore.

If you use the computer for business part of the time, you can take a "depreciation" deduction for some of the computer's cost. *But*, if your computer use isn't primarily job-related, you'll have to divide that deduction over 12 years, instead of five.

Starting in the 1985 tax year, the IRS may request a detailed log of computer use to back up your claim of a deduction.

The new tax law affects not only computers but cars, boats, and leased property as well. If you want to see the new tax bill for yourself, the telecommunications network NewsNet is currently carrying the full text, with explanations. Call NewsNet at (800) 345-1301 for information. Needless to say, though, for expert advice you should ask your accountant.—ROXANE FARMANFARMAIAN

Apple Sends Felon to *pfs: jail*

Burglar Levi Anderson is now in prison, thanks to Howard County, Maryland, police and their Apple II plus.

Police knew there had been dozens of burglaries in and around a Columbia housing development. Using their computer and *pfs: file* database software, they discovered a pattern: The thief was working only between 4:30 p.m. and 10 p.m., and hitting homes with sliding doors. Knowing that, they were able to plan a stakeout that caught Anderson. He confessed to 48 burglaries, and is now serving a 25-year prison term.

Howard County police enter information on every break-in that's reported: point of entry, time of day, type of residence, and about 20 other categories. Then, whenever they suspect a pattern, they go to the computer.

In another case, *pfs: file* showed a pattern of burglaries early in the week, in apartments with ground-floor entrances. A police stakeout ended in an arrest; the alleged burglar is now awaiting trial.

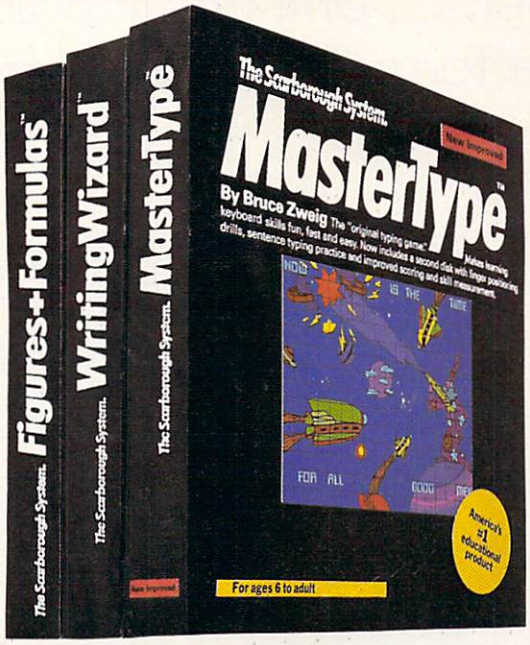
—KATHRYN BONN

ILLUSTRATION BY HOLLY KOWITT

Introducing

"New Improved MasterType™"

and the newest members of the MasterType Family.



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

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

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

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

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

Availability:

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

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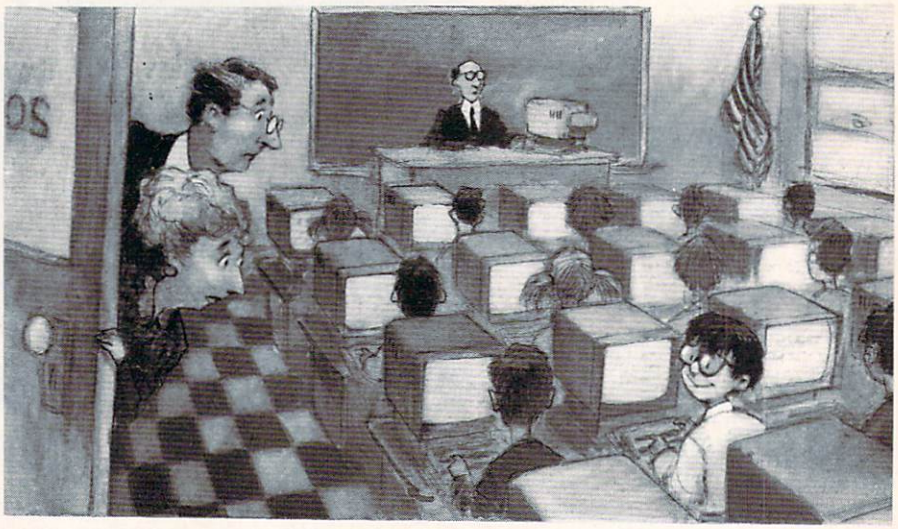
HOME-SCHOOL CONNECTION

LEARNING ABOUT WHAT THE KIDS ARE LEARNING
CAI, Computer Literacy, Drill-and-Practice . . . What Do all Those Terms Mean, Anyhow?

BY KAREL HOLLOWAY



My 9-year-old son, Benjamin, came home from school excited. The next day his class was going to begin using the computer in the fourth-grade classroom across the hall.

By the time he came home the following day, his excitement was gone.

"All we do is put in a tape and do some math problems for about 10 minutes, and then go back to our classroom," he said in a disappointed tone. Benjamin wanted to learn programming.

I'd thought that programming started in the fourth grade, but, just to make sure, I called school to ask.

"We start to use the computers in grade K, with CAI. It's mostly drill-and-practice. Computer literacy doesn't start until middle school," the teacher told me.

What? CAI? Drill-and-practice? Computer literacy? Exactly what do these terms mean? And what are kids using the computer for? I wondered.

TYPES OF USES

As I was soon to find out, terms like computer-assisted instruction (CAI) and computer literacy are in common use. To further complicate things, not all schools use the terms alike. However, there are three basic categories of computer-related instruction that are easy to understand. All computer learning can be broken down as follows:

1. Teaching *with* the computer
2. Teaching *about* the computer
3. Programming

All terms I've heard thrown around fit into one of these broad categories.

TEACHING *WITH* THE COMPUTER

CAI is the most common form of teaching with computers today. When the term is used, it often refers to the electronic version of the math, spelling, or reading drills you did with pencil and paper as a child. Usually, a student will be given a disk or cassette tape to load into the computer and then will sit and do math problems, spell words, or complete sentences. Variations include arcadelike games with pictures and sounds that test a student's ability to come up with the correct answer before being shot down or devoured.

"When you talk about [computerizing] old-fashioned drill-and-practice . . . many people are against it because the computer is capable of so much more innovative drills," said Marjorie Ragosta, a senior, research scientist with the Educational Testing Service (ETS) in Princeton, New Jersey. "But that sort of thing works. Not only does it work, the kids don't really mind it."

Ragosta did a four-year study for ETS, the company that conducts many college entrance exams including the SAT, and found that students in grades 1–6 who used drill-and-practice programs for 10 to 20 minutes a day improved their skills in math. In language arts and reading, the ETS study found smaller but consistently positive gains.

Even if the computer drills in your child's school aren't the best available, they still give students individualized instruction that a teacher rarely has time to offer.

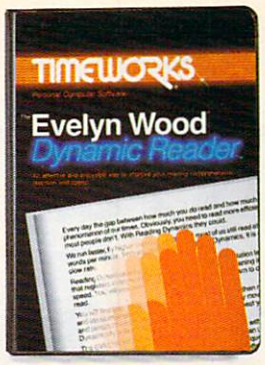
She said that students using the computer drill programs could do up to 100 math problems in a 10-minute session. "When you do it with pencil and paper, you don't get anything like that," Ragosta added.

The Mission Independent School District in Texas, near the Mexican border, has used CAI only for the past six years. Students spend 10 to 20 minutes a day with drill-and-practice programs, Lupe Gonzalez, director of the district's computer center reported, and have shown remarkable improvement in standardized test scores.

These programs are not just drill-and-practice. Highly specialized to first determine the child's level and then provide problems on that level, they immediately feed information to the student and teacher on how the child is doing. Subsequently, they move up levels of instruction as the

ILLUSTRATION BY HOWARD LEWIS

KAREL HOLLOWAY, *of Dallas, Texas, is a reporter for* The Dallas Morning News. *She wrote about Houston's "Computers Can" program in the January* FAMILY COMPUTING.



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Only Timeworks brings this highly successful reading program into your computer. It will guide you like a gifted teacher through the drills and exercises at your own comfortable pace, automatically record your progress, and let you graphically review your results on colorful bar charts.

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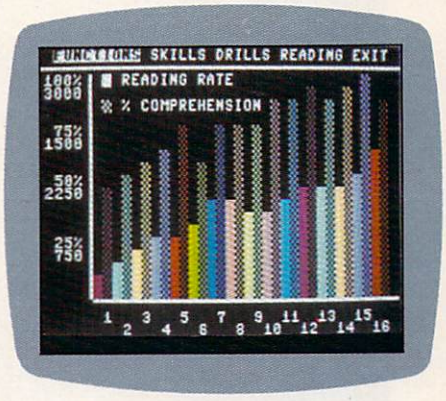

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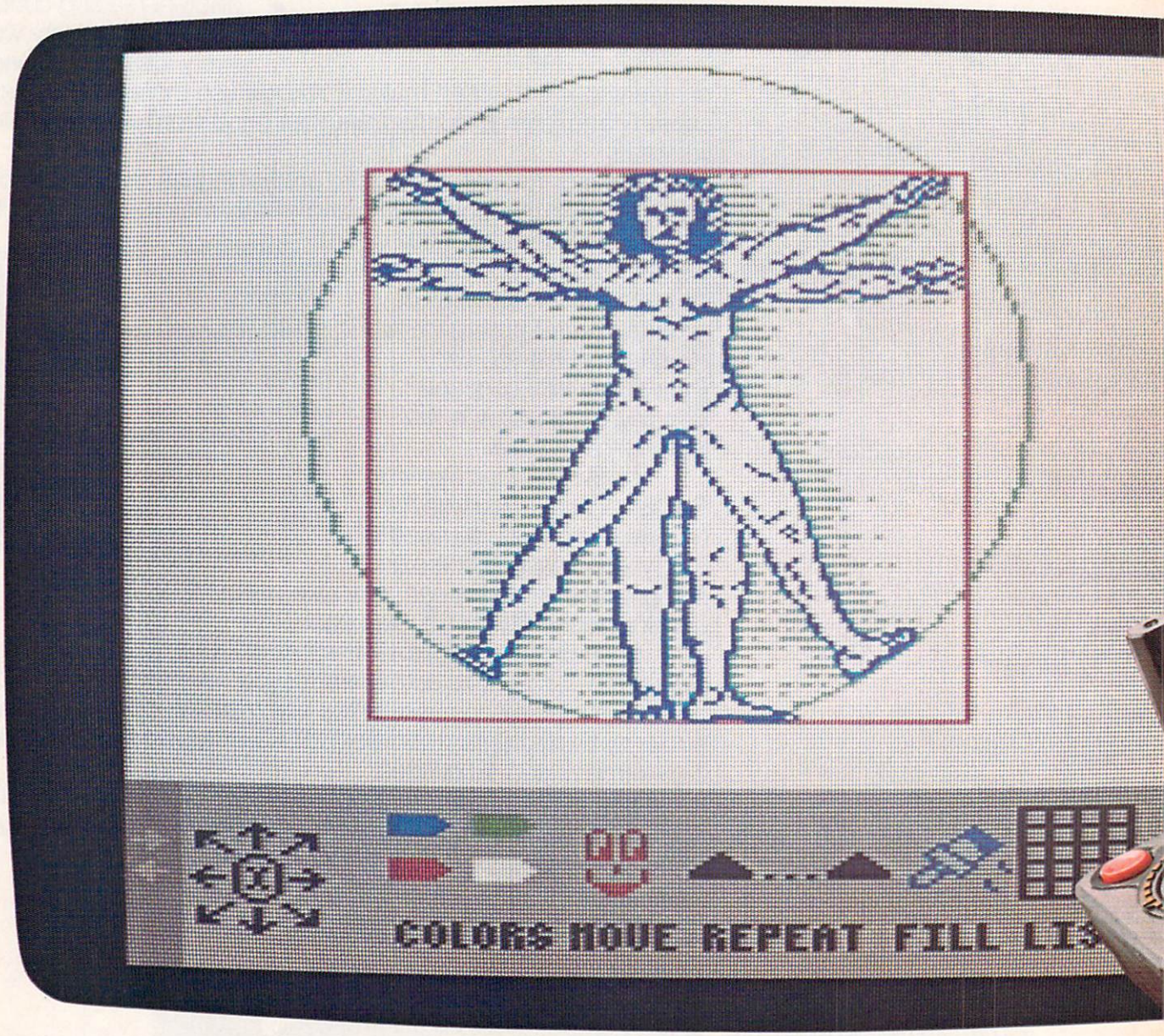

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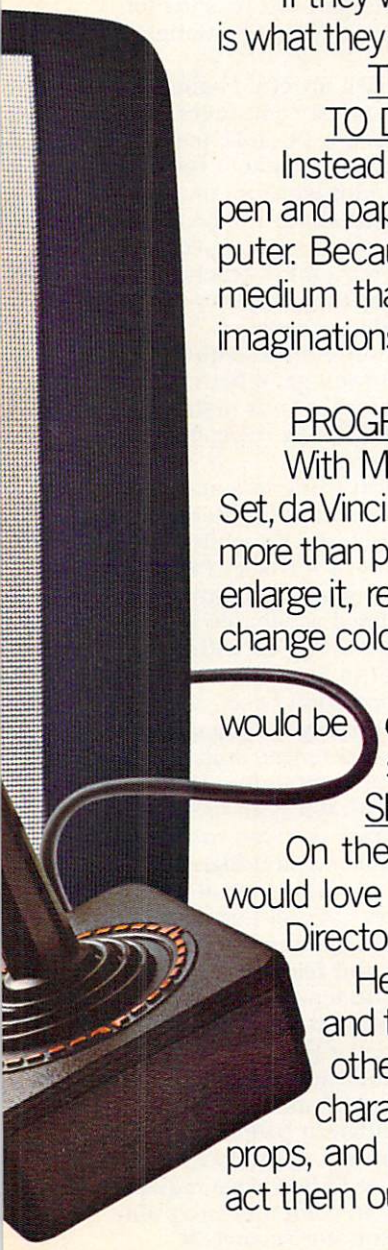

If they were starting out today, this is what they could start with. Pixelwerks.

THE OTHER WAY TO DRAW AND WRITE

Instead of a brush and canvas, a pen and paper, they'd create on a computer. Because Pixelwerks is the first medium that can keep up with their imaginations.

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With Mr. Pixel's Programming Paint Set, da Vinci (or any 8-year old) could do more than paint a picture. He could also enlarge it, repeat it, move it around, and change colors. Instantly.

And at the same time, he would be developing his programming skills. Painlessly.

SHOW DIRECTOR

On the other hand, Shakespeare would love to play around with Show Director.

He'd use it to create plots and think up one scene after another, and he'd get a big cast of characters, lots of backgrounds, props, and musical sound effects to act them out.

BANK STREET STORYBOOK

Dickens wouldn't be able to keep his hands off Bank Street StoryBook by George Brackett.

Not only could he write his own story, but he could also illustrate the scenes and characters he sees in his mind.

MR. PIXEL'S CARTOON KIT

Maybe Al Capp wouldn't be satisfied with cartoons that just sit on the page after he tried Mr. Pixel's Cartoon Kit. Because he could make his cartoons come to life by animating them. His characters could move around, and even react to each other.

Every kid has a touch of creative genius buried inside. The job of Pixelwerks is to bring it out, with more features, more options and more flexibility than other programs.

In short, we supply the tools. Kids supply the imagination.

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student progresses. They are defined as "tutorials" or diagnostic/prescriptive programs.

TEACHING *ABOUT* COMPUTERS

Because of the success Gonzalez's district has had with CAI, it has not been too interested in using the computer in other ways. Nevertheless, beginning in 1985, the district—like all other public school districts throughout Texas—must introduce a computer literacy course to middle school students as part of the state-required curriculum. The course is to cover computer terminology, history of the computer as a tool, communicating instructions to the computer, and issues and impacts of computer use.

The state decided to require a computer literacy program to ensure that all students had a chance to really use a computer for at least one period every day for one semester, said Sandy Pratscher, director of instructional computing for the Texas Education Agency.

Even though the agency requires computer literacy, it also encourages computer-assisted instruction.

"But to be really useful, and not just [substitute for] electronic flashcards," Pratscher said, "CAI must include high quality, appropriate software, teacher follow-up on the computer lessons, and enough time on the machines to be able to progress. Too often CAI programs don't have diddlysquat to do with the lesson being taught," she noted.

PROGRAMMING

The computer literacy course in Texas must also include programming—the key to understanding the term computer literacy. Some school districts use computer literacy to mean only programming instruction. Other districts teach computer literacy by teaching computer terms and uses from a textbook. Still others, like the Texas program, combine both in a single class during a single term. "We think it is important to include programming in this course, not for vocational reasons, but for educational reasons," Pratscher said. "It puts students in the driver's seat."

Paul Kimmelman, assistant superintendent for the Norton City Schools in Ohio, said his district will be concentrating on programming and CAI in computer literacy courses for the same reason it has music and phys. ed. classes.

"We feel we will discover students who are interested in programming when we offer it at a lower grade level," he said. "We are required to offer English; we are required to offer math; we should be required to offer computer programming. We may discover students particularly good at computer programming who are not good at English or math."

THE KEY TO SUCCESS

All the educators stressed that the key to all good computer-related instruction is planning. Whatever its name, a program cannot benefit the student unless clear objectives have been determined and the courses designed to meet those objectives. "The teacher or administrator should take the time to work out a plan," Kimmelman said.

It's not always easy to find out exactly what your children are doing with computers at school. Teachers and administrators, themselves often still unfamiliar with the terms involved, may have difficulty explaining how the computer is being used and what educational goals they are trying to meet.

Here are some questions you can ask to help get the answers you need:

1. How often does my child get to use the computer?

Generally, once or twice a week is not really enough to give measurable results in either drill-and-practice or computer programming. For maximum learning and reinforcement, students should be using the computer at least three times a week.

2. How long does my child spend at the computer?

The ETS study mentioned earlier showed that students could exhibit progress in math, reading, and language arts when spending as little as 10 minutes a day working with an individualized computer study program.

3. Are computer programs used just to drill my child on facts learned in the regular classroom?

One of the major complaints about educational software is that it does not support what is being taught in the regular curriculum. Ask how the programs used match up with other classes in the curriculum.

4. What do you mean by computer literacy?

This is a key question. Computer literacy can mean that students are taught about computer use, but get little, if any, hands-on experience. Or, it can mean that only computer programming—with no lessons on how computers work or on actual computer applications—is being taught.

Some educators (and parents) believe that all children must know how to program. Others believe that learning to use applications, such as word processing, should be the instructional emphasis. Still others see classroom lessons on computer use as sufficient. Make sure you know what your school district means when the administrators talk about computer literacy.

5. Why was this instruction method selected?

Educators should be able to give you well-thought-out reasons for their selection of instructional programs.

6. How will my child benefit?

In some cases, computers are being used simply because parents or companies have donated them to the schools. Administrators may not have thought about the benefits or goals of computer use. Make sure you (and your child's teacher) know exactly what the computer program is expected to achieve.

The answers to these questions should help you get a better understanding of what your district wants to accomplish with the computer in the classroom.

The closest thing to a standard definition of computer literacy may be that which the Education Technology Center's Advisory Panel came up with last year: "Computer literacy may be defined as whatever a person needs to know and do with computers in order to function competently in our information-based society. Computer literacy includes three kinds of competence: skills, knowledge, and understanding. That means: 1) the ability to use and instruct computers to aid in learning, solving problems, and managing information; 2) knowledge of function, applications, capabilities, limitations, and social implications of computers and related technology; and 3) the understanding needed to learn and evaluate new applications and social issues as they arise." The Advisory Panel admits that computer literacy may still mean different things to different people, but states that one thing it does *not* mean is the specialized knowledge required for a career in computer programming or computer science. FC

GAMES

STALKING THE PERFECT HOLIDAY GIFT

BY JAMES DELSON

If you're looking to fill a stocking, give a gift, or make the holiday season more enjoyable, here's a list of outstanding games to suit a variety of tastes.

Remember, don't judge a game by its splashy packaging or provocative title. Try to determine the game-player's preferences. Or buy according to personality, using the guide provided below.

Titles appear with manufacturers and hardware availability.

ARCADE GAMES

Arcade games require little or no learning time. And they are easily enjoyed in 15- or 30-minute play sessions.

Ideal for:

☐ Large groups of game-players.

☐ People who put in long hours at the computer for serious applications and who want a quick action breather from intense concentration.

☐ Kids and adults who grow impatient with demanding puzzle-solving exercises.

I'd recommend:

Boulder Dash from First Star/MicroFun, for Apple, Atari, Commodore 64, IBM PC

Buck Rogers from Coleco, for ADAM

Donkey Kong from Atarisoft, for ADAM (available from Coleco), Apple, Atari, Commodore 64, TI

Jumpman from Epyx, for Apple, Atari, Commodore 64, IBM PC

Tutankham from Parker Brothers, for ADAM, Atari, VIC-20

Parsec from TI/Triton Products, for TI

STRATEGY/ARCADE GAMES

Although they challenge your hand/eye coordination, success in these contests often demands that you plan out moves in advance, deduce the opponent's strengths and weaknesses, and learn from a careful analysis of your mistakes.

Ideal for:

☐ Game-players willing to spend more time at the computer, perfecting their skills.

I'd recommend:

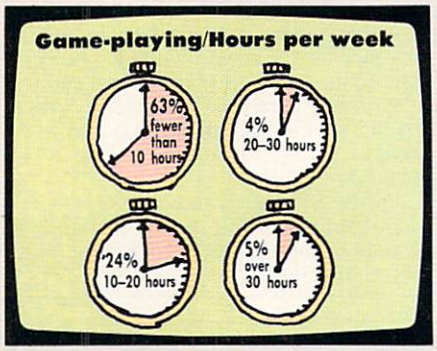
Archon II: ADEPT from Electronic Arts, Atari/Atarisoft, Epyx, Texas Instruments, Electronic Arts, Broderbund, Strategic Simulations, Commodore, Sierra Inc., Activision, Radio Shack, and Coleco garnered the most votes, in that order.

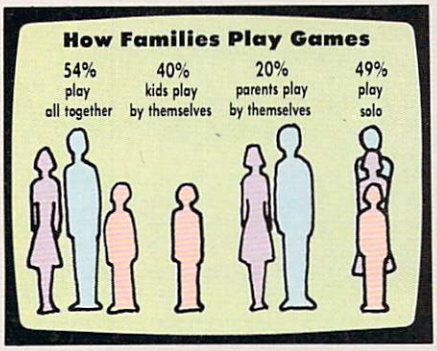
Arcade games led the field as the most popular form of computer entertainment, with 91 percent of the respondents reporting at least one family member hooked on them. Strategy/arcade games are a popular genre as well, with 65 percent saying at least one family member liked games, such as Electronic Arts' *Archon*. Role-playing adventures like the *Ultima* series, and text/graphics adventures like Infocom's *Zork* series or Sierra's classics are equally popular.

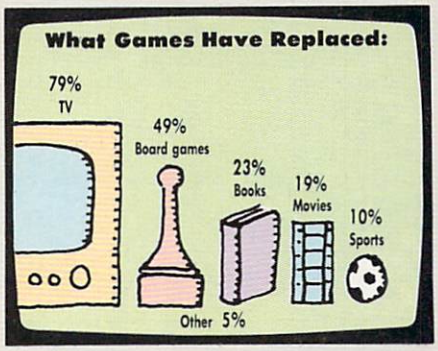
Readers suggested a variety of ways we might improve our games coverage. A large number of respondents requested more reviews of games involving strategy and tactics. They split when it came to requesting either more or less arcade game coverage. Of course, an enormous number of readers, particularly TI owners, asked for more reviews of games for their machine. I've encountered few noteworthy new games for this computer—the reason for the scarcity of TI reviews.

Thanks one and all for your responses. We've selected and notified the winners of the Games Giveaway. We wish them and all readers happy gaming in the coming year. Stay with us as we bring you more of the most exciting entertainment programs for your computer.

YOUR GAME-PLAYING AND BUYING HABITS







FAMILY COMPUTING's first Games Survey elicited a tremendous response. It's helped answer a number of questions we had concerning our readers' game-playing habits. Here are some of the most interesting facts and figures we obtained.

According to the respondents, Commodore 64 was the most popular computer brand used for game-playing, followed by TI/99-4A, Apple, and Atari.

People seem to play in moderation. Sixty-three percent of the responding families play fewer than 10 hours a week (*see chart*) with 24 percent playing 10–20 hours weekly, and only 5 percent playing over 30 hours a week.

Not many families impose restrictions on the amount of game-playing in the house—only 18 percent of the respondents. Thirty-three percent have some sort of rules regarding game-playing, however. Chores and homework must be completed before embarking on gaming sessions in many a home.

As you'd expect, TV-viewing has suffered most at the hands of computer game-playing. Seventy-nine percent spend less time watching the tube (*see chart*). Forty-nine percent play fewer board games, 23 percent read fewer books, 19 percent spend less time at the movies, and 10 percent participate less in sports. But that's not all. Some reported less eating, sleeping, sewing, and even taking care of fish since members started playing computer games.

GAMES—A FAMILY AFFAIR

Every member of the family played games in 63 percent of the responses. For the most part (54 percent), families play together, although solo-play is important, too (*see chart*).

As for how and what you buy, the average respondent owned 16 computer games and bought one the month prior to filling out the survey. The price paid is, for the most part, $25–$35, although almost a quarter of the respondents spend more than $35. And deciding on what to buy usually involves both parents and kids. Nine percent said that kids weren't involved at all; only 3 percent said parents weren't involved at all. Buying, of course, is a different matter: 64 percent said parents paid for the games, while kids foot the bill in 18 percent of the households that responded.

When asked to name their favorite computer game, readers gave *Parsec* (TI/Triton Products), *Wizardry* (Sir-tech), *Donkey Kong* (Atarisoft), *Lode Runner* (Broderbund), *Archon* (Electronic Arts), *Flight Simulator* (subLogic), and *BeachHead* (Access Software) the most votes.

As for designers, only 10 percent of the respondents listed a favorite. Scott Adams (*Adventure*), Bill Budge (*Pinball Construction Set*), Marc Blank (*Zork*), and David Crane (*Pitfall*) rated highest.

Favorite game-making companies proved easier to identify. Forty-seven percent voted in that category. Infocom,

GAMES

for Atari, Commodore 64
Beach Head from Access, for Atari, Commodore 64
Beyond Castle Wolfenstein from Muse, for Apple, Commodore 64
Castle Wolfenstein from Muse, for Apple, Atari, Commodore 64, IBM PC
Combat Leader from Strategic Simulations, for Atari, Commodore 64
Mig Alley Ace from MicroProse, for Atari, Commodore 64
Operation Whirlwind from Broderbund, for Atari, Commodore 64
Raid on Bungeling Bay from Broderbund, for Atari, Commodore 64
Skyfox from Electronic Arts, for Apple
Star Raiders from Atari, for Atari
Submarine Commander from Thorn EMI, for Atari, Commodore 64

STRATEGY AND TACTICS

Learn firsthand how battles were waged and won or lost with this genre which simulates all manner of warfare. These difficult games require advanced planning, coordination of a number of different details, and may take several hours or days to complete.
Ideal for:
☐ World history buffs.
☐ Players who like long and serious competition.
☐ Solo or group play.
I'd recommend:
Battle for Normandy from Strategic Simulations, for Apple, Atari, Commodore 64, IBM PC
Fortress of the Witch King from Avalon Hill, for Apple, Commodore 64
Gulf Strike from Strategic Simulations, for Atari
Legionnaire from Avalon Hill, for Apple, Atari, Commodore 64
Lordlings of Yore from Softlore, for Apple
Parthian Kings from Avalon Hill, for Apple, Commodore 64
Tigers in the Snow from Strategic Simulations, for Apple, Atari, Commodore 64, IBM PC/PC*jr*

TEXT AND TEXT/GRAPHIC ADVENTURES

These games make you the hero of a novel—as the plot unfolds you encounter more obstacles to the completion of your quest. First-rate problem-solving skills are a prerequisite here, though it's often fun for the whole family to get involved.
Ideal for:
☐ Puzzle and braintwister fans.
☐ People who like to use their wits.
I'd recommend:
Enchanter (all text) from Infocom, for Apple, Atari, Commodore 64, IBM PC/PC*jr*, TI, TRS-80
The Mask of the Sun from Broderbund, for Apple, Atari, Commodore 64
Pirate Adventure (graphics) from TI/Triton, for TI
Suspended (all text) from Infocom, for Apple, Atari, Commodore 64, IBM PC/PC*jr*, TI, TRS-80
Ulysses and the Golden Fleece from Sierra Inc., for Apple, Atari, Commodore 64, IBM PC/PC*jr*

ARCADE/ROLE-PLAYING ADVENTURES

These games feature moving pictures and more interaction with the computer.
Ideal for:
☐ Arcade gamers with adventurous urges.
☐ Adventure gamers with arcade itches.
I'd recommend:
Aztec from Datamost, for Apple, Atari, Commodore 64
King's Quest from Sierra Inc., for IBM PC
Murder on the Zinderneuf from Electronic Arts, for Apple, Atari, Commodore 64, IBM PC

FINANCIAL

Manipulate money, develop strategies to beat the system, and/or your competitors in a race for the most—whether you're dealing in stocks and bonds, real estate, or synthetic bananas. These challenges require a lot of time, planning, and thought.
Ideal for:
☐ Junior financiers and executives.
☐ Students learning the ins and outs of economic wheeling and dealing.
I'd recommend:

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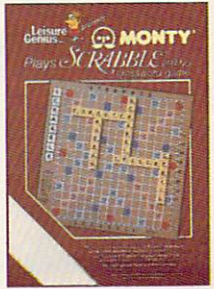

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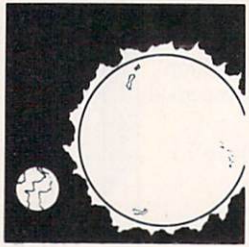
This extremely easy to use home finance program will help you pick the best type of loan for your budget. See what a small difference a couple of percent makes on a 4 year car loan, and what a devastating effect a couple of percent makes on a 20 year mortgage. You can print out an amortization table of any loan. You can figure out the value of an investment based on one initial deposit, or deposits made yearly, semiannually, monthly, or weekly.



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The classic game that has fascinated computerists for over a decade. Commanding the bridge of your starship, you explore the galaxy, fending off the Klingon invaders with your phasers and photon torpedoes, at the same time conserving your limited time and energy.

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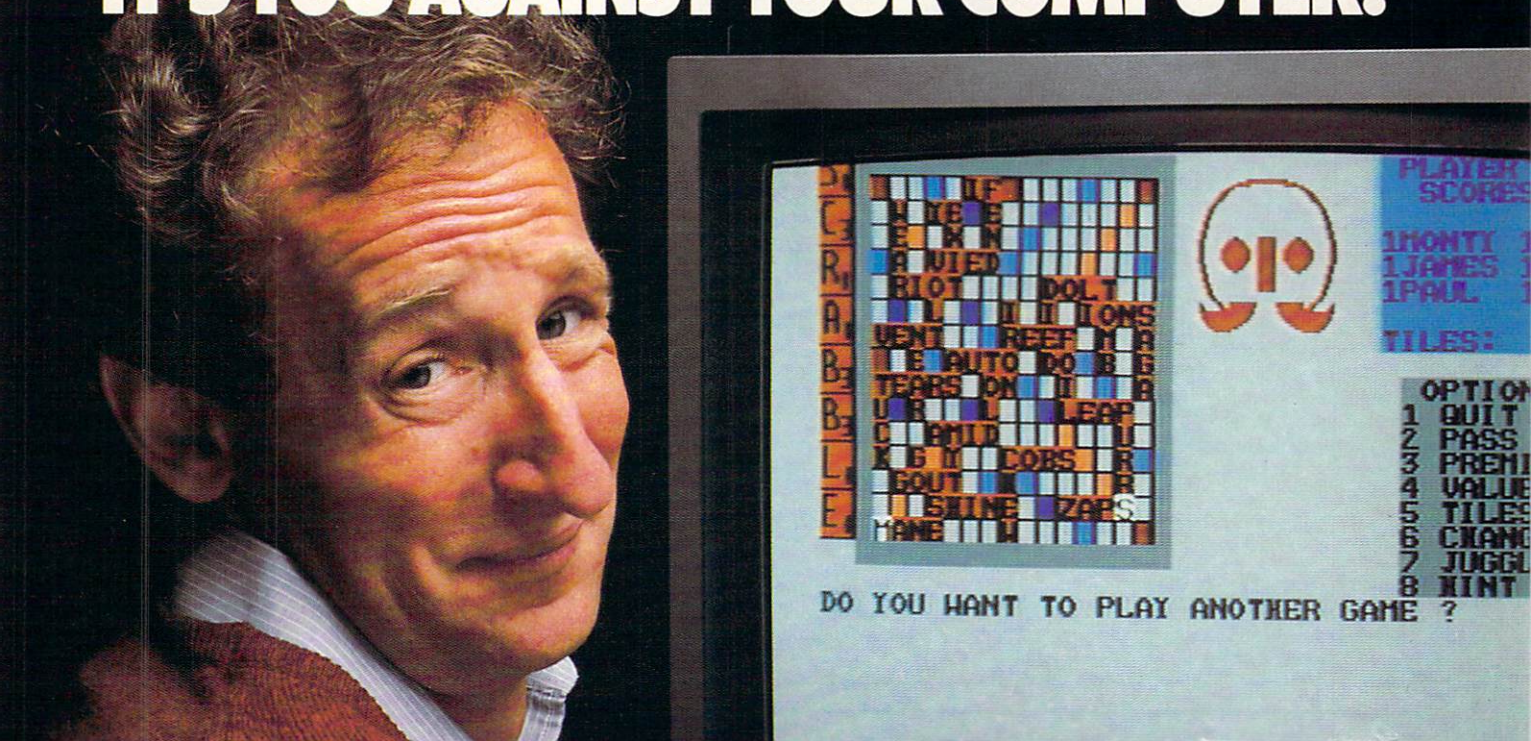


GAMES

Cartels and Cutthroats from Strategic Simulations, for Apple
M.U.L.E. from Electronic Arts, for Atari, Commodore 64
Oil Baron from Epyx, for Apple, Commodore 64, IBM PC
Rails West! from Strategic Simulations, for Apple, Atari, Commodore 64
Run for the Money from Scarborough Systems, for Apple, Atari, Commodore 64, IBM PC

SPORTS

Ideal for:
☐ The sports enthusiast.
☐ Arcade gamers looking to challenge fellow joystick pros.
☐ Group or solo play.
I'd recommend:
Julius Erving and Larry Bird Go One-on-One from Electronic Arts, for Apple, Atari, Commodore 64, IBM PC
Professional Tour Golf from Strategic Simulations, for Apple, Commodore 64, IBM PC/PC*jr*
Rocky from Coleco Industries, for ADAM
Star League Baseball from Gamestar, for Apple, Atari, Commodore 64
International Soccer from Commodore, for Commodore 64

CONSTRUCTION SETS

Ideal for:
☐ Tinkerers and mechanics.
☐ Arcade gamers who've ever thought "I could have made it better."
☐ Group fun—build games to challenge family and friends.
I'd recommend:
Lode Runner from Broderbund, for Apple, Atari, Commodore 64
Mr. Robot and His Robot Factory from Datamost, for Apple, Atari, Commodore 64
Rally Speedway from Adventure International, for Atari

ROLE-PLAYING ADVENTURES

You create characters and send them into action on a quest for treasure or fame. If dragons and dwarves, exploration and questing are the fancy of the gamer on your list, these should go over splendidly. Fun and compelling, this breed isn't to be tackled lightly. Games can last for months.
Ideal for:
☐ Extended group play.
☐ Dreamers and romantics over 10 years old.
I'd recommend:
Galactic Gladiators from Strategic Simulations, for Apple, IBM PC/PC*jr*
The Seven Cities of Gold from Electronic Arts, for Apple, Atari, Commodore 64, IBM PC
Ultima II from Sierra Inc., for Apple, Atari, Commodore 64, IBM PC
Tunnels of Doom from TI/Triton Products, for TI
Ultima III from Origin Systems, for Apple, Atari, Commodore 64, IBM PC
Wizardry series from Sir-tech, for Apple

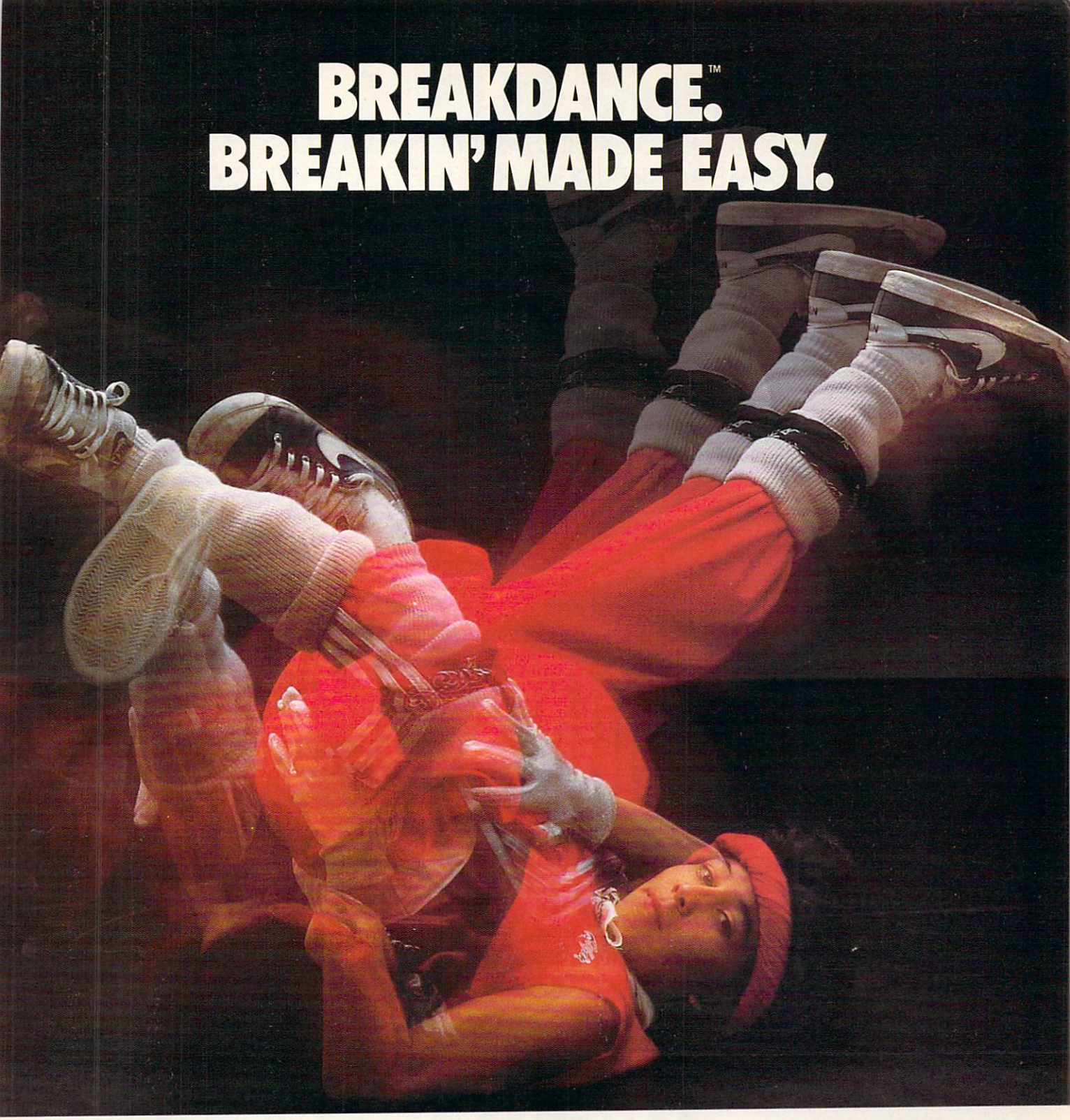
BEGINNER GAMES FOR KIDS AND CAUTIOUS ADULTS

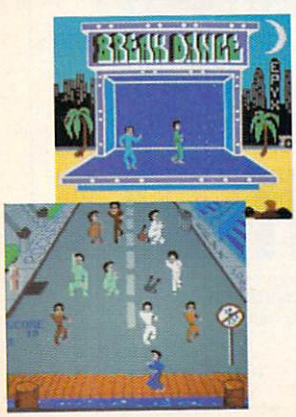
Ideal for:
☐ The game player who isn't so fearless.
☐ People who haven't gotten their feet wet.
☐ Limited play sessions.
☐ Group, as well as solo play.
I'd recommend:
B.C.'s Quest for Tires from Sierra Inc., for ADAM, Apple, Atari, Commodore 64, IBM PC/PC*jr*
Bristles from First Star, for Atari, Commodore 64
Gateway to Apshai from Epyx, for ADAM, Atari, Commodore 64
Gumball from Broderbund, for Apple, Atari, Commodore 64
Motor Mania from United Microware, for Commodore 64
Rabbit Trail from Funware/Creative Software, for TI
Star Wars: The Arcade Game from Parker Brothers, for ADAM, Atari, Commodore 64
Triple Brain Trust from Reston, for IBM PC/PC*jr* FC

JAMES DELSON *is* FAMILY COMPUTING*'s games critic. Next month he will give his list of the year's best.*

ADAM

BREAKDANCE.™
BREAKIN' MADE EASY.





The hottest craze in the U.S. this fall is Breakdancing, and you don't have to miss it. Now anyone can Breakdance. Just grab your joystick and control your Breakdancer in poppin, moon walking, stretching and breaking...all on your computer screen.

Breakdance, the game, includes an action game in which your dancer tries to break through a gang of Breakers descending on him, a "simon-like" game where the dancer has to duplicate the steps of the computer-controlled dancer and the free-dance segment where you develop your own dance routines and the computer plays them back for you to see. There's even a game that challenges you to figure out the right sequence of steps to perform a backspin, suicide or other moves without getting "wacked."

Learn to Breakdance today! Epyx makes it easy!

One or two players; joystick controlled.

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Strategy Games for the Action-Game Player

COMPUTING CLINIC

INCOMPATIBLE DISKS • TI DISK FILES • ON-LINE LOCKUPS GARDEN PROGRAMS • CARTRIDGES FOR THE COCO • VIC-20 SOFTWARE•

BY JEFFREY BAIRSTOW

Are any two disk drives compatible? Disks from my daughter's Commodore 64 will not work in the drives on my Franklin 1000. Why is this so?

ROSCOE MURRAY
Carson City, Nevada

Unfortunately, the recording formats for disks differ from manufacturer to manufacturer, so disks used in one maker's computer cannot generally be used in a model from another supplier. This is true for Franklin and Commodore, for example.

Some computers that use the CP/M operating system can read disks from other CP/M computers; many of the IBM PC-compatible systems can also interchange disks. In addition, there are programs available to convert disk formats from CP/M to IBM PC-DOS or MS-DOS, but none, as far as I am aware, to convert from Commodore to Apple (Franklin) formats, or vice versa.

How do I set up files on my TI-99/4A with a disk drive? When I called TI, I was told to look it up in the manual.

JASON DELOZIER
Bedford, Texas

Setting up disk files in BASIC is a relatively complex operation. Unfortunately, space does not permit me to give you complete instructions here. However, TI is correct—the information is in your manuals.

I suggest that you begin by reading the section in your TI-99/4A *User's Reference Guide* on "File Processing." Work through the examples, substituting DSK1.FILENAME for CS1 in the programs. Then read the section of your *Disk Memory System* manual that explains the use of the "Disk Manager Command Module" that came with your disk drive.

I have a Commodore 64 with an Automodem 1650. Once in a while, when I am talking to another computer, the keys lock up so I can't communicate although the other computer can. Is this the fault of the modem or the computer?

JONATHAN TOFEL
Bennington, Vermont

When there's a problem with telecommunications, the phone line is always a prime suspect. Most telephone lines were designed for voice messages, not data, and the least bit of "dirt" or "noise" throws a monkey-wrench. If the telephone tones are

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.*

Get even more involved in the adventures—by winning a computer of your own!

You already know about the BYTES BROTHERS mysteries—the exciting series of stories you solve yourself with the help of a home computer. Imagine how much fun it would be if that computer *were yours*! Here's your chance. Look for a BYTES BROTHERS book display and pick up your Entry Form—or put your name and address on a plain piece of paper.

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One Commodore 64™ Computer with: disk drive, printer, 13" color monitor and modem (retail value over $1000)

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One Commodore 64™ Computer with: disk drive and modem (retail value over $500)

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Prizes will be awarded to the first three coupons drawn at random. No purchase necessary to win. All entries must be postmarked no later than February 15, 1985. Chances of winning depend upon number of entrants. Send all entries to:

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BECAUSE NOT ALL TYPING GAMES HAVE TO BE SHOOTING DOWN SPACESHIPS.

Why do typing programs have to involve shooting down spaceships? They don't!

9 TO 5 TYPING lets students and adults learn to type using an effective method developed by college educators. We've taken the ten basic steps to learning typing and combined them with the fun of sequences from the movie, 9 TO 5.* What could be better than learning the key locations while helping Doralee lasso Hart. Or increasing your speed while taking pot shots at Hart in a shooting gallery. All the fun of the movie combined with an innovative new approach to learning touch typing.

9 TO 5 TYPING. The typing game for everyone...Spaceships not included.

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Strategy Games for the Action-Game Player

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distorted or disturbed by noise from other telephone circuits, garbage characters can be generated that may appear as errors on your screen.

But your problem seems to stem from other causes. If you have this problem with one particular information service, or individual computer, then check to make sure your settings match.

If your keys "lock up" even when you aren't connected to another computer, then the fault is probably the computer's. Commodore 64s have been known to break down.

Finally, it's possible that you are operating in full-duplex, and the other computer is not "echoing" characters back to you. If this is the case, your keys haven't locked up; you just can't see what you're typing. Try switching to half-duplex.

What companies besides Radio Shack make game cartridges for the TRS-80 Color Computer?

SHIRLEY A. PRETTYMAN
Laurel, Delaware

Radio Shack is the only company that makes cartridges for the Color Computer. However, a number of independent software manufacturers market software in cassette format for the CoCo. Check at a Radio Shack Computer Center for the *Directory of Reviewed Software*. This thick, three-ring binder, published by Radio Shack, lists third-party software for all Tandy/Radio Shack computers, describes the type, and gives each listing a rating (one to five stars).

Is the Commodore VIC-20 out of production? If so, and if no new software is available, is there any conversion (or emulator) available that allows the VIC-20 to operate Commodore 64 software?

RICHARD E. PITMAN
Marion, Arkansas

The VIC-20 is, by all indications, no longer in production, and software for it from Commodore is increasingly hard to find. However, since many VIC-20s are still in use, independent software makers continue to offer programs for that machine. You may have some success in obtaining VIC-20 software by mail order from one of the companies advertising in the classified columns of this magazine.

Unfortunately, there's no way to upgrade a VIC-20 to run Commodore 64 software.

Do you know of a good gardening program for the Apple IIe?

ROGER D. THOMAS SR.
Marion, Illinois

There are a number of gardening programs for the Apple IIe and other computers. I suggest you investigate *The Gardener's Assistant*, available for the Apple II plus/IIe/IIc ($39.95), IBM PC/PC*jr* ($45), and the Commodore 64 ($29.95), from Shannon Software, Box 6126, Falls Church, VA 22046; (703) 573-9274.

This program will allow you to produce graphic displays of suggested garden layouts, and recommends planting quantities and dates for more than 50 vegetables. FC

ATTENTION TI OWNERS!

In the September Clinic, we omitted mention of a major supplier of TI-99/4A products: UNISOURCE, P.O. Box 64240, Lubbock, TX 79464; (800) 858-4580, in Texas (806) 745-8834.

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Easy user.

Letter Wizard is an ideal word processing program for even the most serious wordsmith in your family. It boasts a spelling checker and compatibility with all popular printers. Nice thing is, commands are a whiz to learn and perform.

Easy writer.

Compose and edit right on the screen. At the stroke of a key, you can move, delete, insert, search and replace words and paragraphs like. . .well, magic.

Easy speller.

Letter Wizard includes a spelling checker which allows easy in-line corrections of over 33,000 words. And you can even create custom dictionaries of your own special words. Have we got you under our spell yet?

Easy buyer.

OK, a powerful program like this must cost a powerful lot of money, right? Stuff and nonsense. Even though Letter Wizard offers more than most, it costs less than most. And that's no voodoo.

For Commodore 64, Apple II and Atari systems.

Letter Wizard™ with Spelling Checker by Datasoft®

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You've experienced his barbaric world in movies, novels and comics. Now Conan is ready to spring to life in your home.

So flex your muscles and prepare to do battle.

Your mission is to slay Conan's wicked rival and bring home a bounty of gems. Blocking your way are fire-breathing dragons, poisonous scorpions, vicious bats and other deadly adversaries.

If that weren't enough, you also have to fight your way through dark caves and dangerous dungeons. One false step and you'll be swallowed up in red-hot lava pits. And watch out for all those mysterious, supernatural creatures waiting to do you in.

Whew! Are you strong enough to play Conan?

For Commodore 64, Apple II series, Atari and IBM PC & PC/JR systems.

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TELECOMPUTING

BANKING ON THE FUTURE

A Traditional Industry Turns High-Tech

BY JUNE ROGOZNICA

You're leaving tomorrow at 6 a.m. for a long-awaited, two-week vacation in the Bahamas. You just remembered you haven't made the monthly mortgage payment that's due Tuesday. You don't have enough in your checking account to cover it. You glance at your watch. It's 3:32:09 p.m. Your bank just closed. Big problem. The automated-teller machine at your bank doesn't allow fund transfers. You ponder the alternatives:

1. Try to arrange a later flight even though you'll lose your "super-saver" fare.

2. Take a chance. Send the check and hope they don't cash it until your return.

3. Don't send the check and hope your loan officer won't miss it.

4. Take your planned flight. Don't worry about losing your house. You always liked apartment life anyway.

None of these alternatives is ideal. They may work. Then again, they may not. The problem is, these may be your only alternatives—or at least they were, until the emergence of home banking.

Gone is the time when banks lured customers with toasters, clock/radios, and televisions—premiums offered to depositors. Today, banks are turning away from toasters and toward high technology. Their reasons: to keep old customers, woo new ones, and reduce the cost of a labor- and paper-intensive industry.

JUNE ROGOZNICA *is the managing editor of* FAMILY COMPUTING.

Whether their tryst with technology will be successful is uncertain. What's even more important to thousands of Americans is whether the concept of home banking is sound, and the service useful. Here we'll attempt to answer some of the questions most frequently asked.

WHAT *IS* HOME BANKING?

Home banking is a relatively new service offered by some banks, thrifts, and holding companies. It allows an individual to conduct normal banking transactions such as fund transfers and up-to-date check balancing at home during nonregular banking hours. With nearly all home-banking institutions you can pay your bills on-line. For example, with electronic funds transfer, money is moved directly out of your checking account into the vendor's (payee's) account. There are, however, certain important transactions that you cannot do, such as make deposits and withdrawals.

HOW TO GET STARTED

First, you must open or have an account at a financial institution that provides home banking. You will need a computer or terminal, a modem, and communications software. There are a variety of home-banking systems, and each system

ILLUSTRATION BY GIL EISNER

LAST NIGHT WE EXCHANGED LETTERS WITH MOM, THEN HAD A PARTY FOR ELEVEN PEOPLE IN NINE DIFFERENT STATES AND ONLY HAD TO WASH ONE GLASS...

That's CompuServe, The Personal Communications Network For Every Computer Owner

And it doesn't matter what kind of computer you own. You'll use CompuServe's Electronic Mail system (we call it Email™) to compose, edit and send letters to friends or business associates. The system delivers any number of messages to other users anywhere in North America.

CompuServe's multi-channel CB simulator brings distant friends together and gets new friendships started. You can even use a scrambler if you have a secret you don't want to share. Special interest groups meet regularly to trade information on hardware, software and hobbies from photography to cooking and you can sell, swap and post personal notices on the bulletin board.

There's all this and much more on the CompuServe Information Service. All you need is a computer, a modem, and CompuServe. CompuServe connects with almost any type or brand of personal computer or terminal and many communicating word processors. To buy a Starter Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call or write:

CompuServe

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5000 Arlington Centre Blvd., Columbus, OH 43220

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Most people a medical problem

It's right before your eyes. In a cardboard box. Or a shoebox. Or crammed in files with enough paperwork to do the U.S. Government proud.

Your medical records.

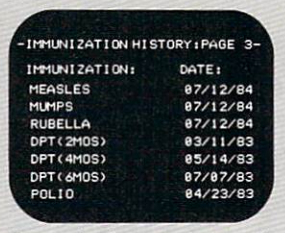
And there's a potential problem whenever you can't get at certain records easily. Because when there's an emergency you might need these records. Fast.

Fortunately, this is a medical problem that can be solved. Before it happens. By you. Easily. With Avant-Garde's *An Apple A Day...*™ software.

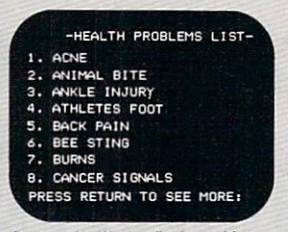
Part of our To Your Health Series, *An Apple A Day...*™ lets you keep a complete medical file on everyone in your family. A file that can be updated with a few taps of the fingertips. A file that keeps track of immunizations, blood pressure, triglycerides, laboratory results, x-ray exposure, height, weight, blood type, cholesterol, drug allergies, physician visits, hospitalizations, and special medical problems.

But most importantly, a file that is kept in one, easy-to-get-to location.

And if you have a printer, you can make copies. Copies for your doctor. Your insurance agency. Your child's school nurse. Even for tax purposes.



Immunization records are only one of over 12 records that can be called up instantly with the program's medical records disk.



Say you'd like to find out if you have acne and what can be done about it. Punch number 1 and answer the easy questions.

THE NEXT BEST THING TO HAVING A DOCTOR NEXT DOOR.

Is having one right in your home. Well, sort of one.

The program's medical advice disk, created by Dr. Edward Weinstock, can help you identify, treat, and prevent 47 everyday medical ailments. Quickly. Safely. From acne to athlete's foot. All by answering easy-to-understand questions.

A little friendly advice, however. Any time you think you need to see a doctor there's only one thing you should do. See one. Immediately. In no way is this program meant to be a substitute for regular examinations or treatment by a qualified physician.

NO MORE FUMBLING FOR IMPORTANT PHONE NUMBERS.

With *An Apple A Day...*™ there are no pages to flip. No phone books to fiddle through.

Because it'll store every single important medical phone number you may need in case of an emergency. For the family physician and dentist, a para-

don't know when they see one.

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

It'll even keep directions to the nearest emergency room.

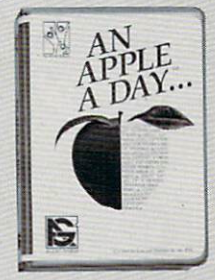
And for the Fidos and Felixes in your family, there are forms to list numbers of the vet and nearest 24-hour emergency pet hospital.

With a printer, you can make copies of the entire directory. Post one by the phone. Give one to the babysitter. Keep one in the car.

GETS ALONG WITH EVERYBODY'S.

If you have Apple's II, II+, IIe, IIc or IBM's PC, PCjr or Commodore's 64, you've got all you need to run this program. Except an electrical outlet.

So if you're looking for a better way to keep up with all the shots, bumps, bruises, coughs and sneezes in your family, pick up *An Apple A Day...*™ Look for it at your local computer dealer.



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

Than left to pile up.

To learn more about our educational and personal productivity software, write: Avant-Garde, P.O. Box 30160, Eugene, Oregon 97403. An Apple A Day...™ is a trademark of Avant-Garde Publishing Corp.

AVANT-GARDE

is compatible with different computers. For example, Pronto, offered by Chemical Bank of New York and in the planning stage at quite a few other banks, is compatible with Atari, Apple, Commodore, Compaq, and IBM computers. Penn Security Bank & Trust Co. of Scranton, Pennsylvania, serves the same computers as well as ADAM, Apple's Macintosh, TRS-80, and several others.

In general, basic monthly fees range from $7.50 to $15 plus the cost of local telephone calls. At least one bank, however, charges 10 cents a minute or $6 per hour. (This assumes, of course, that you already have the hardware and communications software necessary to go on-line.)

THE ADVANTAGES

The primary benefit of a bank-at-home service is the convenience. It allows a customer to perform banking transactions on a more flexible schedule. In general, home-banking services are available between 6 a.m. and midnight.

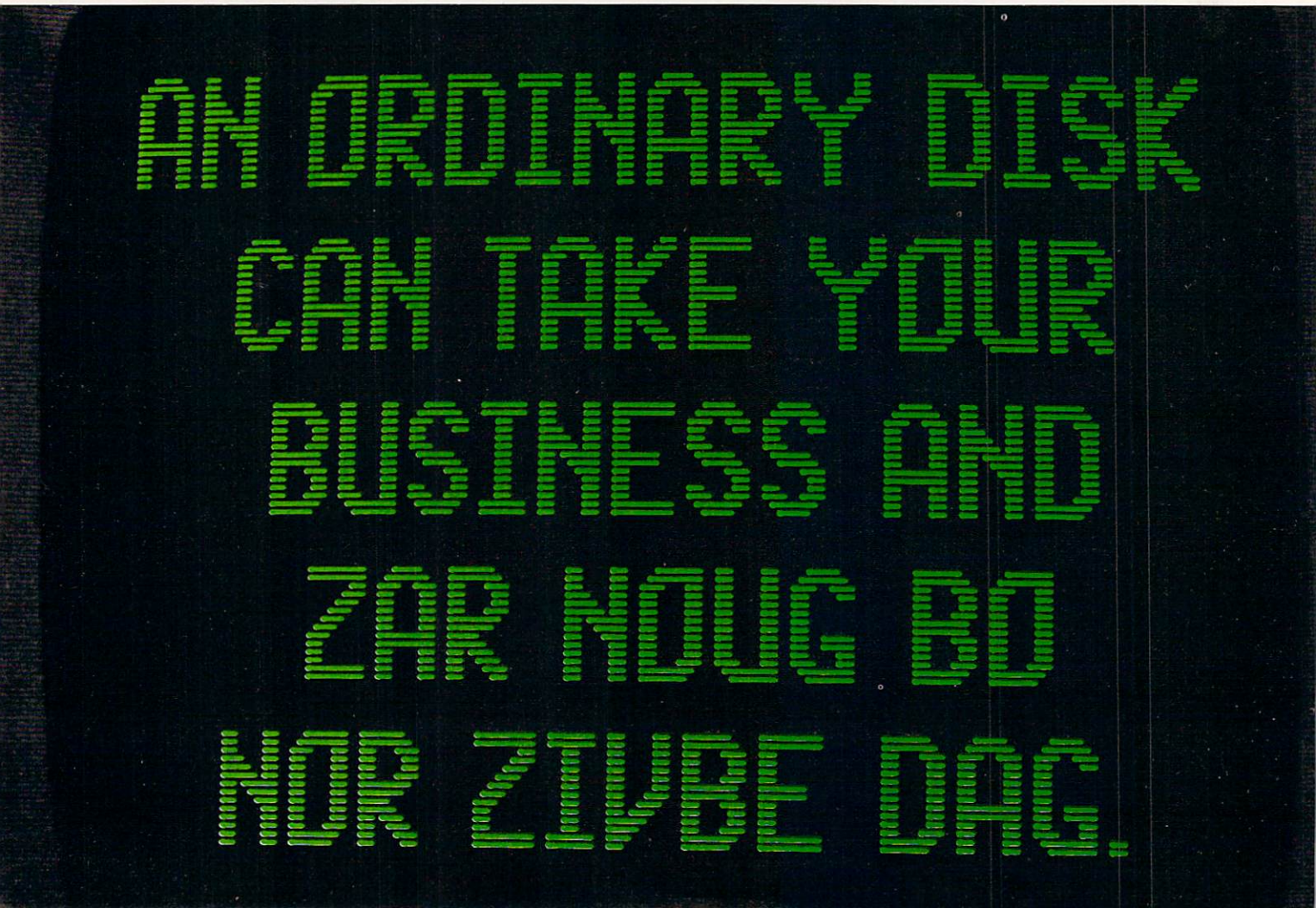
For Vincent Brennan of Ridgewood, New Jersey, home banking's greatest asset is the ability it gives you to manage cash in your accounts on a daily basis. Brennan, a principal for Peat, Marwick, Mitchell & Co., a public accounting and consulting firm, was part of a pilot program conducted by AT&T and CBS. "I could make deposits into an interest-bearing account, stagger my bill payments, and make more interest on my available funds," Brennan explained.

However, if you're dealing with small sums of money, like $300 in a savings account, the benefits will be barely noticeable. "If you're talking about $30,000 in a money-market account, it can make a big difference," Brennan said.

Brennan noted that in the past he shopped for high interest rates, interest-bearing checking accounts, low service charges, and high returns on certificates of deposit. "Whether I had to drive two miles or five miles, it was worth it for me. But, I would be willing to accept the lower interest rates on the deposit for the total convenience and flexibility of home banking." Though the pilot program has ended, Brennan plans to get home banking when it's offered at a financial institution in his area.

But, you don't have to sacrifice a higher interest rate to get home banking. In fact, Penn Security Bank & Trust Co. gives higher rates (2 points higher) on certificates of deposit to customers who obtain them through its home-banking service. The reason: to stimulate activity in the home-banking area, according to Audrey F. Markowski, an assistant vice president at Penn Security.

The bank, the only one in Pennsylvania to offer bank-at-home services, also has a two-month free-trial period. Additionally, after customers sign up for it, they are given two hours of free service each month. There are other enticements as well. Chemical Bank allows new Pronto users to purchase an Atari 300-baud modem for $75, $65 below the regular cost.



WHO'S ON LINE?

Location	Institution	System	Bill Paying	Statement On-Line	Brokerage	Additional Service Provider
California	Bank of America NT&SA, San Francisco	Own	□	□	O	T-M
District of Columbia	Madison National Bank, Madison	Own	□	□	X	O
Florida	Bank of Coral Gables, Coral Gables	VTN	□	□	O	K-R
Florida	Continental National Bank, Miami	Own	□	□	O	X
Florida	Dadeland Bank, Miami	VTN	□	□	O	K-R
Florida	Southeast Bank NA, Miami	VTN	□	□	O	K-R
New York	Chemical Bank, New York	PRO	□	□	O	PRO
New York	Citibank NA, New York	Own	□	□	O	DJ
New York	United States Trust Co., New York	Own	X	□	□	X
Ohio	Huntington National Bank, Columbus (BancShare)	CIS	□	□	O	CIS
Ohio	Huntington National Bank, Columbus (ExpressWire)	Own	—	—	NA	—
Ohio	NCR Universal Credit Union, Dayton	Own	□	□	O	CIS
Ohio	Toledo Trust Co., Toledo	VBK	□	□	X	O
Pennsylvania	Penn Security Bank & Trust Co., Scranton	Own	□	□	X	O
Tennessee	United American Bank, Memphis	DA	□	□	X	X
Canada	Bank of Montreal, Montreal	INF	O	□	X	INF

States with banks that have home-banking services planned or in pilot stages: Arizona, Arkansas, Connecticut, Illinois, Massachusetts, Michigan, New Jersey, North Carolina, South Carolina, Washington, Wisconsin

Key: □ = *Operational*; O = *Planned*; X = *No plans to implement*; CIS = *CompuServe*; DA = *Data One Inc.*; DJ = *Dow Jones News/Retrieval*; INF = *Informart*; K-R = *Knight Ridder Newspapers' Viewdata Corp. of America Inc.*; Own = *Proprietary*; PRO = *Pronto*; T-M = *Times Mirror Videotex Service*; VBK = *VistaBanc (Toledo Trust Co.)*; VTN = *Viewtron.*

*Chart reprinted with the permission of *AMERICAN BANKER* copyright July 23, 1984.

The time saved is probably the most obvious benefit of home banking. "If it typically took you two hours to pay bills on a bimonthly basis, you could probably do it in a half hour [with home banking]," Brennan said. Jon Patrick Harper of Sunnymead, California, saves "the commute time and fuel costs associated with trips to the banks" by using Bank of America's HomeBanking Los Angeles.

THE DISADVANTAGES

Home banking is not quite the panacea it might appear to be at a glance. There are problems—flaws inherent in the system of telecomputing—particularly physical limita-

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tions. "Home banking doesn't alleviate the problem of going to the bank and making deposits—or getting cash," Brennan explained. As a result, using home banking doesn't totally eliminate his trips to the bank.

With home banking in its infancy, there are additional bugs to be worked out. There are occasional time lags since most of the information passes through the bank's mainframe computer.

There's the question of system security. Is there a way other users can access another person's account and transfer funds? In general, bank officials say that fear is unfounded. But, others insist there is room for improvement. One home-banking user involved in a voice-based network (his terminal was hooked up to a TV set and telephone-based terminal) overheard another user speaking in his home. "Now, had he verbalized his access number and account number, I might have been able to access his account. And, I have no idea if my voice was ever overheard."

The user suggested incorporating "device integrity" into the system as a way to guard against "break-ins." Device integrity requires that transactions be made from an authorized and validated terminal, usually in the user's home. That way, someone else could not access your account unless they logged on from the designated terminal or computer.

WHO USES IT?

There are about 26,000 American households that now bank at home through terminals or microcomputers, according to a study conducted by *American Banker*, a newspaper that covers the banking industry. That number is expected to grow substantially as the quantity of personal computers and modems in the home increases. Communications Studies and Planning International Inc., a New York-based consulting firm, predicts that there will be 9 million personal computers in homes by the end of this year. And, 10 percent—or nearly 1 million—of those computers will be equipped with modems.

But those in the banking industry admit that converting computer users into home-banking users is not an easy task. Says Mason Ellerbe, a management assistant with the American Bankers Association, "Getting people to use the system is generally harder than getting the system set up."

THE FUTURE

"To a great extent, you can think of the personal computer in banking as being where the automatic-teller machines were 10 years ago," says Gary Arlen, president of Arlen Communications Inc., a consulting and research firm specializing in interactive services. "People didn't think they'd be using them, but now they're waiting in line to use them." Others, both inside and outside the industry, are optimistic that home banking will become more widespread. But, they are also realistic that it will take some time.

John Fisher, senior vice president of Banc One Corp., Columbus, Ohio, has a more visionary view of home banking. "There are generic services being provided now, but there will be more exotic, specialized services in the future." For example, "If you want to buy a car and get a loan for it, you'll be able to access the current rate through your computer." And these services won't be confined to the home, says Fisher. They'll be available in offices and public access areas such as shopping centers. Who knows? The next step may be banking from a hotel in the Bahamas. FC

HOW IT WORKS—ONE USER ON-LINE

One of my biggest banking problems has always been the bank's hours. When it's open, I'm working, and when I'm free, it's closed. Now, thanks to my computer, I usually do my banking—at home—at about 11 p.m. on Saturday, after my kids and I get back from the movies.

With home banking, I can take care of nearly all my month's banking during a single session at the computer. The process begins when I turn on my Apple II plus computer and load the *Smartcom I* telecommunications software for my Hayes Micromodem IIe.

Next I hook up my computer to the bank's by dialing a local or a toll-free number. When the bank's computer answers, I follow a simple log-on procedure, which is explained in the users' guide provided by my bank, Bank of America. Then, I provide my customer number and passcode. (I often think how much faster and more pleasant the log-on procedure is than standing in line at the bank.)

When the main menu appears, I have several transaction choices. I most often use the PAY BILLS option, which I access by entering the number next to it and pressing RETURN. When the menu appears, I indicate which of my accounts I want to use for making payments.

I have two sets of bills to handle: those I pay electronically and those I continue to write manually. By using electronic funds transfer, there's no lead or float-time. The date I specify payment is to be made is the date I'm credited with the payment. This earns me maximum interest on my funds.

I return to the main menu by using shorthand commands, like =EM for ELECTRONIC MAIL and =TF for TRANSFER FUNDS. A few seconds later I move funds between appropriate accounts to cover the payments I've just scheduled.

Next, I pull up on my screen what will become my next month's statement. Here, I verify my deposits and the checks that have cleared. When my statement comes, I have a neat, concise statement instead of reams of canceled checks.

If I have a question or a problem, I use the service's electronic mail process which is handled by a bank clerk. It's similar to writing a short letter, except that it's all done on a computer screen. After I've sent my messages off, I return to the main menu to make sure there's nothing else I want to do. Seeing nothing, I type in =LO, shorthand for LOG OFF, and sign off for the night. Total elapsed time? Five minutes.

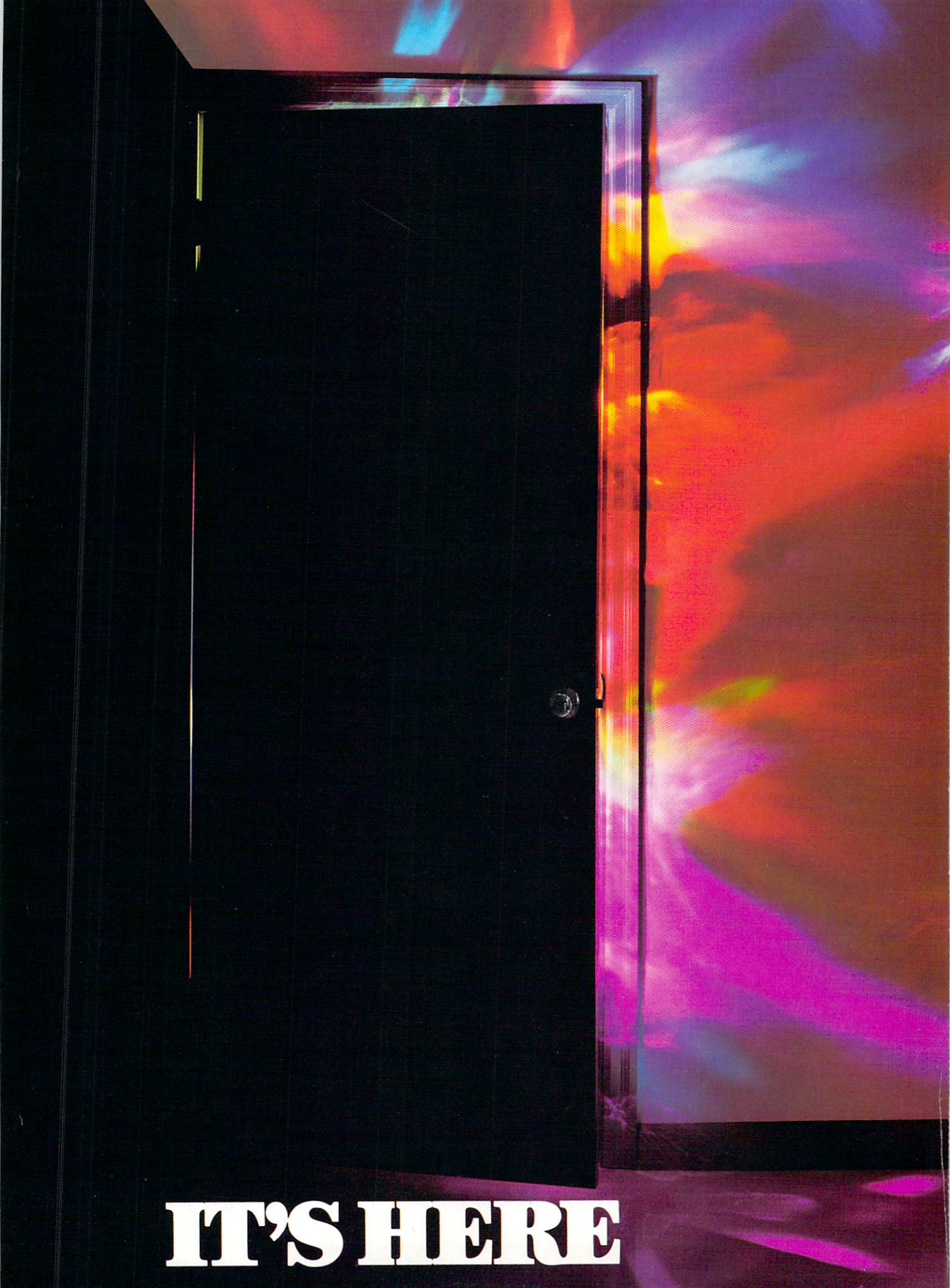
—JON PATRICK HARPER

ELECTRONIC EDITION

FAMILY COMPUTING *has started an "electronic edition" on CompuServe. Here, you may read fast-breaking news and reviews, post messages for the editors and other users, attend live conferences, and generally participate in the creation of a new electronic magazine. Type* GO FAM *at any CompuServe prompt to check it out!*

You can also leave messages (SourceMail) for FAMILY COMPUTING *on The Source (account No. T15483).*

To operate these electronic services, FAMILY COMPUTING *uses modems supplied by Hayes Microcomputer Products, Inc.*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If you use your personal computer to keep track of mortgage payments, tuition payments, balance your checkbook or jump ahead of the Dow Jones', there's good news for you. You'll find that the new OKIMATE 10 gets down to business quickly. And easily.

A "Learn-to-Print" diskette and tape shows you how to set up your new personal color printer and start printing. A complete OKIMATE 10 Handbook will show you how you can take your imagination to places it's never been before.

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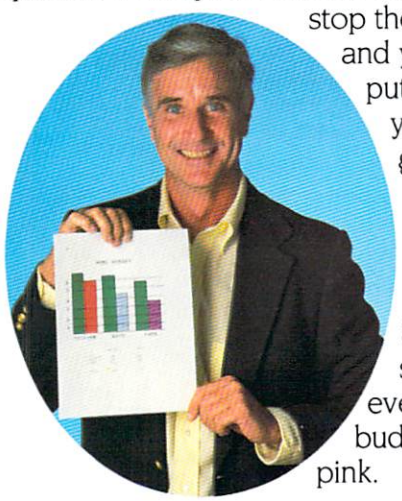
PERSONAL COLOR PRINTER UNDER $250.

And while your imagination is soaring, you'll be glad to know that your new printer can keep right up with it! The new OKIMATE 10 is built with the same tradition of quality and manufacturing excellence that has made Okidata the most respected name in computer printers. Okidata craftsmen specially designed and engineered the new OKIMATE 10 to be incredibly small and lightweight. And they made it quiet as a whisper. But their imagination didn't stop there. To help you and your personal computer keep within your personal budget, they made the OKIMATE 10 available at retailers everywhere for less than $250. Something that should make every personal budget tickled pink.



Color your world.

If you've been playing games on your personal computer, now you can get serious and still have fun. The new OKIMATE 10 is completely compatible with a variety of software packages that will run on your Atari and Commodore with a simple disk drive. Just load and you're off and running. Plotting charts. Designing special graphs. Creating original illustrations and pictures. Drawing special graphics. And printing them all beautifully for everyone. On most kinds of paper. In over 26 beautiful colors!

QUESTIONS & ANSWERS

Q: Why do I need a printer?

A: You might as well ask, "Why do I need crayons?" When it comes to communicating, "putting it on paper" is still the best way to get your message across. You can have lots of computer equipment, but without the OKIMATE 10, it doesn't mean very much. Unless you get your letter, report, term paper or party invitation off the screen and down on paper, nobody's going to see it.

Q: What makes the OKIMATE 10 better than any other printer?

A: Because the OKIMATE 10 is unlike any other printer. First, it prints in COLOR. Up to 26 beautiful colors. Second, it prints up to 240 words a minute, so quietly you can talk in a whisper right next to it and still hear every word! And third, it prints letter quality, every time.

Q: What about graphics and pictures?

A: The OKIMATE 10 does it all. Graphs, charts, symbols, pictures, illustrations, and special drawings! With a compatible drawing package, anything you create on your screen can be printed in full color; a disk drive is required for color screen printing.

Q: What kind of paper can I use?

A: Just about any kind of smooth paper you want. From continuous feed computer paper to single sheets. From mailing labels to plastic acetate for overhead transparencies, the OKIMATE 10 prints crisp, clean, colorful images you'll be proud to send to friends, teachers, business associates, or frame and hang right in your own living room!

Q: Is the OKIMATE 10 easy to use?

A: As easy as "PLUG 'N PRINT!" No other printer is easier to use than the OKIMATE 10. Connecting the printer to your Commodore or Atari computer is, literally, a snap. The exclusive PLUG 'N PRINT package snaps into the printer. One cable connects it directly to your computer or disk/tape drive. Turn it on and you're in business. Once your OKIMATE 10 is up and running, the "Learn-to-Print" software program (included) teaches you printer basics—the "Color Screen Print" disk (also included) automatically prints everything on the screen in a single stroke. As a matter of fact, most of your printing can be done with just one command.

Q: What's the printer like in operation?

A: In one word: easy! Incredibly easy! The ribbon comes in a "Clean Hands" cartridge. So it's as easy to change as the tape in your audio cassette player.

Q: What about reliability?

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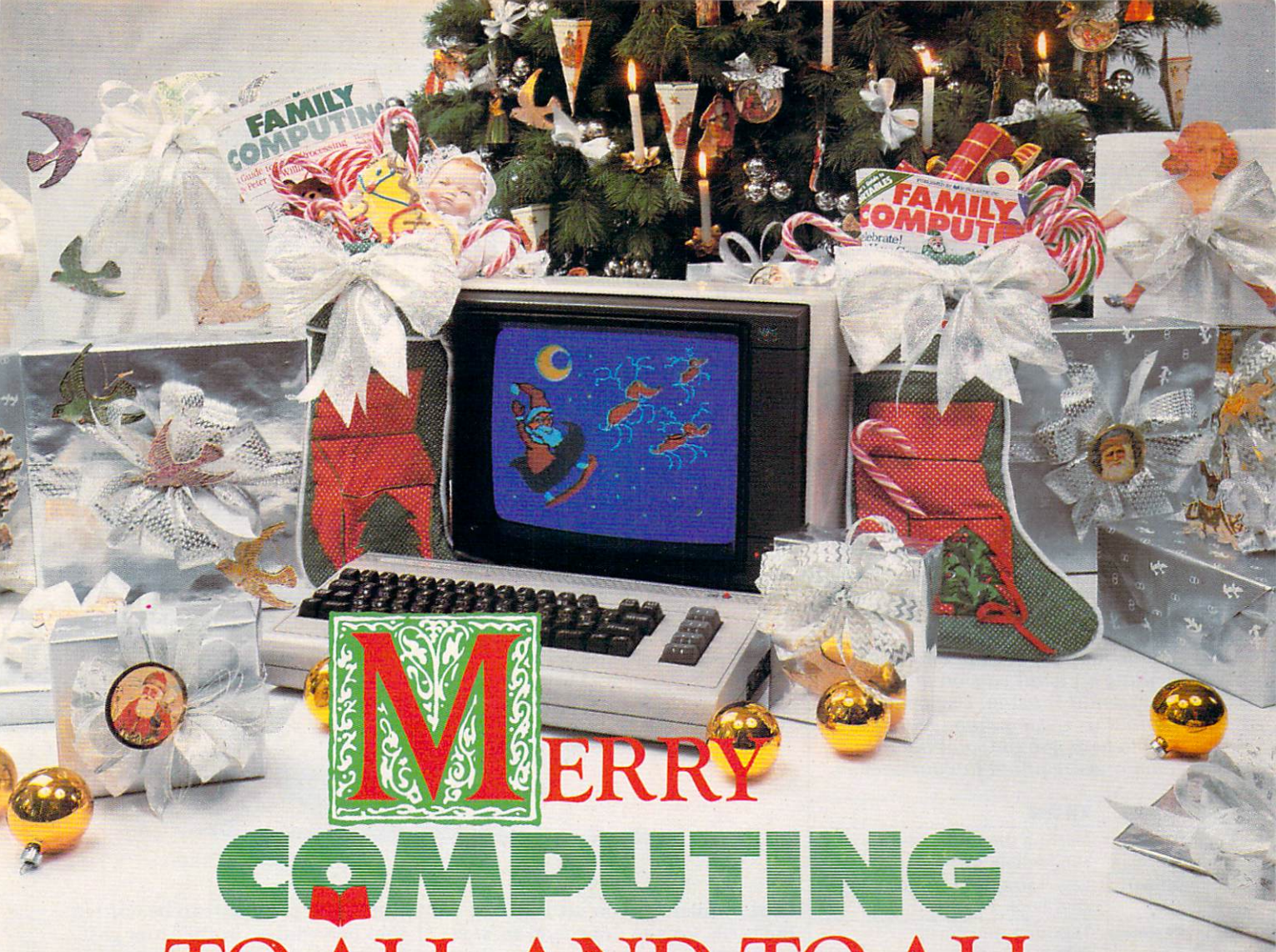

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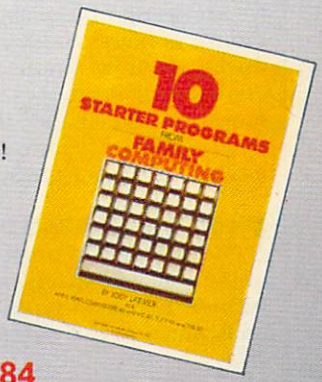

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FAMILY COMPUTING

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LEARNING LOGO

SPARKLING UP YOUR ROUTINES

Learn How to Add Color to the Most Simple Procedures, Then Try Some New Shapes

BY MINDY PANTIEL AND BECKY PETERSEN

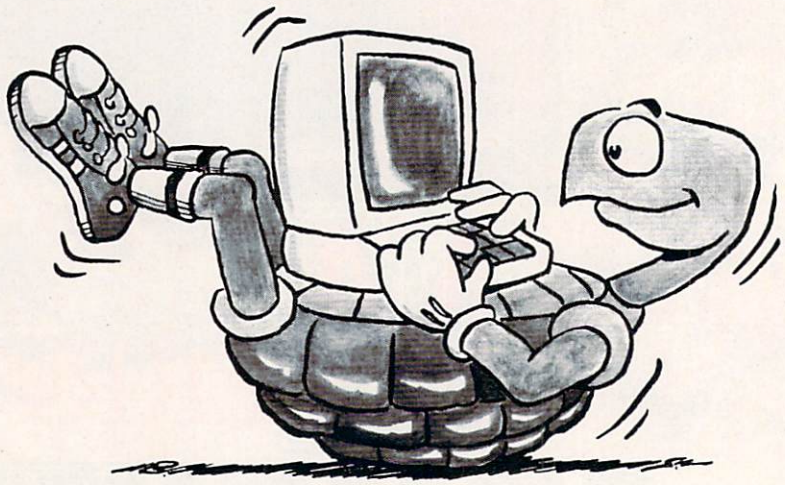
This is the fourth article in a six-part series which takes a step-by-step approach to learning Logo. In the past months, families have learned how to write, edit, and debug their own Logo procedures using commands such as FD, BK, RT, LT, PU, PD, and REPEAT. *As with any computing language, these commands may differ somewhat depending on what version of Logo your family is using. Use your Logo manual as a companion to this article to help you pinpoint the exact commands required in your version.*

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

Kids love color—coloring books, crayons, colored pencils, and markers. Commands that add a rainbow of colors to programs are built into the Logo language. The first thing we are going to talk about this month is how to add color to procedures. Then we will use some discovery-learning strategies to define more complex shapes than those we've explored before, including triangles, other polygons, and circles.

OVER THE RAINBOW

Adding color to procedures is one of the easiest aspects of Logo to master. For most types of Logo, it boils down to two commands: **PC** (**PEN-COLOR**), which lets you set the color the turtle uses to draw, and **BG** (**BACKGROUND COLOR**) which lets you set the color of the screen background. (Some versions of Logo use the commands **SETPC** and **SETBG** for these purposes, but the concepts are the same. This is a good example of an instance when it is important to refer to your Logo manual.) Of course you will need to be using either a color television or a color monitor as your video display in order to use the Logo color capabilities.



To change the drawing or background colors, you will type in a PC or BG command, followed by a color number which represents one of the colors available. Depending on your computer and the version of Logo you are using, the number of colors available to you at any one time can vary from three to 18. The six numbers listed here for the colors available with Krell and Terrapin Logo are common Apple color numbers:

0 Black	3 Violet
1 White	4 Orange
2 Green	5 Blue

To change the background color to green, you would enter BG 2; to change the pencolor to orange the command PC 4 would be used. Color commands can be used in either the DIRECT MODE or they can be written into procedures. In the latter case, backgrounds and pencolors are programmed into appropriate places where specific color is desired.

Here's an example (for the Apple II series) of how color can be written into a procedure which defines four different colored squares lined up horizontally on the screen. First, you define the subprocedures SQUARE and MOVE because they are needed in the final product. SQUARE creates a square with sides 30 turtle steps long. MOVE uses PU (PENUP) and PD (PENDOWN) commands to move the turtle to the next location where a square is to be placed.

```
TO SQUARE
REPEAT 4 [FD 30 RT 90]
END

TO MOVE
PU RT 90 FD 40 LT 90 PD
END
```

Now take a look at the final procedure. The first sequence of commands places the turtle far to the left side of the screen so that there is enough room to fit all four squares. On the following lines you will see that each time you use the

ILLUSTRATION BY BOB SUDNA

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

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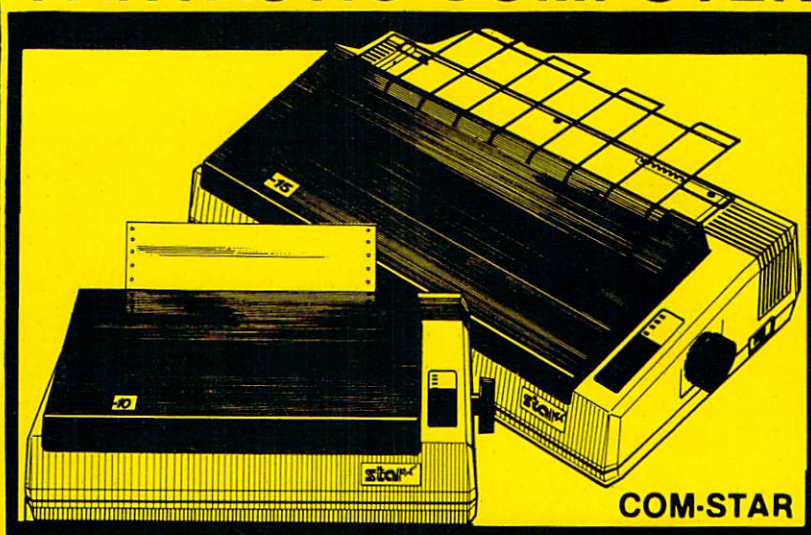

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THE FAMILY CHALLENGE

Here's a challenge that will give your family an opportunity to celebrate the holiday season with Logo. The challenge begins by entering the procedures shown below into your computer. You will see the outline of a Christmas tree appear on the screen.

```
TO TREE
PU BK 40 LT 90 FD 90 RT 180 PD
TRIANGLE
FD 80 RT 90 PD
TRUNK
END

TO TRIANGLE
REPEAT 3 [FD 180 LT 120]
END

TO TRUNK
REPEAT 3 [FD 20 LT 90]
END
```

Note that the main procedure, TREE, calls for two subprocedures: TRIANGLE and TRUNK. Can you tell what each of these subprocedures contributes to the final picture?

Now, the tree needs all kinds of decorations—every size and shape is fair game in making this the most festive tree ever! Have each family member design a procedure to create at least one type of ornament. Use your skills to make polygons and circles—perfect shapes for tree-trimming creativity. Some members of the family might also want to design a gift or two to put under the tree. Each gift shape should be defined as a separate procedure.

The final step is to combine the TREE procedures shown above with everyone's procedures for ornaments and gifts—and then add color! This will require family members to put their heads together and work as a team.

Call your final procedure XMAS. The first step is to put in the TREE procedure. Then, remembering to use PU (PENUP) and PD (PENDOWN) commands as you go, add steps to move the turtle to the points where you wish to place your special ornaments and gifts.

Put color into the final picture by adding PC and BG commands to the main procedure. The final procedure might start out something like this:

```
TO XMAS
BG 1
PC 2 TREE
PU RT 90 FD 100 PD
PC 4 ORNAMENT1
PU RT 180 FD 15 PD
PC 3 GIFT1
```

. . . and so on until each of your ornaments and gifts is where you want it. As you can see, the tree, the ornament, and the gift are each assigned their own pencolor just before they are drawn in the command sequence. (The example above is written for the Apple, using Krell/Terrapin Logo. Remember to check your manual for specific information on how your Logo system specifies color.)

Season's greetings and have fun! From the Logo turtle.

PC command along with a number, it changes the next square to a new color.

```
TO 4SQUARES
PU LT 90 FD 80 RT 90 PD
PC 2 SQUARE MOVE
PC 3 SQUARE MOVE
PC 4 SQUARE MOVE
PC 5 SQUARE MOVE
BG 1
END
```

Using the color numbers listed earlier, read the procedure and see if your family can figure out what color each of the four squares will be. Then, see who can determine what color the background turns at the end of the procedure. (Answers: square 1 is green, square 2 is violet, square 3 is orange, square 4 is blue, the background color is white.)

IN A FLASH

Adding color to procedures that form distinct figures makes sense. For instance, if a clown face has been defined, different pencolor commands can be put into the final procedure to make blue eyes, a red nose and mouth, and orange hair.

Kids love to add flashing colors to almost anything they design. Try adding **TO FLASH** to the end of any procedure.

```
TO FLASH
REPEAT 5 [BG 0 BG 1 BG 2 BG 3 BG 4 BG 5]
END
```

FLASH directs the computer to flash all of the colors in order five times. Add it to the end of the 4SQUARES procedure you did earlier and see what happens.

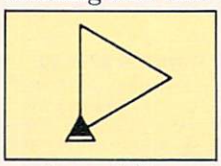
GOING IN CIRCLES

Up until this point, we have talked mostly about right angles, and generally squares have been used to illustrate Logo concepts and commands. This is because everyone—young children as well as adults—easily understands what a square is and can quickly recognize the forward and 90-degree turn motions needed to create a square.

Now it's time to move beyond right angles and explore circles. On the way, we will practice making many-sided geometric shapes, or polygons, ranging from triangles, to pentagons, to shapes with over 100 sides. The end result should move children toward discovering that one way to create a Logo circle is to come up with a formula for making a figure with 360 sides. Eventually the turtle will repeat FD 1 RT 1 movements until it has created a full circle.

LEARNING BY DISCOVERING

First, challenge your children to see if they can figure out how to make an equilateral triangle with turtle graphics. Many will need reminding that this kind of triangle



has three equal sides. See what they come up with and how long it takes them. For that matter, adults and teenagers should give it a try, too, paying particular attention to the thought processes they go through and, again, how long it takes them to solve the problem.

Children will soon discover that they need to do a lot of experimenting with angle sizes in order to get a triangle with equal sides to work. Here's a hint: A quick way to determine how far you want the turtle to turn with each angle of a polygon is to divide 360 by the number of sides in the figure.

Compare notes. Help youngsters to discover the number of turtle turns that were needed in each angle to make the finished triangle. Point out that in creating an equilateral triangle they are telling the turtle to repeat a pair of operations (i.e. drawing a line, turning by a certain angle) three times. How might this knowledge be used to increase the efficiency of a triangle-drawing procedure? Hint: Since all sides and angles of an equilateral triangle (or any regular polygon) are equal, the most

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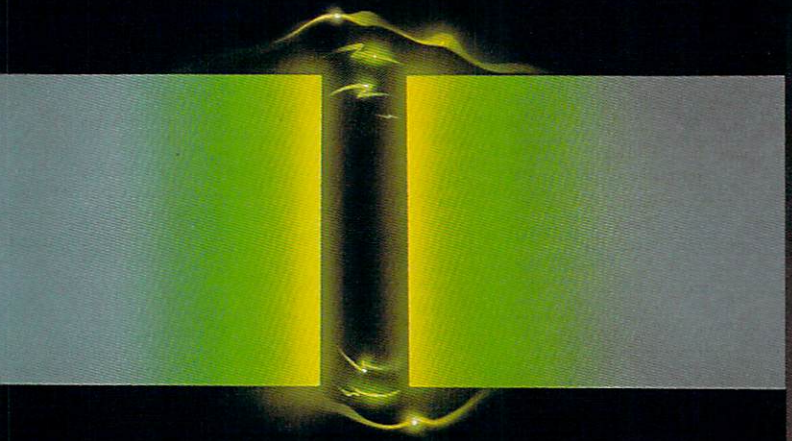

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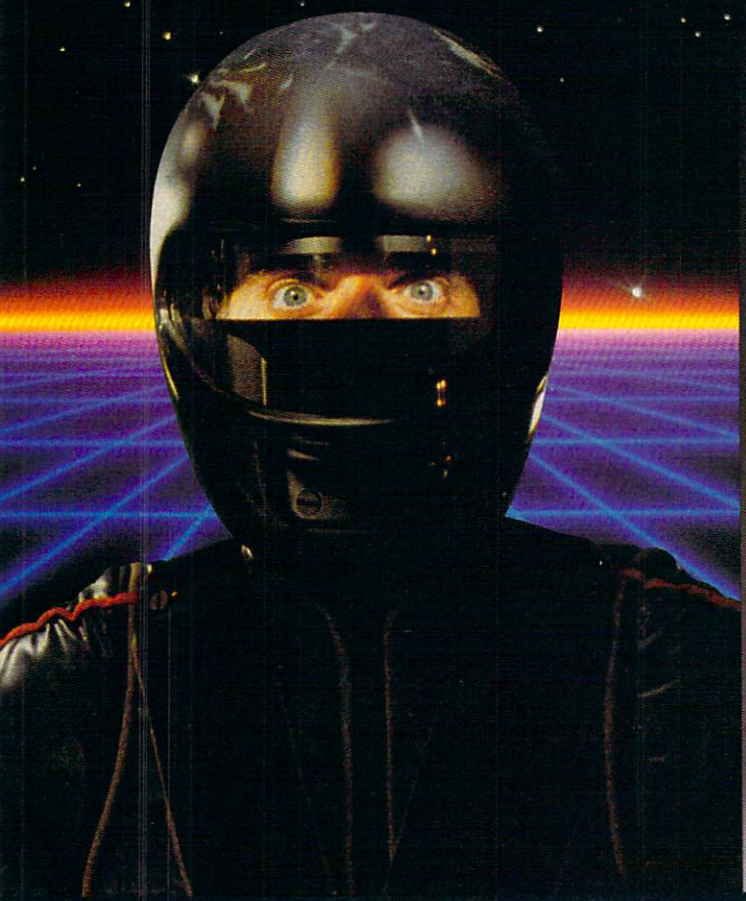

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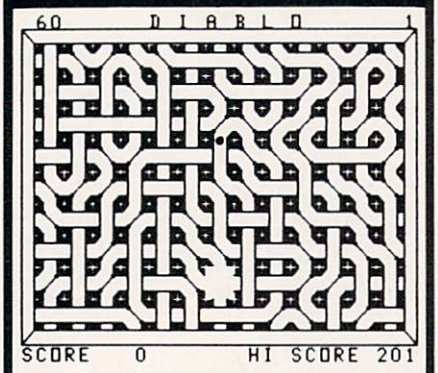

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LEARNING LOGO

efficient way to create such a figure is to use the REPEAT command. Remember, REPEAT is used along with a number indicating how many times the commands within the brackets are to be repeated. For instance, an efficient procedure for an equilateral triangle might look like this:

```
TO TRI
REPEAT 3 [FD 30 RT 120]
END
```

Next, have family members try drawing a pentagon, or five-sided figure, like the one below. And, after that, try the hexagon, or six-sided figure. Make sure to use the REPEAT command in each procedure that is defined.

Next, help your kids examine the common elements in the commands that have been used to define these shapes. Toss in the formula for a square (a four-sided figure) as well, and see what similarities they identify. Most kids will need help with this aspect of the discovery learning approach.

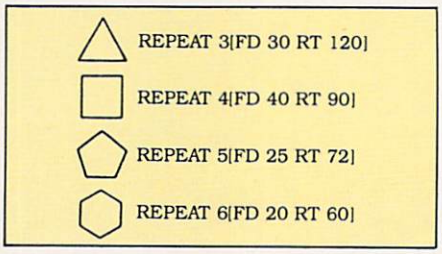
Help them to note these four things:

1. Making any regular shape requires repeating a pair of operations (e.g. draw/turn) several times.

2. The number of repeats needed to make the shape is the same as the number of sides in the shape.

3. The size turn (degrees in each angle) needed to make the shape can be determined by dividing the number of sides into 360.

4. The number of forward steps in a side can differ from figure to figure.



To help youngsters get even closer to discovering how to make a circle, have them try a 10-sided figure next, than a 36-sided figure. Suggest that they also begin to experiment with sides that are shorter, i.e. with fewer turtle steps in them. (This will help prevent the turtle from going off the screen, or wrapping around as it attempts to draw the shape.)

Keep going by attempting figures that have over 100 sides. For instance, try a 120-sided figure with sides only four turtle steps long, then a 360-sided figure with sides that are only one turtle step long. What has been created with the last scenario? A circle!

TIME TO TALK

Naturally, children are going to need some guidance through the discovery learning process and it does require mastery of the basic arithmetic skill of division. (If you're not comfortable with this process, you can either skip it, or better yet, learn along with your child.) Generally, children in the fourth or fifth grade are ready to handle the concepts involved in creating Logo polygons and circles, and have mastered the requisite arithmetic skill of division. Even at that, you will need to talk to them about what they think might be happening. Ask open-ended questions to help them draw conclusions about the progression from 3-sided figures to figures with 360 sides—from triangles to circles. For example, when looking at two circles, you could ask "Why do you think that circle is bigger than the one we just drew?" rather than "Which circle is bigger?"

Parents might wonder why it wouldn't be much easier just to give youngsters the formula for a circle and then show them how to change its size by altering the number of turtle steps in each side. It works. They can make circles that way, but they are missing the opportunity to think through what is happening. In short, they haven't had to put any problem-solving skills to work, thereby circumventing one of the major strengths of what Logo can teach youngsters.

That's not to say that very young children should not use circles in Logo designs. Even preschoolers can put circles to work in their pictures if parents or older brothers or sisters define a set of circles for them to use. However, once they are old enough to understand the conceptual basis for the commands Logo uses to make circles, it would be helpful for parents to back track and help them examine the meaning of those commands.

In the "Family Challenge" this month we provide a Logo program that outlines a Christmas tree. Logo learners are encouraged to write procedures that add colorful ornaments to the tree and packages underneath it. Next month we will take a look at using variables in Logo procedures, making it easier to create shapes of differing sizes. FC

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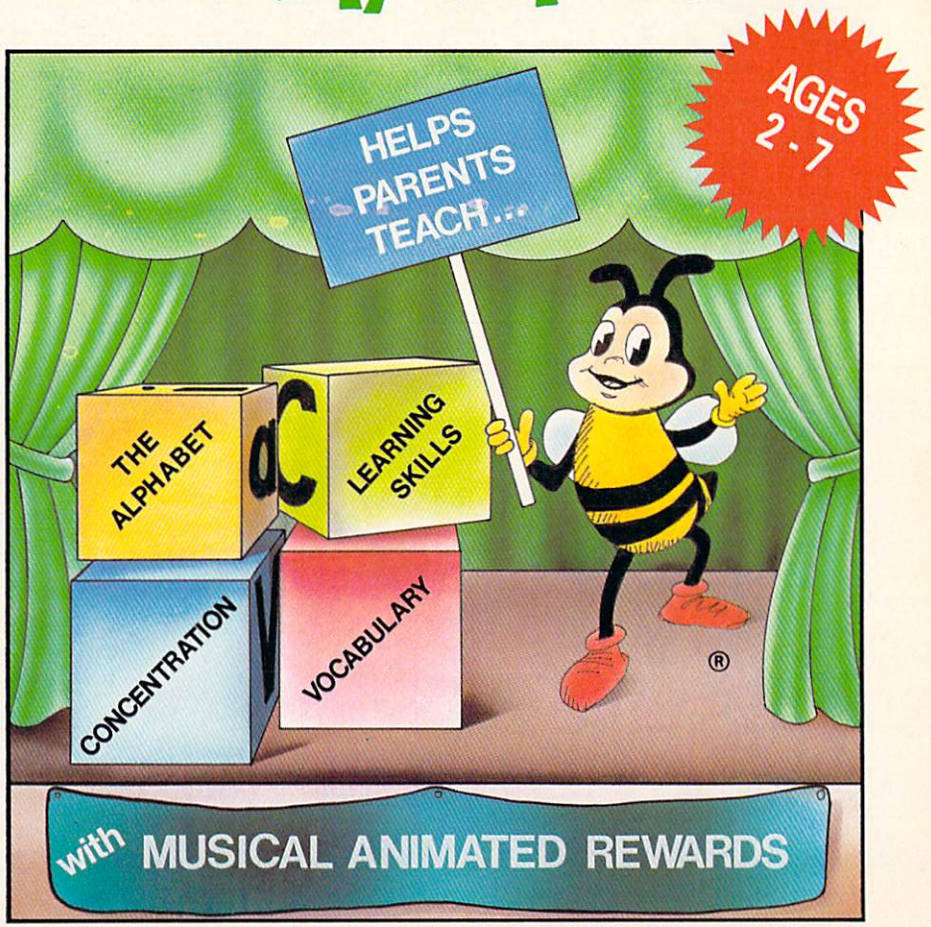

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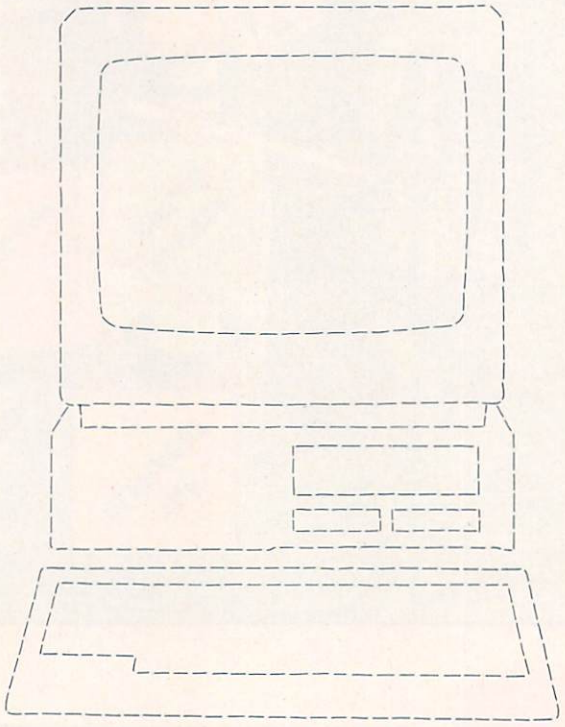

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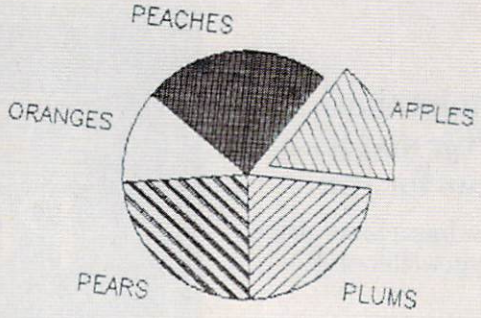

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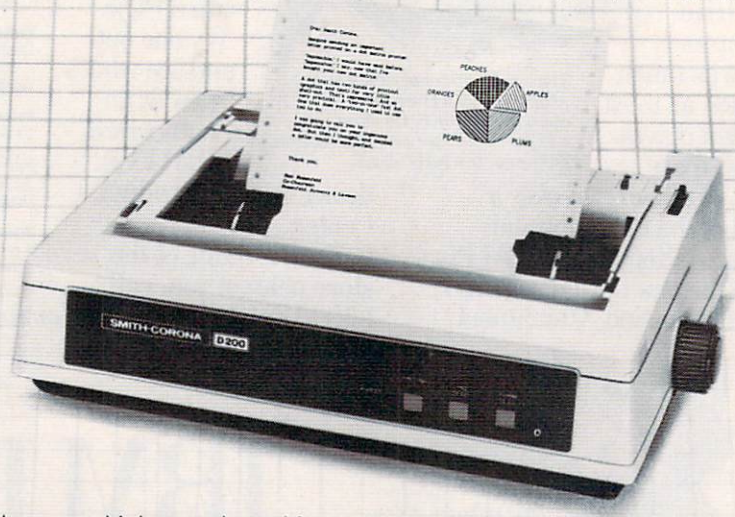

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SHOPPING GUIDE

FOR·COMPUTER·LOVERS

Buying the right computer and peripherals for your needs requires homework and legwork. We've done the legwork for you so you can let your fingers do the shopping in our "Best-Ever Shopping Guide for Computer Lovers." FAMILY COMPUTING research has shown that you—our readers—want product information. So, we turned to our staff and contributing editors and put together some of the best, or the most time-tested, or the most offbeat products on the market—from "dream machines" to picture-perfect software to computer classes on a steamship down the Ol' Mississippi. We've even provided you with some tips on how to shop and some guidelines for easy-to-make gifts. Certainly, not all of our suggestions may be the right ones for you. But, they might provide you with a bit of inspiration during this holiday shopping season. Take a look on the following pages.

A GALAXY OF GIFTS

IDEAS FROM $3 TO $3,000

BY DEBORAH ZIPKIN

Better to give than to receive. But what to give to the kids' teachers, the nephews and nieces you haven't seen in months, the newspaper deliverer, or your great aunt in Anchorage? You want to give each one something special—something fun, and maybe even useful, so they'll know you spent a minute or two thinking about it. How about a computer gift? Here are some suggestions to make last-minute shopping a great deal easier. Check out these gadgets and gizmos all specially designed to add sparkle to any computer lover's holiday. Inspire the non-computerist in 1985 with some of these novel computer ideas. Surprise your own computer with a gift this year, or wrap up next year's shopping list now.

Send Them Packing

There's one in every family—someone whose hair stands on end and whose face turns pale when the word "computer" is mentioned. They are "computer phobics." The antidote? A completely nonstressful computer course. Grab your computer phobic and head to **Club Med**. Spend a week in Mexico or the Bahamas.

There you can learn to use any of the most popular personal computers, work with BASIC, and get an introduction to programming. A dozen Club villages throughout the world now offer computer workshops. Prices for a week's stay range from $490 to $900 per person, and at some villages kids up to age 6 are welcome for free, and those 7–11 for half the adult fee. For more information, call (800) 528-3100, or write Club Med at 40 W. 57 St., New York, NY 10019.

For those who might prefer to do their learning floating down the lazy waters of Ol' Man River, Class Associates offers a week-long computer cruise aboard a paddlewheeler, **The Mississippi Queen**. Experiment with a variety of computers under the guidance of 10 instructors. Prices range from $1,295 to $1,895 per person per week, including meals, accommodations, and computer instruction. Contact Class Associates Inc., P.O. Box 492, 644 Danbury Road, Wilton, CT 06897. Call (800) CLASS-CO for departure dates.

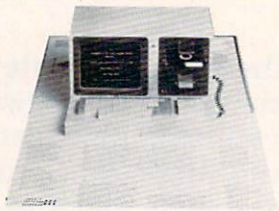
For women who want to take the plunge and become

computer comfortable, the nonprofit **Women's Computer Literacy Project** has the perfect program. Look for WCLP classes in New York and San Francisco. Courses are limited to 12 students, and cover everything from computer selection to computer languages and data-base management. The intensive, 2-day program costs $245 per student in California and $295 in New York. In San Francisco there's an evening class for $175; it's 12 hours of training over a 1-month period. Call (212) 517-8871 or (415) 647-1404, or write to the Women's Computer Literacy Project, 1195 Valencia St., San Francisco, CA 94110 for class schedules.

Good Reads

An avalanche of new computer activity books was published this year. For young readers, check out **The Bytes Brothers** series, $2.25 from Bantam Books, 414 E. Golf Road, Des Plaines, IL 60016. Aimed at preteens, the four books have kids use their computing skills to solve various mysteries.

K-Power Books, $4.95 each from Scholastic Books, 730 Broadway, New York, NY 10003; (212) 505-3612, are filled with original programs for Commodore, Apple, Atari, TI, and IBM computers. Kids experiment with computer



monsters and visit space.

One new release that will thrill adults as well as kids is **Inside the Personal Computer**, $19.95, published by Abbeville Press, Inc., 505 Park Ave., New York, NY 10022. Open the book and a three-dimensional computer pops off the page. Tour through a disk drive, meet a disk, and get to know the computer inside and out. Diagrams, charts, and clear text support the charming pop-up illustrations.

Are thoughts of Christmas already putting pounds on you? Lucille Roberts, has the answer: **Computercise: Your 21-Day Personalized Body Shaping Program**, $16.95 from Simon and Schuster, 1230 Ave. of the Americas, New York, NY 10020; (212) 245-6400. The book's questionnaires and charts, all based on Roberts' computerized spa program, help you develop a personalized exercise regimen.

For the friend whose modem is a favorite *modus operandi*, check out Mike Crane's **The Computer Phone Book**, a compilation of the numbers of more than 400 private and corporate on-line data bases. It's available in bookstores, or order it by mail for $9.95 from NAL Books, P.O. Box 999, Bergenfield, NJ 07261.

Don't be put off by the title of **The Whole Computer Catalog**. Editor Narda Schwartz has put together a 400-plus-page computer directory of hardware, software, applications, careers, schools, health issues, magazines, associations, and stores. To order the catalog send $35, plus $2.50 postage and handling, to Designs III, 515 W. Commonwealth Ave., Fullerton, CA 92632, or call (714) 871-9100.

And, of course, give a year's subscription of **FAMILY COMPUTING** to friends and family. It's the perfect monthly gift, all year long, and they'll receive a free book of 10 programs, too. $19.95 for the first subscription, $13.95 for each additional one. Write to FAMILY COMPUTING, 730 Broadway, New York, NY 10003, or call (212) 505-3632.

Two for the Road

The ultimate gift for any computer buff is, of course, another computer. If you're in the market, you might want to consider one of the new portables. Epson's new, 4-pound **Geneva** is notebook size, has rechargeable batteries, and costs $995. Geneva comes with three built-in programs (*WordStar*, *The Scheduler*, and *VisiCalc*), 64K RAM, 32K ROM, and a full-size keyboard. Optional additions include a portable printer, disk drive, and more memory. Contact Epson America Inc., 3415 Kashiwa St., Torrance, CA 90505; (800) 421-5426 for details.

The Portable, Hewlett-Packard's notebook-size computer is a bit heftier, weighing in at 9 pounds. It is battery-powered, and also comes with three built-in software packages: *Lotus 1-2-3*, *Memomaker*, and *Personal Applications Manager*. The Portable, which sells for $2,995, has 272K RAM, 384K ROM, and a built-in modem. A portable, battery-operated disk drive and the Hewlett-Packard Think-Jet Printer (HP 2225C) can join The Portable on the road. Call (800) FOR-HPPC for more information, or write Hewlett-Packard at 1000 Northeast Circle Blvd., Corvallis, OR 97330.

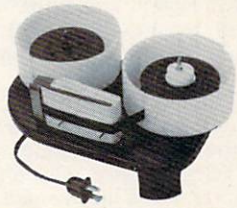
Deck the Halls

Welcome your relatives, neighbors, or even Santa during the holidays, with a personalized banner hung festively from your mantelpiece. Contact Advanced Analytics Technology Corp., Business and Technology Center, 701 Devonshire Dr., Champaign, IL 61820 or call (217) 359-5888 to order **Banner**, a program for the Apple II series, Apple III, and IBM PC. For $24.95 plus $2.50 postage and handling, your printer can output a parade of 12-inch-tall characters in the message of your choice.

Sent out your holiday cards yet? Want to try customizing them? Zazda's **Zcard Print**

program offers 32 card formats and includes 30 sheets of paper with matching envelopes. It can be ordered for $49.95 plus $2 handling from OMNI International Inc., P.O. Box 11708, Dept. Z, Kansas City, MO 64138; (800) 251-0071. Use your IBM PC or IBM PC XT and a dot-matrix printer to design Valentines and birthday cards, too.

The Print Shop, from Broderbund Software, 17 Paul Drive, San Rafael, CA 94903; (415) 479-1170, at $49.95 (*see review in the September* FAMILY COMPUTING, *page 120*), is a software package for the Apple II series. Use it to create greeting cards, signs, or letterheads.



Tuck in an automatic ribbon re-inker as a gift for your printer (cartridge or spool-type). **MacInker**, from Computer Friends, 6415 SW Canyon Court, Suite #10, Portland, OR 97221; (800) 547-3303, will re-ink any variety of fabric ribbon. MacInker lists for between $54–$69, depending on your brand of printer. $3 will get you a 2-ounce bottle of ink in red, green, yellow, brown, black, blue, or purple to jazz up your greeting cards.

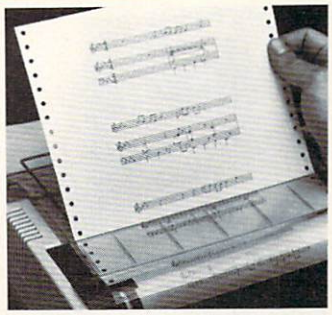
Got friends who own an IBM with at least DOS 2.0 and Advanced BASIC? Ask **Greetingware**, Roxbury Research Inc., RD 1, Box 171A, Roxbury, NY 12474; (607) 326-4070, to send them a gift/card all-in-one surprise disk, which comes complete with Christmas pictures, a holiday message, and six carols. This super greeting costs $13.95. For $3 more the company will add in your personal message.

Sounds and Sights

Support the budding Beethovens, Botticellis, and Demostheneses in your family with computer-assisted creativity.

Hook up **Melodian**, $200 from Melodian Inc., to your Commodore 64. It features a three-octave keyboard instrument, and *ConcertMaster* software. The package includes 16 preprogrammed instrument sounds, teaches note-reading, and composing. For IBM PC; version planned for Apple this winter. 115 Broadway, Suite 1202, New York, NY 10006; (212) 406-5163.

For the novice who hankers for something completely different, the new touch-sensitive **ColorTone Keyboard** by Waveform might be just the thing. Designed for the Commodore 64 by the same people who created *MusiCalc*, the ColorTone Keyboard has 25 piano-like keys, 12 musical-scale options, and preset melodies ranging from classical to Technopop. It is available at computer stores or from Waveform Corp., 1912 Bonita Way, Berkley, CA 94704, for $79.95; call (415) 841-9866 for details.



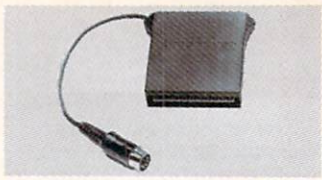
Is the keyboard virtuoso in your home complaining that playing music is fun, but writing it down is a bore? **Polywriter**, by Passport Music Software for the Apple II series, turns whatever is played on a synthesizer keyboard into printed music. The program sells for $299. However, would-be composers must invest in a keyboard instrument with MIDI (Musical Instrument Digital Interface) jacks, a Passport MIDI Interface ($195), and a dot-matrix printer to get the system going. Write Passport Music Software, 625 Miramontes St., Suite 103, Half Moon Bay, CA 94019, or call (415) 726-0280 for the complete story.

Koala Technologies is encouraging artists and composers to take pen in hand—light pen that is. With the **Gibson Light Pen** system, $249, bypass the computer keyboard and draw with light directly on a display screen. The system includes four complete software packages: *PenMusician*, *PenDesigner*, *PenAnimator*, and *PenPainter*, as well as PenTrak, a language for

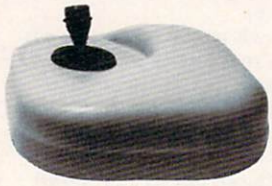
generating original light-pen programs. Currently available for the Apple II/II plus/IIe. Koala says it will market Commodore 64, Atari, and Apple IIc versions by year's end. Contact Koala Technologies Corp. at 3100 Patrick Henry Drive, Santa Clara, CA 95052; (800) KOA-BEAR.

But before you draw any conclusions, check out **Doodle**, a $39.95 software package for the Commodore 64, from City Software, 735 W. Wisconsin Ave., Milwaukee, WI 53233; (800) 558-1008. Grab your joystick or trak ball and select from one of nine different paintbrushes. Zoom in, use color, build boxes, make mirror images, and turn negatives into positives. Output your work on a Commodore 1525 printer, Epson, Gemini, ProWriter, or Okimate 10.

For the person who doesn't quite believe that a picture is worth 1,000 words, Currah Technology's **TheVoice Messenger** will start their Commodore 64 talking in no time. With two voice selections, an infinite vocabulary, and even intonation, this $49.95 system is easy to install and steals no RAM from the BASIC work space. Pick one up at your local department store, or contact Currah Technology, 50 Milk St., 15th Floor, Boston, MA 02109; (617) 357-8084.



Take a look at one of the sleekest, most exciting—not to mention most expensive—joysticks around. **The Turbo Stick**, $395 plus extra charges for connecting cables, from the KA Design Group, 6300 Telegraph Ave., Oakland, CA 94509, looks like a small spaceship. It can make the cursor move in five different ways at seven different speeds. Call (415) 654-6300 for more details.



Gifts a Computer Could Love

Computers really don't ask much of their families. They need a place to hang out that's relatively free of dust, dirt, and spills, and they require a reliable source of power.

When the computer is stationed in the family room, or gets a regular workout at the kitchen table, it is exposed to all kinds of danger. That's when a good quality **keyboard cover** becomes a gift of mercy. Diversified Manufacturing Inc., 4722 E. 8th St., Wichita, KS 67208, has rigid, plastic covers available for Apple II series, Macintosh, IBM PC, and Commodore 64 computers for $14.95–$17.95. Call (316) 683-4265 for ordering information.

Where were you and your computer when the fuse blew and the lights went out? One way to deal with flickering power, blown fuses, or blackouts is to invest in an emergency power supply. **Minuteman**, a $435 emergency-power and voltage-protection package, sounds an alarm and switches your computer to 15 minutes' worth of battery power when electrical service is interrupted. It also keeps the electricity flowing into the computer and disk drive at a constant 120 volts. Minuteman, a product of Para Systems, can be used with Apples, Commodores, IBM PCs, and 60 other microcomputer models. Call (214) 869-1688 or write 11425 Mathis St., Suite 404, Dallas, TX 75234.

The Max, which comes in six models from Panamax and costs $79–$159, is a simpler mechanism that will relieve worries about power surges, but not supply any emergency power. To keep a constant 120 volts flowing into your equipment, just plug your CMU and your disk drive into Max and plug Max into the wall. Voilà! Contact Panamax at 150 Mitchell Blvd., San Rafael, CA 94903, or call (415) 472-5547. The Max works with almost all personal computers.

Surprise a friend with a membership to an information network this year, or give one to your family. A computer, a modem, and a phone are needed to join. Members can use their network connection to shop at home, get the news, talk with other users, and play games. There are several national networks to select from. **CompuServe** charges $39.95 to sign up and from $6 to $15 an hour to use the service, depending on the hour of day. Call (800) 848-8199 or write 5000 Arlington Centre Blvd., Columbus, OH 43220. **The Source** costs $49 to sign up and charges from $7.75 to $20.75 an hour. Call (703) 734-7500 or write 1616 Anderson Road, McLean, VA 22102. **Delphi** has a sign-up cost of $49.95 and charges $6 to $16 an hour. Contact Delphi at 3 Blackstone St., Cambridge, MA 02139; (800) 544-4005. Rates may change.

Station Break

Avoid Hacker's Back! Get your favorite computer buff a decent chair for his or her workstation.

Scandinavian Design, headquartered at 603 Worcester Road, Natick, MA 01760, sells the **Balans** chair, a good-looking and ergonomically designed seat. Scandinavian Design says this $180 chair is good for your back. Call (617) 655-2830 to learn where the store nearest you is located. You also will be able to see its complete line of teak work-station furniture.

For the hacker with more traditional tastes, cast an eye over **A.J. Hilliard, Inc.**'s oak-furniture brochure. Inspect the $696 roll-top desk designed to hold a CPU, keyboard, printer, and disk drive. Add the $287 oak bookcase and you have storage space for manuals and magazines. Write to 111814 Coursey Blvd., Suite #425, Baton Rouge, LA 70816, or call (504) 927-0270.

If your taste runs more to modern, check out **The Smart Desk**, a sleek, laminated desk ($199) with space for a computer, a monitor, and accessories, made by The Furniture Byte, Inc. You can end the paper chase with **The Smart Stand** ($149), a printer stand with storage space for

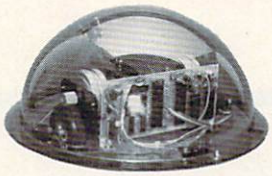
supplies. This easy-to-assemble furniture is available directly from the manufacturer or selected dealers. Call (800) 426-5301 or write The Furniture Byte Inc., P.O. Box 1757, Longview, WA 98632.

Perfect Pets

Know someone who has been clamoring for a pet? What about a robot instead?

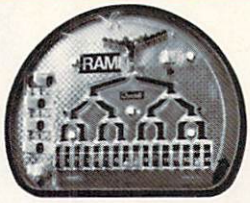
This year the Tomy Corp. introduced its family of robots. There's baby **Dingbot** ($10), a 5-inch, battery-powered toy that rolls around the floor and switches direction when it bumps into things. **Verbot** ($65) is about a foot tall and can be programmed to respond to eight spoken commands. **Omnibot**, at about $250, is the most sophisticated. It is 2 feet tall, and contains a microcomputer, a cassette tape deck, and an alarm clock. Contact the Tomy Corp. at 901 E. 233 St., P.O. Box 6252, Carson, CA 90749, or call (213) 549-2721.

The 9-inch **Turtle Tot Personal Robot**, $299.95, is a different breed of mechanical pet. A learning tool and an introduction to Logo, Turtle Tot moves around on the floor and draws on paper. Every Turtle Tot comes assembled with a 21-foot leash, 10 color pens, built-in software, and an optional RS-232 interface. It will interact with any Apple, Atari, Commodore 64, IBM, or TRS-80 computer. A speech package ($99.95) is optional. Order from Harvard Associates Inc., 260 Beacon St., Somerville, MA 02143, or call (617) 492-2999.



Grab Bag

Try **Rami**, an introduction to computer thought process. You don't need a CMU to play this hand-held pinball game. Send the 32 plastic balls through 16 tunnels, and uncover the basics of the binary system. It's available for



$19.95 from My Child's Destiny, P.O. Box 7366, San Francisco, CA 94120; (800) 445-5678.

A call to Sports Software will bring a trained consultant and a **CompuTennis** computer to your tennis court. Pay $75 and the computer will track your tennis game and give you, or perhaps a worthy opponent, a printout of your strengths and weaknesses on the court. Call Sports Software at (415) 494-2111, or write to 2 Palo Alto Square, Suite 120, Palo Alto, CA 94306.

Feeling blue? **Expando-Vision** has a program to pick you up. Or it may help a spouse stop smoking, get skinny, or succeed better on the job. Hook up the $89.95 Expando-Vision hardware to your Atari, Commodore 64, or VIC-20 and your television, and subliminal self-improvement messages will flash regularly on the screen. Any of the eight programs, at $39.95 each, are sure to make a difference in your life if you watch the TV for an hour a day, says the manufacturer. Order Expando-Vision by calling Stimutech Inc. at (313) 761-9027 or writing 3711 Plaza Drive, Ann Arbor, MI 48104.

Slightly more down-to-earth, a perfect present for any little angel, is Koala Technologies' **Muppet Learning Keys**, a $79.95 computer keyboard and software package. Available for the Apple IIe, IIc, and Commodore 64, the Muppet keyboard has number keys, a paintbox of colors, letter keys in alphabetical order, and a HELP key that brings Miss Piggy on screen to administer first aid. Get information by dialing (800) KOA-BEAR, or write 3100 Patrick Henry Drive, Santa Clara, CA 95052.

Stocking Stuffers

Tie one on. **Harriet Carter Gifts Inc.** has men's ties decorated with a pattern of computer terminals. The ties are $12.98 plus $2.95 postage and handling, and are available in blue, brown, or maroon. The same company also has a coffee mug that boasts the message "Old Computer People Never Die—They Just Lose Their Memory" for $3.50 plus $2.25 postage and handling. Write Dept. 44, North Wales, PA 19455 or call (215) 362-5186.

Show off those legs with **Computext** hosiery—pantyhose printed with step-by-step commands for a computer game. In white, ivory, and gray with the instructions printed in bold colors, Computext cost approximately $12 a pair. For information, write to Crystal Creations, 711 W. 17th St., Costa Mesa, CA 92672; or call (714) 631-1414.

Want to be thought of every day in 1985? Send someone the 1985 **Computer Term-A-Day Calendar**. It has 365 computer words and their definitions on tear-off sheets. The calendar is $5.95 plus $2.25 shipping and handling from Abbey Press, 109 Hill Drive, St. Meinrad, IN 47577; (812) 357-8251. For $7.95 plus $2.25 shipping and handling send for Abbey Press' set of three ornaments carved to look like computer terminals.

Sweet Gum Inc., 15490 NW 7th Ave., Suite 204, Miami, FL 33169; (800) BE-SWEET, specializes in gifts, such as "Computer Expert" T-shirts ($8.95) and microchip jigsaw puzzles—$7.95. Check with Sweet Gum for postage and handling charges.

Commodore 64, Atari, and Apple IIe and IIc owners will flip over the **Diskette Notcher** ($14.95 plus $1.50 shipping). It's a handy tool that adds another "write-enable" notch to single-sided disks so the flip side becomes usable. Contact Quorum International, Industrial Park Station, P.O. Box 2134, Oakland, CA 94614; (415) 769-6080.

The best byte around is bound to be the 1-pound **Chocolate Personal Computer** for $18.95 postpaid, from the shop in The Computer Museum in Boston. The shop's catalog is full of wonderful gift ideas for computer buffs. Call (617) 426-2800 or write The Computer Museum, 300 Congress St., Boston, MA 02210 and request a copy. FC

DEBORAH ZIPKIN *of New York writes on education. Her articles have appeared in the* New York Times *and* Women's News.

Holiday How-To

FOUR EASY-TO-MAKE GIFTS

BY JO SPRINGER

Surprise the computer enthusiast in your family with a homemade gift for the holidays! For the programmer who works late into the night, a *Printout Scarf* to keep warm; for the long trek home from school, a *Tote Bag*; for the next member of the computer generation in your family, a *Baby Bib*; and for your Christmas tree, a *Computer Ornament*.

Follow these simple directions and you can give the most original computer peripheral of the year!

JO SPRINGER's needlework designs have appeared in numerous publications including Woman's Day, Family Circle, and Good Housekeeping. She is the author of The Pleasures of Crewel and Creative Needlework, among other books, and works in media ranging from woodworking to lacemaking.

PHOTOGRAPHS BY ANTHONY LOEW

TO BRIGHTEN YOUR HOLIDAY

One of the best stocking stuffers this holiday season may be software, and it could also be one of the best buys. To make your holiday brighter, quite a few software manufacturers are offering discounts through rebates, coupons and two-for-one deals. The chart below provides a roundup of some of the special offers. But before you make your holiday gift list, be sure to ask your local software dealer about other companies' offerings. The dollars you save will be well worth the time spent in research.

Manufacturer	Offer/Time Limit	Software/Products Featured
Advanced Ideas (415) 526-9100	Free LearningWare disks w/purchase of educational games. At dealer's discretion.	Buy games at $39.95 (Apple, IBM), $34.95 (C 64)/get free disks valued at $19.95: *The Game Show/People Places and Things*; *Tic Tac Show/History*; *Master Match/Foreign Language*
Apple Computer Inc. (408) 973-4409	Redemption certificates w/IIe or IIc. Nov. 1–Jan. 15, 1985.	Apple Logo $100/$15 rebate; *Charlie Brown's ABC's*, *Spell It*, *Story Maker*, *Typing Tutor III*, $39.95/$6; joystick $60/$10; Mouse IIc $99/$10, IIe $149/$15; *AppleWorks* $250/$25; *Dollars and Sense* IIc $119/$18, IIe $100/$15; *Homeword Writer* $69.95/$10.50, w/ *Speller $99/$15*; *Print Shop* $49.95/$7.50; AppleScribe Printer $299/$50; *Dazzle Draw* $59.95/$9; *Echo Plus/Cricket* $149/$22.50, $179/$27; *Music Construction Set* $39.95/$4.80; *Flight Simulator II* $49.95/$7.50; *FlashCalc* $99/$15; *ProClock* $159/$32; Modem 1200 $495/$50; *Apple Access II* $75/$10
CBS Software (203) 622-2500	$5 rebate on any software. Receipts dated June 15–Oct. 31, 1984.	All CBS software
Datasoft (818) 701-5161	Buy 1 game, get 1 free or get $4 rebate; buy 2 games, get $10 rebate; coupons in software. Oct. 1–Jan. 31, 1985 for rebates; coupons sent by Feb. 28, 1985.	Coupons with: *ManCopter*, *Bruce Lee*, *Heathcliff*, *Zaxxon*, *Demon Quest*, *Lost Tomb*
Electronic Arts (415) 571-7171	Buy 2 programs, send receipt and $1.50 postage, and get 1 free. Now through Jan. 15, 1985.	All Electronic Arts software except *Get Organized*
Epyx, Inc (408) 745-0700	With $3 and coupon get preview disk of 6 C 64 games; get $3 rebate if buy 1 of the 6. Mid-Sept.–Mid-Dec. 1984.	*Silicon Warrior*, *Breakdance*, *Impossible Mission*, *Summer Games*, *PuzzlePanic*, *The World's Greatest Baseball Game*
Eric Software (209) 237-0989	Send proof of purchase from any educational software package and receive a child's digital watch (value: approx. $19.95). Now through Dec. 31, 1984.	*Grabit Factory*, *Learning Line*, *The Sweet Shoppe*, *Tick Tock Clock*
Infocom, Inc. (617) 492-1031	4-game sampler $7.95; buy 1 get $8 rebate; get $6 poster for $2. Started Sept. 1984 (no deadline set).	*Witness*, *Infidel*, *Planetfall*, *Zork I*
K-12 Micro Media (800) 922-0401	15%–20% savings on educational software through catalog. Month of Dec. 1984.	50 publishers including DesignWare, Learning Co., Scholastic Software, Spinnaker
Microsoft (206) 828-8080	*Microsoft Spell* free with *Microsoft Word*; $9.95 *Microsoft Word* sample, if buy program, you get $9.95 rebate. Oct. 1–Dec. 31, 1984.	*Microsoft Word* and *Microsoft Spell*
Parker Brothers (617) 927-7600	$10 rebate on Atari and C 64 games; some for IBM PC and TI-99/4A. Now through Jan. 31, 1985.	*Q*bert*, *Popeye*, *Star Wars: The Arcade Game*, *James Bond 007*, *Gyruss*, *Mr. Do's Castle*, *Montezuma's Revenge* (also PC); *Frogger II: Three-deep!*
Quality Input (309) 454-1061	Buy 2 programs, get 1 free. Nov. 1–Jan. 15, 1985.	*Numbers Plus Math Series* (6 titles in series)
Scarborough Systems (914) 332-4545	Send coupon, proof of purchase, and $3.50 to send software to any school you choose. Sept. 15–March 15, 1985.	*MasterType*, *Songwriter*, *Phi Beta Filer*, *PatternMaker*, *PictureWriter*, *Run for the Money*
Scholastic Software (212) 505-3000	$5 software rebate; coupons in advertisements/get 6-month subscription to FAMILY COMPUTING w/some purchases. Sept. 15–Jan. 31, 1985.	Rebate on any Scholastic program/get subscription w/*Frog*, *Story Maker*, *Logic Builders*, *Quations*, *Microzine*
Sierra Inc. (209) 683-6858	Buy 2 educational programs, get 1 free. Now through Dec. 31, 1984.	*Learning With Leeper*, *Troll's Tale*, *Dragon's Keep*, *Learning With Fuzzywomp*, *Wizard of Id's WizType*, *Wizard of Id's WizMap*, *StoryMaker*, *Gelfling Adventure*
Software Publishing (415) 962-8910	Buy gift pack *pfs: file*, *write*, and *solutions* and get coupons worth $65–$194. Thanksgiving–Christmas.	*pfs: file*, *pfs: write*, and *pfs: solutions* discounted MS-DOS ($299) and Apple IIe/IIc ($219) versions. W/ MS-DOS version, rebate coupons: $5 off any Learning Co. program, $10–$15 off other pfs programs, $24 off Home Banking Service from Bank of America, $25 off POPCOM modem models C-100 and X-100. W/ Apple version, get trial disk *pfs: access* and rebate coupons: $5 off Learning Co. products, $5–$15 off other pfs products, $24 off Home Banking Service from Bank of America, $50 off Apple 1200 modem, $100 off Color Plotter 410
Spinnaker Software (617) 494-1200	Buy computer and game, get game free; buy 4 or 5 games, get 1 free. Oct. 1–Jan. 1, 1985.	Learning Series; Learning Discovery Series; Learning Adventure Series; Early Learning Series (free T-shirt w/proof of purchase and coupon inside package); Windham Classics (coupon good for ½ off of a children's classic book); Trillium (free posters w/ games); *Aerobics* (send for free "Spinnaker Sports Top" shirt)
Strategic Simulations (415) 964-1353	Half-price specials on software while supplies last.	*Cytron Masters*, *Queen of Hearts*, *S.E.U.I.S.*, *The Shattered Alliance*, *Galactic Gladiators*, *Computer Conflict*, *Operation Apocalypse*, *Southern Command*, *Road to Gettysburg*

Picture Perfect

BY BECKY PETERSEN AND MINDY PANTIEL

Lauretta Jones, a professional computer artist, created this fish scene with Broderbund's *Dazzle Draw*.

If you've ever watched a 3-year-old pore over a coloring book, or stood by as a budding Van Gogh sketched a sunset and a shimmering lake, you know how valuable creativity and design are in a child's development. Fingerpaints, paint sets, Play-doh, and crayons—these staples of childhood creativity have been joined recently by a new tool: the personal computer.

There's a host of software available that turns your computer screen into a miraculous electronic canvas. Using the joystick or keyboard, you'll be able to draw on your screen, switch colors instantly, mix new ones, experiment with brush widths, and magnify sections of the masterpiece—all with a flick of the wrist or press of a button.

AN ART FORM ALL ITS OWN

In the past decade the world of computer graphics has become an art form all its own. Some artists have foregone the easel and palette entirely in favor of the computer. And whether you've noticed or not, computer graphics frequently pop up everywhere from TV commercials, to movies and business presentations.

Until recently, only a few specialists have had access to the wealth of design possibilities offered by computers teamed with fancy, high-priced software. But over the past few years, more and more personal computers are being outfitted with clever, low-cost programs. Now, families with a limited software budget can afford to experiment with this new brand of home-based creativity—an educational, entertaining, and unusual new computer application.

You'll find art software to challenge a variety of talents:

Computerized coloring books are at the most basic level. They permit young artists to fill in the lines with colors of their choice, although they offer very little in the way of artistic freedom.

Then there are the packages that provide an empty screen and the challenge to fill it using a variety of design options and routines you couldn't easily duplicate manually. Computer artists can draw a picture in plain black and white and fill it in with color later, or "paint" with any number of different hues right from the start. Many of these packages include zoom or close-up features, which allow users to work in more detail on portions of their drawings, and the ability to alter the thickness of a brush stroke with a simple command.

A few packages combine the best of the two by offering both a drawing function and a coloring-book option. Along similar lines, some software comes with preprogrammed shapes and figures which can be put together to make pictures. Youngsters can create everything from houses to space modules by piecing various components together.

Kids often become frustrated with their inability to render on paper what they envision in their mind's eye. Near-perfect rectangles and circles are easier to imagine than they are to actually execute. The computer offers immeasurable help when it comes to realizing artistic potential.

THE HARDWARE

The graphics capabilities of the major personal computers vary considerably from machine to machine. In general, Atari and Commodore 64 owners will be able to get the greatest artistic effects through commercially available software, although there is a big supply of software for the Apple as well.

All computer graphics, including circles, strange shapes, and even text, are created by linking together small squares called pixels. Low-resolution graphics use bigger pixels to create shapes; high-resolution graphics use much smaller pixels. As a result, low-resolution designs and shapes often appear chunkier than those composed in high-resolution.

Beyond the computer itself, the video display is probably the most important component in determining the quality of the pictures you create.

A color monitor is preferable to a

BECKY PETERSEN *and* MINDY PANTIEL, *contributing editors of* FAMILY COMPUTING, *wrote "The Perfect Marriage" in the November Home Business. Petersen is a former art teacher and art curriculum coordinator.*

THIS BOUQUET OF ART SOFTWARE TURNS YOUR COMPUTER INTO A POWERFUL ELECTRONIC CANVAS

TV set since it can accommodate graphics in a higher resolution. Obviously, color monitors are more suitable for art software than "monochrome" or single-color displays. Professional computer artists are likely to use monitors that cost upwards of $5,000.

Another thing to keep in mind is that although you may be able to save creations to disk with many of these programs, not all will furnish you with "hard copy," or actual printouts of your work. You may have to invest extra money in any of the special accessories—the circuit cards or additional software that will let you print out this week's masterpiece for the refrigerator door.

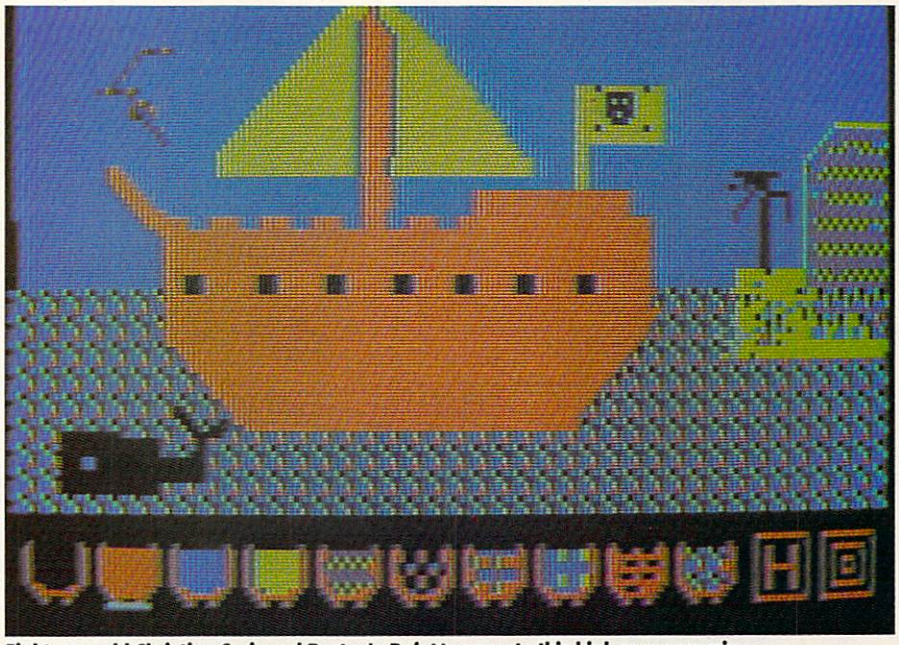
THE ELECTRONIC PAINT BRUSH

With art software you have a variety of different "paintbrushes" to choose from. The keyboard is perhaps the most cumbersome and the least like real drawing. Arrow keys (or other specified keys) can only control the brush in four directions—horizontally and vertically. Since curved lines are virtually impossible to draw with such limited dimensional alternatives, most keyboard painters usually wind up limiting their graphic creations to straight lines and right angles.

Other devices, such as joysticks, light pens, touch tablets, and mice, reduce the frustrations and make computer drawing feel a lot more natural. In this roundup we'll concentrate on those packages that primarily use joysticks or game paddles to simulate a paintbrush. Be aware that many of the more advanced graphics packages rely on more sophisticated input devices. Light pens, touch tablets, and mice, plus their software will be discussed in a future issue of FAMILY COMPUTING.

THE SOFTWARE

The packages reviewed here are ones that we found most suitable for artists in the home setting. We considered approximately 30 packages in the process—and singled out those we believe offer something for everyone in the household, from the most diligent finger painters to the more serious art student. Some packages are distinguished by their ease of use. More difficult ones often offer near professional results in exchange for the greater effort required.



Eight-year-old Christian Ceci used Reston's *Paint* to execute this high-seas scenario.

BLUE RIBBON CHOICES

Here are three packages for the Atari, Commodore, and Apple that stood out.

Tops in the ease-of-use department is *Paint*, on disk for the Atari. Now 2 years old, it still compares well with many new art programs. Designed originally for kids, it's ideal for artists of all ages.

You have a choice of 81 different brush patterns and brush widths—from star-shaped lines to dotted ones, from thin ones to fat ones for painting great swatches at a time. To pick up colors, move the cursor into any one of the paint pots at the bottom of the screen and press the trigger. You can draw freehand, but you can automatically generate lines, circles, and brush strokes as well. An electronic coloring book section in the program lets youngsters add touches to an existing work.

The package comes complete with the most entertaining and educational documentation we saw. It provides a splash of art history as well as suggestions to ignite the imagination. This is a special touch for anyone who's ever listened to a small child ask, "What should I draw?" *Paint* will let you save your work to disk. But you can't print it out.

Doodle, on disk for the Commodore 64, gets high marks for its array of unusual features. Using a joystick or trak ball, artists can change brush sizes and colors by pressing the appropriate function or numerical keys. Documentation takes you step by step through the process of filling sections with color and executing perfect circles and boxes.

Make a mirror image or turn your work into instant op-art, so that your creation appears to be moving on screen. This is an especially good feature for family teamwork. Parents and older siblings can work on the initial drawing while younger members take over for the touch-up phases.

"Stamp" multiple copies of any portion of your work around the screen or on other drawings you've

ART SOFTWARE

Title Price	Manufacturer Address	Hardware requirements	Input	Program type	Documentation	Hard copy	Comments
Art Gallery $39.95	Radio Shack A division of Tandy Corp. Fort Worth, TX 76102 (817) 338-2395	TRS-80 CoCo, 4K or 16K (cartridge)	Keyboard	Drawing and coloring book	Good (template overlay for keyboard)	No	16K users have access to more operations; locating data tape coloring book pictures takes practice.
Artpak $99	Pal Software Corp. 6100 Barrows Drive Los Angeles, CA 90084 (213) 259-9659	IBM PC/PC*jr*, 128K (disk)	Keyboard	Drawing and graphic design	Very good, but very complex	*	More advanced capabilities include animation and music.
Color Me $29.95	Versa Computing, Inc. 3541 Old Conejo Road, Suite 104 Newbury Park, CA 91320 (805) 498-1956	Apple II series, 48K	Joystick or game paddles	Coloring book	Good	No	25 full-screen pictures to color; no separate drawing mode; for very young children.
The Complete Graphics System $79.95	Penguin Software P.O. Box 311 Geneva, IL 60134 (312) 232-1984	Apple II series, 48K	Keyboard, graphics tablet, joysticks, paddle, trak ball	Drawing and graphic design	Very good, but complex	No	Very good program with advanced capabilities for more serious art students.
Computer Crayons $34.95	Futurehouse Inc. P.O. Box 3470 Chapel Hill, NC 27514 (919) 967-0861	Atari Home Computers, 48K (disk); Commodore 64 (disk)	Edumate light pen or joystick	Drawing and coloring book	Very good	No	Easy to understand "icons" make program easy for children to use on their own.
Dazzle Draw $49.95	Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 479-1170	Apple IIe/IIc, 128K	Mouse, graphics tablet, joystick	Drawing and graphic design	Very good	Yes	Excellent menu-driven package has advanced capabilities for more serious uses.
Doodle $39.95	City Software 735 Wisconsin Ave. Milwaukee, WI 53233 (800) 558-1008	Commodore 64 (disk)	Joystick or trak ball	Drawing	Excellent	Yes	Contains multitude of options that are fun and easy to use.
Drawpic $19.95	Artworx 150 North Main St. Fairport, NY 14450 (716) 425-2833	Commodore 64 (disk); Atari Home Computers, 40K (disk)	Joystick	Drawing	Adequate (commands do not stand out from text)	No	Includes most standard drawing features; nothing unique.
Flying Colors $39.95 (C 64) $69.95 (Apple)	The Computer Colorworks 3030 Bridgeway Sausalito, CA 94965 (415) 331-3022	Apple II series, 48K; Commodore 64 (disk)	Joystick, paddles, touch tablet	Drawing and graphic design	Excellent	Apple only	Easy-to-follow, on-screen menus make advanced capabilities easy to use; allows you to mix text and graphics.
Fun With Art $39.95	Epyx 1043 Kiel Court Sunnyvale, CA 94089 (408) 745-0700	Atari Home Computers, 16K (cartridge)	Joystick	Drawing	Good		Includes most standard features; menu options do not remain on screen during drawing.
Magic Crayons $35	C & C Software 5713 Kentford Circle Wichita, KS 67220 (316) 683-6056	Apple II series, 48K	Keyboard	Drawing	Good	Yes	Good for very young children; includes "icons" for prereaders and special identifying labels for keyboard.
Micro Painter $34.95	Datasoft 19808 Nordhoff Place Chatsworth, CA 91311 (800) 423-5916 CoCo version from Radio Shack	Apple II series, 48K; Atari Home Computers, 48K (disk); TRS-80 CoCo, 16K (cartridge)	Keyboard or joystick	Drawing and coloring book	Very good	No	Includes some standard features; difficult to load pictures with CoCo version.
Paint $39.95	Reston Publishing Co. 11480 Sunset Hills Road Reston, VA 22090 (800) 336-0338	Atari Home Computers, 48K (disk)	Joystick	Drawing and limited coloring book	Excellent	No	Excellent easy-to-use program, for home use; menu options remain on-screen.
Paint Brush $19.95	HesWare 150 N. Hill Drive Brisbane, CA 94005 (415) 468-4111	Commodore 64 (cartridge)	Joystick	Drawing and coloring book	Limited but adequate	No	Limited number of options; good for younger users not interested in a lot of commands.
Pic Builder $39.95	Weekly Reader Family Software 245 Long Hill Road Middletown, CT 06457 (800) 852-5000	Apple II/II plus/IIe/III, 48K; Atari Home Computers, 48K (disk)	Keyboard or joystick	Picture-building kit	Fair (requires considerable effort)	No	Picture-building kit is a fun idea; sometimes difficult to discern different picture parts.
PictureWriter $29.95	Scarborough Systems 25 N. Broadway Tarrytown, NY 10591 (914) 332-4545	Apple II series, 48K	Joystick	Drawing and coloring book	Good	Yes	Includes on-disk tutorial; suggested for ages 5–15 but very young children may have trouble.
Poster $24.95	Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3000	Apple II series, 48K; Commodore 64 (disk); version planned for IBM PC/PC*jr* (disk)	Keyboard	Drawing	Good	No	Limited low-resolution drawing possibilities; package uses simple, fun programming language like Logo.
Sorcerer's Apprentice $49.95	Event Horizon Corp. P.O. Box 1327 New York, NY 10028 (212) 535-0697	Commodore 64 (disk)	Keyboard or joystick	Drawing	Good	No	Has most standard features.

*Yes, in black-and-white; color printouts require additional software.

saved on disk. Type words and letters on your creation, or ZOOM into different sections to perfect parts in detail. *Doodle* has the double advantage of letting you print out your work as well as save it to disk.

For more serious art students, *Dazzle Draw*, on disk for the Apple IIc and IIe with 128K, is one of the most impressive packages available. Operations and tasks are presented in a series of menus you can pull down from the top line, using a joystick or mouse, as well as a graphics tablet. Select from one of 10 differently-shaped brushes. You have a rainbow of more than 16 colors to choose from at any one time. The zoom, cut-and-paste, and spray paint features are just a few of the options that allow you to make brilliant designs.

The spray paint feature lets you add the illusion of dimension to your work. The CAPTURE option will store a section of your work on the program's internal clipboard for later use. For extra-detailed design, artists can go one step beyond ZOOM and work with a portion of the piece pixel by pixel. And, you can print out your work—even in color (with the right kind of printer). All in all this is a terrific package, but definitely a more demanding one.

HONORABLE MENTION

Several other noteworthy programs provide a spectrum of electronic paint possibilities. *Flying Colors*, for instance, for the Apple II series, provides a full range of colors and brush widths, which you manipulate with a joystick or game paddle.

Sorcerer's Apprentice, on disk for the Commodore 64, lets you automatically execute lines, circles, rectangles, and triangles, as well as draw freehand in a combination of 16 colors.

Another program that combines drawing and coloring book features is *PictureWriter*, on disk for the Apple II series. A thorough, step-by-step on-disk tutorial supplements the written documentation. You can draw your own pictures, color in existing ones, or play and make your own games.

The Complete Graphics Package, on disk for the Apple II series, is an advanced package that deserves special attention. It lets you create three-dimensional objects on-screen and rotate them to view different sides, as well as draw lines, ellipses, arcs, boxes, and triangles.

If you wanted to design a house for instance, you would draw each of its sides or faces separately, then assemble the pieces and rotate the image to see various different perspectives of the structure. Next, you can paint the sides with several of more than 100 colors, using up to 96 brush strokes. Magnify details and perfect the drawings point by point.

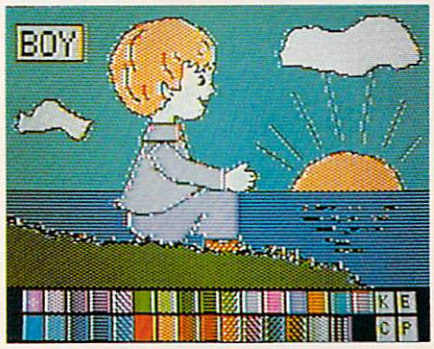
FOR THE PINT-SIZE PICASSO

With a little parental patience and instruction, younger members of the family can create computerized works of beauty, too. In general, younger children are content with just a few different options and capabilities—changing colors and brush widths, for instance. All they need are some suggestions about what to draw and they'll really take off. Most of the programs mentioned here—designed specifically for younger age groups—use easy-to-understand symbols for instructions and operation. Youngsters only need to learn a limited number of commands.

Color Me, for the Apple II series, is a computer coloring book with 25 high-resolution pictures. Though targeted for ages 3–12, it's best-suited for kids in the lower end of the spectrum. Thirty-two color pots provide the child with a nice range of choices. (*Editor's Note: Springboard Software's new program*, Rainbow Painter, *on disk for Apple, Commodore, and IBM PC*jr, *$34.95, unavailable for review at presstime, may also be worth a look.)*

With *Computer Crayons*, on disk for the Commodore 64 and Atari Home Computers, kids use a joystick or an Edumate light pen to either color in preprogrammed pictures or sketch their own drawings. To select a picture to work on, the child simply presses a letter of the alphabet and a corresponding picture appears. "Z" brings up a zebra, "B" a barnyard. You also get a bit of animation with this package—select the option indicated by the little running man and a portion of the picture comes alive and moves across the screen.

For CoCo owners, *Micro Painter*, from Datasoft, is another combination coloring book and sketch pad package. A version is available for Apple II series and Atari Home Computer owners. And *Paint Brush*, on cartridge for the Commodore 64, is especially good for young users because the number of functions and operations are kept to a minimum. Users may fill in drawings, erase, and decide on brush color.



Above (from top to bottom), scenes created with *PictureWriter*, *Flying Colors*, and *The Complete Graphics System*—graphics programs that satisfy the creative urge for a variety of skill and age levels.

BEFORE YOU BUY

Nothing is more likely to cut short an aspiring computer artist's dreams than a frustrating experience with unwieldy art software. It's best to avoid programs that use the keyboard as the sole means of input. Drawing a picture by tapping one key at a time is not a recommended method for stimulating creativity. If you're using a joystick, make sure it operates smoothly. Some packages, like *PictureWriter*, demand very accurate joystick control in executing pictures.

The computer has come of age as a unique and exciting creativity tool. This selection of software will turn your machine into an instrument worthy of a place next to the old watercolor, crayons, and clay. All work wonders in satisfying and stimulating the creative urge of artists—young and old. ■

Diary of a Computer Shopper

BY ROBIN RASKIN

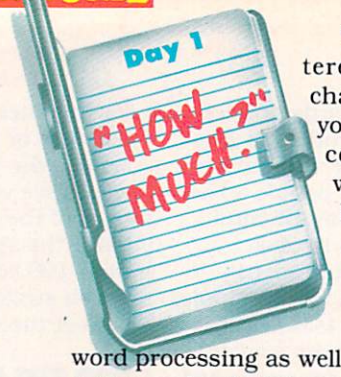
10 TIPS TO MAKE YOU A SAVVY CONSUMER

'Tis the season to be jolly, but it's also the season for shopping. And shopping, especially for a computer, can be hard work. I've had over five years of computer experience. Along with my computer-scientist husband, I've bought more equipment than I can justify. I write about *them*, I live with five of *them*, magazines about *them* clutter my house—and still I find that buying computer equipment is hard work. Each purchase requires careful research, agonizing comparisons, and listening to dozens of "sales raps."

Recently I paid a series of visits to computer marketplaces (in the suburbs outside New York City and in small towns Upstate). I was thinly disguised as a freelance writer in search of a computer I could use for work and with my family. My kids are young, ages 4 and 2, but taking to computers fast.

Keeping a diary of my computer-shopping activities helped me spot some of the shopper's classic stumbling blocks. While the overall shopping situation has improved greatly since my last spree about two years ago—salespeople were generally courteous and well-informed—there's still room for improvement. I've condensed my diary, and present it here as a collection of tips and guidelines to help smooth your experience.

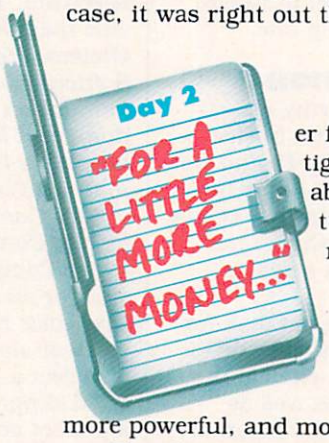
ROBIN RASKIN *is a contributing editor of* FAMILY COMPUTING. *Her last article was "Organizing Your Household, Data-Base Style" in the October issue.*



The very first store I entered was a mass-merchandise toy store. The young salesman in the computer department was busy uncrating boxes of new software. As he stocked the shelves, I told him I wanted a computer that I could use for word processing as well as for the family's education and entertainment. He paused thoughtfully, and without turning around asked, "How much?"

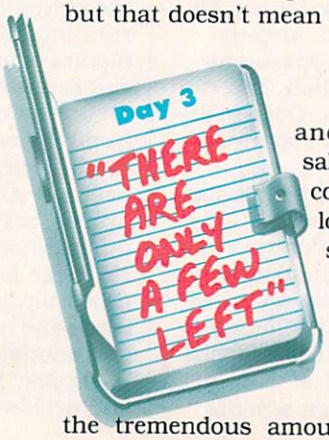
I thought he was asking me about my memory requirements, but it turned out he wanted to know about money. When I said I hadn't given much thought to how much I was willing to spend, he looked at me like I was from another planet. "Do you know anything about Atari, Commodore, or Coleco?" he asked (that was his longest sentence!). I replied that my parents had an Atari. With that, he suggested the Atari 800XL. He also suggested I might want to try "a real computer store;" spend more and get more.

I tried three stores up the road and the story was the same: The salesmen all wanted to know how much I was willing to spend before we even walked within striking distance of a machine. Once I mentioned a figure, they could steer me in the appropriate direction. (In one case, it was right out the front door.)



I walked into a computer franchise store to investigate a sale on a dependable, time-tested computer. I mentioned my requirements, and before I could say "64K" my vivacious salesman got me to sit down and watch a demonstration of a new, more powerful, and more expensive machine.

The demonstration was fun and I agreed that the new machine was better for me. I also believe that the Jaguar is a better car for me, but that doesn't mean I'll go out and buy one.



Super discounts, clearance sales, and special sales of any kind create consumer pressures. One local computer franchise store was conducting a phenomenal sale on the PC*jr*. I walked in and was left to gaze around for about five minutes, marveling at the tremendous amount of computer power

ILLUSTRATIONS BY JIM LUDKE

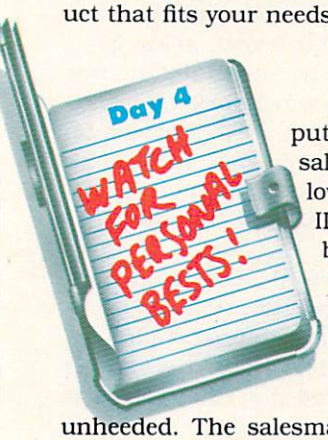
surrounding me. The place was full of Macintoshes, IBM PCs, Hewlett-Packards, etc.

My salesman methodically demonstrated some of the capabilities of the PC*jr*. I said I'd return with my family. Then the pitch began. "We only have a few of these left at the sale price. I wouldn't take too long to decide. They're selling faster than we can stock them."

I began to sweat in the climate-controlled display room. Another salesman backed up his colleague. "Yup, I wrote up three this morning."

Gosh! I had nonchalantly walked into the store because I was curious about the PC*jr*, but I was exiting with my adrenaline racing.

My advice is to set a ballpark figure for spending, then concentrate on finding a product that fits your needs.



At another hi-tech computer franchise store my salesmen was obviously in love . . . with an Apple IIc. He touted its portability. Even though I told him I didn't really need portability, he stood strong. I had other questions, but they went virtually unheeded. The salesman was distracted by a new flurry of customers in business suits (better potential customers?), and I was handed the IIc's demo disk.

After 10 minutes of running the demo, I grew restless. The demo was illuminating, but, like most, obviously designed to maximize the best features of the machine. "Whaddya think?" asked the salesman. "Perfect, isn't it?"

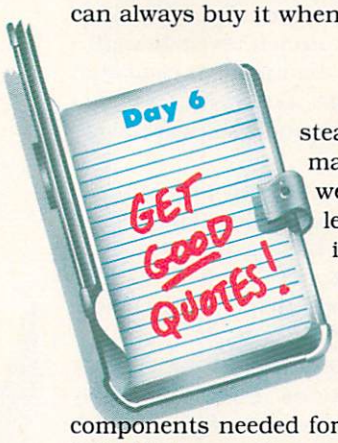
I said I'd have to see some *real* software run on it. I said many of my friends used *WordStar*, for word processing. He said *WordStar* didn't run on the IIc, but that many other fine word processing programs did. However, the software he chose to show me was *MousePaint*, an intriguing program that allows you to draw color pictures with a mouse—but which didn't answer my needs. Again, I think he was trying to show off the machine. Or maybe he was a victim of the store's training program, and had only one spiel to give.

One selling point that attracts shoppers to specialty computer stores—as opposed to large, discount merchandisers—is service. Computer stores that are authorized dealers for particular brands usually offer contracts for service beyond the life of the warranty. However, whether or not you need elaborate service contracts is debatable.

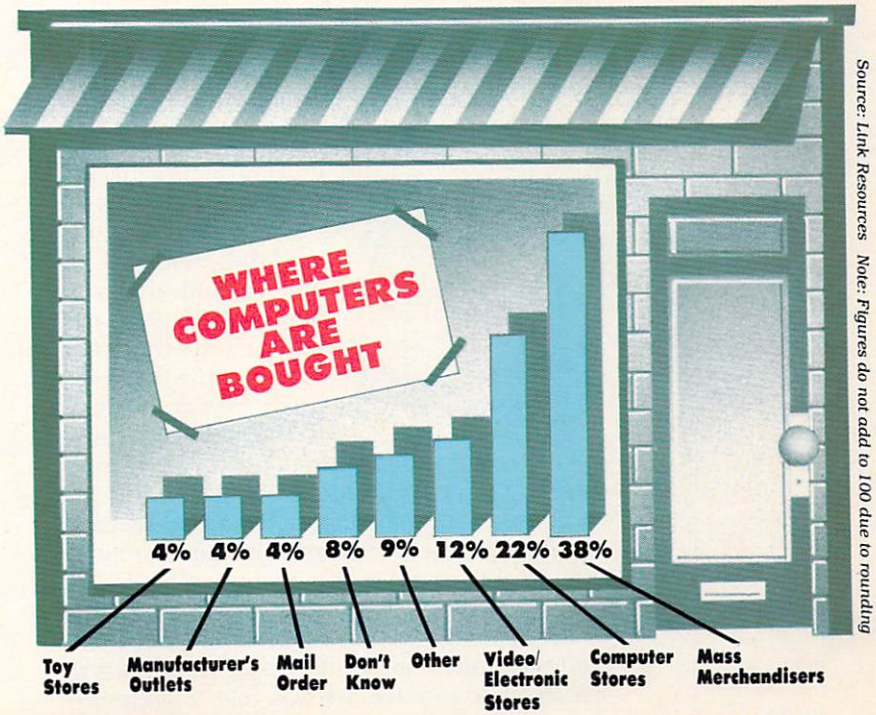
When I ask the folks at computer stores what they think of service contracts, they always respond by telling me how often things break or how disk drives routinely wear down. When I put the same question to mass merchandisers, they say that computers seldom break down. "Computers aren't mechanical, they're electronic," one apparently knowledgeable retailer told me. "If computers break they do so in the very beginning, while still under warranty."

Who do you believe? I used my computer constantly for three years before something failed. When it did, I found plenty of third-party service centers willing to clean and align the head on my aged drive. The repair cost $60 and took one week. Since I had another computer at home, the repair didn't inconvenience me. And a service contract for all those years would have been significantly more expensive.

My advice: Let your pocketbook and conscience be your guide. Although I generally don't take out service contracts, it comforts me to buy from stores that offer service. I figure I can always buy it when I need it.



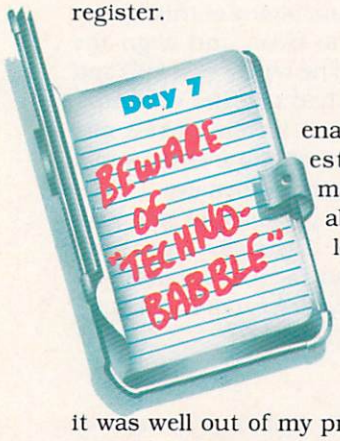
It took me a week of steady shopping to realize many of my price quotes weren't truly accurate. I learned this during a visit to the Sears Business Systems Center, where the saleswoman quoted me a price on the IBM PC. She carefully listed all the components needed for a working system: the DOS (disk operating system), the printer inter-



Source: Link Resources Note: Figures do not add to 100 due to rounding

face, the color graphics adapter, etc. "Oh, no!" I exclaimed. "No one else mentioned those expenses." The total came to around $2,500; all I'd heard before was that the computer cost $1,400.

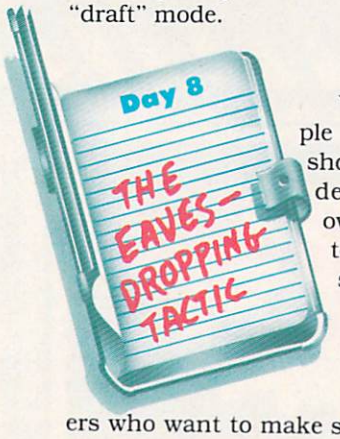
When you get a price quote, make sure you've got the whole story. That often means knowing what you need, which is a good habit to cultivate. If you buy a monitor, for instance, or a printer, you're also going to need a cable. Get the salesperson to itemize each component on paper before you make your decision. Otherwise, you're in for a rude shock at the cash register.



Some salespeople are enamored of the very "latest" in everything. No matter what you tell them about your needs, they lead you to the newest thing in the store. One salesman was raving to me about the Macintosh, even though I had made it clear that it was well out of my price range. Moreover, at that time there was not much software available for the Macintosh.

Close cousins of such salespeople are those who specialize in "technobabble." They figure they can wow you into buying by giving you long lists of technical specs—such as "256K, double-sided drives, hi-res display, touch-sensitive screen," etc.

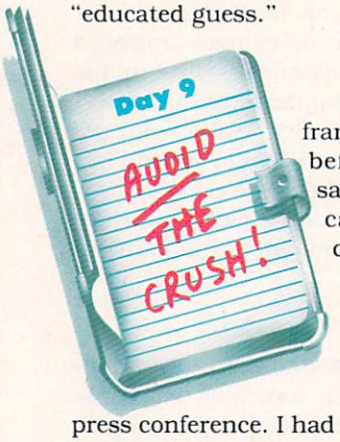
I've learned to respond to both sales types by asking human questions. I ask how many pages of text a given computer and given word-processing program can hold at one time, how many addresses a data-base package can hold, how fast a printer can print in its "correspondence-quality" mode—not just its fastest "draft" mode.



You know all salespeople develop tactics; if you shop long enough you'll develop some of your own. From now on I intend to hang around a store until I get some indication that the salespeople support their repeat customers as well as customers who want to make small purchases of software or computer books.

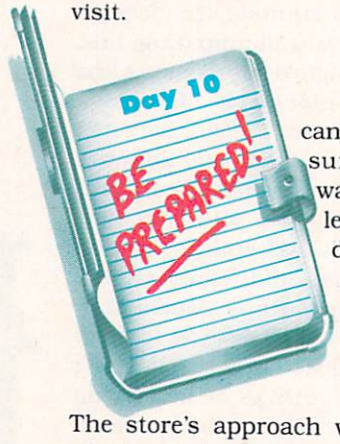
I observed one shopper, who had recently bought a printer, return to the same store to buy a cable. (Apparently he hadn't been told he'd need one!) The store didn't carry the brand of computer he owned, and no one there could tell him what kind of cable he needed to match his computer. He was told to go home, look it up in his manual, and return.

You'd think they could have spared a repeat customer (especially one who'd bought a $400 printer) the inconvenience of a trip home by placing a call to the manufacturer. On the other hand, I was gratified to see the store didn't sell the guy the wrong cable by taking an "educated guess."



I had to return to one franchise store two times before I could corner a salesperson. At my local camera/computer discount store I had to yell questions to an overburdened salesman—he looked like he was surrounded by reporters at a presidential press conference. I had to return to a hi-fi store on the day when a certain "computer expert" would be working. You think I've got this kind of time?

The first two inconveniences could have been avoided had I shopped during "off-peak" hours. Avoid, if at all possible, shopping on weekends or during lunch hour, unless you know what you want and don't need help. If you're shopping at a computer specialty store, you can avoid return trips by calling ahead and finding out which salesperson is best suited for your particular needs, and when you should visit.



In some stores you can't be a questioning consumer. At a big "video warehouse" I visited, Coleco ADAMs and Commodore 64s were selling for fantastic prices. The music was blaring and the salespeople were dancing too hard to listen to questions. The store's approach was: "What you see is what you take home."

In many stores, however, you can question the salespeople. I've learned to blast away with questions without inhibition. I never walk into a store empty-handed. I bring a list of questions, and pencil and paper to take notes.

I try, as much as possible, to read up on my subject—both the store and the product—before I walk in the door. It's not fair to walk in and fall helplessly into the arms of a salesperson. It's more productive to say, "I've heard there isn't much software available for this machine," and let the salespeople take it from there.

You go to school to learn, and to stores to buy. The salesperson's job is to make a sale, not to educate. FC

BUYER'S GUIDE TO COMPUTER SYSTEMS

HOW TO BUILD A SYSTEM IN THREE STAGES

This Buyer's Guide is the work of several people. Charles Gajeway, a contributing editor to FAMILY COMPUTING, *and long-time Apple and IBM expert, wrote the introduction and compiled Apple and IBM systems.*

Louis Wallace, who has written several Buyer's Guides and product reviews for FAMILY COMPUTING, *and who is a former president of the Gainesville, Florida, Commodore Users' Group, was charged with listing Commodore and Atari components.*

Lance Paavola, FAMILY COMPUTING'S *technical director and author of the "Tandy 1000 Preview" in this issue, took on the challenge of tracking down the best equipment for the TRS-80 Color Computer. He was aided by comments from Sandy Trevor and Richard Gregory, CoCo fans found on CompuServe.*

In some ways, choosing a computer system is like shopping for a stereo. Some manufacturers offer prepackaged systems that include all the major operating parts. Others sell the keyboard and CPU alone, and leave the task of assembling a working system—with a cassette or disk drive, a TV or monitor, a printer—to you.

Of all the major computers designed specifically for home use, only Coleco's ADAM is a complete system; all the rest require at least some decisions on the part of the buyer as to what auxiliary equipment he or she requires. Apple and IBM computers are often sold as systems, but can be expanded far beyond the "starter" stage to meet growing needs.

Among business-oriented computers, many of which are now being used in the home, the Compaq, Epson QX-10, Kaypro 2X and 4, Apple Macintosh, Sanyo MBC 550, TRS-80 Model 4, and the Panasonic Sr. Partner (*see chart*) are often sold as complete systems.

Whether you're buying a computer primarily for business, education, or entertainment use, we feel the basic hardware needs are very similar, as are the basic patterns of growth and expansion. Obviously, if you're a musician or an artist, you'll expand somewhat differently than an accountant, parent, or a writer. But the basic path will be the same.

What makes a piece of hardware good is that elusive balance between usefulness, reliability, and price—i.e. the value factor. Adaptability and expandability are also key product attributes. It is downright wasteful to have to discard a piece of a system when upgrading it or expanding its capabilities. Choosing versatile equipment at the start is a key factor to the long-term enjoyment and usefulness of a home system.

Described below are three general types of systems—called "Entry," "Working," and "Dream." Whatever your primary application, the progression from one system to the next should follow the same logical pattern shown here.

ENTRY SYSTEM

An Entry system includes enough to get started. That means a keyboard and system unit (CPU), a display device (TV or monitor), a storage unit (cassette recorder or disk drive), and usually game controls (joysticks or trak balls). If you can afford it, a printer should also be included.

While purchase of the printer can be deferred for a while, not being able to produce hard-copy output seriously reduces the usefulness of any computer. If you're going to use your computer for business, start out with a low-cost letter-quality printer ($350–$500). You can add a more versatile dot-matrix printer later. If speed or the ability to print out graphics displays is a must, then you'll need a dot-matrix printer.

In general, low-cost letter-quality (daisywheel) printers are a better value than low-cost dot-matrix printers ($150–$250).

WORKING SYSTEM

The intermediate Working system expands the user's horizons with additional storage (either the first or second disk drive), a modem, and extra memory (if available). And, for those who couldn't afford it at first, a printer. This type of system will satisfy most users' needs.

Some of the items we've included in the Dream category—like a graphics tablet or a voice synthesizer—could be substituted to customize a system for a particular family's needs.

DREAM SYSTEM

The Dream system is the practical maximum—everything that will fit and offer the user a reasonable degree of functionality, particularly for business or professional use. Such a system includes items such as a high-resolution RGB (Red-Green-Blue) color monitor (where possible); a large capacity hard disk for fast, convenient data storage; a wide-carriage dot-matrix printer that will produce text and graphics on most sizes of paper; maximum RAM; a plotter to produce quality color graphics; a graphics tablet for computer drawing; and other niceties. This system offers the ultimate in convenience, speed, and flexibility.

APPLE AND IBM

In general, Apple and IBM computers are more powerful and easily expanded than lower-priced systems. For that reason, my equipment choices for these two systems are more advanced and specialized.

For the most part, using a color TV with Apple or IBM systems is unacceptable, since an 80-column display

1. ENTRY SYSTEM. Besides the keyboard and CPU (sometimes one unit), the Entry system should include either a TV or a monitor, and either a cassette recorder or a disk drive. A printer is recommended, but optional.

15 COMPUTERS FOR

Computer	Price	RAM: Minimum/ Maximum	Bundled Software	Bundled Hardware	Monitor, TV, or Both	Interfaces/Cartridge
ADAM	$750	80K	SmartBasic, *SmartWriter*, *Buck Rogers Planet of Zoom*	Digital data drive, printer, two joysticks	Both	Nonstandard parallel; cartridge
Apple IIc	$1,195	128K	BASIC, ProDOS, tutorials	Disk drive	Both	2 RS-232C serial ports
Apple IIe	$995	64K/128K	BASIC, ProDOS	Monitor, disk drive	Both	Optional; 7 expansion slots
Atari 800XL	$199	64K	BASIC	None	Both	Nonstandard serial; cartridge
Commodore 64	$199	64K	BASIC	None	Both	Nonstandard serial; cartridge
Commodore Plus/4	$299	64K	Word processor, data base, spreadsheet, graphics, BASIC	None	Both	RS-232C; cartridge; nonstandard parallel user port
Compaq Portable	$2,495	128K/640K	DOS 1.0, BASIC	Disk drive, monitor	Both	Centronics parallel
Epson QX-10	$2,495	256K	Valdocs (with word processing)	2 disk drives, monitor, RX-80 printer	Monitor	Centronics parallel and RS-232C; 5 option slots
IBM PC	$1,999	256K/640K	PC-DOS 2.0, BASIC	Disk drive	Both	Optional; 5 expansion slots
IBM PC*jr*	$999	128K/512K	PC-DOS 2.1, BASIC	Disk drive	Both	RS-232C serial; parallel is optional; cartridge
Kaypro 2X	$1,599	64K	BASIC, *Star* series, CP/M	2 disk drives, monitor	Monitor	Parallel, 2 RS-232C serial
Macintosh	$2,195	128K/512K	*MacWrite*, *MacPaint*	Disk drive, monitor, mouse	Monitor	2 serial, mouse, speaker, and disk drive ports
Panasonic Sr. Partner	$2,145	256K/512K	MS-DOS 2.11; *VisiCalc*; *pfs: report*, *file*, and *graph*, *WordStar*	Disk drive, thermal printer	Monitor	Parallel and serial
Sanyo 550-2	$999	128K/256K	MS-DOS 2.11, *WordStar*, *CalcStar*, *EasyWriter I*, BASIC	Disk drive	Monitor	Centronics parallel; RS-232C serial opt.
Extended TRS-80 Color Computer 2	$159	16K/64K	Extended Color BASIC	None	TV	RS-232C serial; cartridge
TRS-80 Model 4	$1,099	64K/128K	BASIC, TRSDOS 6.0	Disk drive, monitor	Monitor	Centronics parallel; RS-232C serial optional

FOOTNOTES: **1** *Plus/4 and Epson QX-10 allow horizontal scrolling.* **2** *Atari 800XL and Commodore Plus/4 have 16 colors, with 16 and 8 luminances, respectively.*

(best for word processing) is beyond the resolution of any TV. The only practical solution is to use a monochrome display for 80-column work, and a TV when color is needed (for games and educational programs). Or, you can put up the extra money for an RGB monitor—which does both well—right at the start. I've included an RGB in the Dream system.

Since Apples and IBMs are often used for business applications, and are frequently sold with a disk drive, tape recorders are not an option.

APPLE IIe

Entry System

COMPUTER: Apple IIe 64K "Starter System" ($995)

Includes:

STORAGE: Apple Disk II with controller card (Apple DuoDisk dual drive is extra)

Not Included:

DISPLAY: Apple Monitor II ($229)

PRINTER: Silver-Reed EXP 400 ($399), or Epson RX-80 ($399), or Okidata Microline 82A ($499), or Star Micronics Gemini 10 ($399)

INTERFACE: Orange Micro Grappler+ parallel printer interface ($145)

The Apple IIe Starter System is a superb way to enter computing. The Silver-Reed is a good (but slow) performer that uses standard daisy wheels and ribbons. The Orange Micro Grappler+ printer interface only makes sense if you're adding a parallel dot-matrix printer, such as an Epson. If you are, this interface allows you to print out all Apple graphics with virtually any major brand.

Working System

Add to the above:

STORAGE: Apple Disk II ($429), unless DuoDisk purchased with Starter system

MODEM: Hayes Micromodem IIe ($329); or Apple Super Serial card ($125) and Hayes Smartmodem 1200 ($699)

INTERFACE: Taxan 410-64K memory add-on 80-column card ($250)

OTHER: Kensington Microware System Saver fan ($89)

Resist the temptation to buy a non-Apple disk drive, even though many third-party drives store much more data. Apple drives are extremely reliable and well serviced. The Kensington fan cools the system, and also provides outlets for a printer and monitor, as well as a front-mounted power switch. The Taxan interface card is preferable to others (all expand memory to 128K and give 80-column displays) because the Taxan allows for RGB output. The Hayes Micromodem IIe (300 baud) is an internal modem (which means that you won't need a serial card), but the Hayes 1200-baud Smartmodem is four times faster and can save money. Hayes modems are industry standards, and will work well with virtually any communications program.

Dream System

Add to the above:

STORAGE: Great Lakes Superior 10 megabyte hard disk drive ($1,495)

PRINTERS: Okidata Microline 84 dot-matrix printer ($1,099), or Star Micronics Gemini 15X ($549), and/or Hewlett-Packard 7470 plotter ($1,095)

DISPLAY: Taxan 415 High Resolution RGB monitor ($540)

INPUT DEVICES: KoalaPad touch tablet ($125), Apple Mouse ($99)

I use the Great Lakes hard disk drive on my IBM PC, and find it a reliable mass storage unit at a most attractive price. The Okidata 84 is the best all-around printer on the market today, in my opinion. The Taxan monitor is the finest Apple display I have seen to date.

APPLE IIc

Entry System

COMPUTER: Apple IIc ($1,195)

DISPLAYS: Apple Monitor IIc with stand ($239); or TV

PRINTER: Apple Scribe printer ($299) or ImageWriter ($595)

Unlike the IIe, which is an extremely flexible system, the IIc is fairly straightforward. The disk drive is built in. Apple's own components

HOME USE

Disk Drive Storage	No. of Keys	Function Keys	Text Display	No. of Colors	Sprites	Voices/ Octaves	Maximum Resolution
256K	75	6 Smart Keys	36×24	16	32	3/5	256×192
143K	63	2	80×24	16	None	1[3]	560×192
140K	63	2	40×24	16	None	1[3]	280×192
180K	65	4	40×24	256[2]	4	4/3.5	320×192
170K	66	8	40×25	16	8	3/9	320×200
170K	67	8	40×24[1]	121[2]	None	2/4	320×200
320K	83	10	80×25	16	None	1[3]	720×300
376K	105	18	80×24[1]	2	None	1[3]	640×400
360K	83	10	80×25	16	None	1[3]	640×200
360K	62	10	80×25	16	None	3/7	640×200
195K	72	18	80×25	2	None	None	100×160
400K	58	1	varies	2	None	4/12	512×342
360K	83	10	80×25	16	None	None	640×200
360K	84	5	80×25	8	None	1[3]	240×200
156K	53	None	32×16[4]	8	None	1[3]	256×192
184K	70	3	80×24	2	None	1[3]	256×192

3 *One-voice computers can be programmed to output varying numbers of tones.* 4 *No lowercase characters.*

match its design and work well. The Scribe is a reasonably priced color printer; if you don't want color output, then a low-cost letter quality or a medium-priced dot-matrix—such as the ImageWriter—would be better. But you have fewer choices here than on the IIe, since the IIc has a serial printer interface.

Working System

Add to the above:
STORAGE: Disk IIc ($329)
MODEMS: Apple Modem 300 ($225) or 1200 ($495)
INPUT DEVICE: Apple Mouse ($99)

If you can afford it, go with a 1200-baud modem. Since the serial interface is included (it's not on the IIe), you can put that saved money into a more powerful modem.

Dream System

Add to the above:
DISPLAY: Apple Color 100 monitor ($599)
INPUT DEVICE: KoalaPad touch tablet ($125)
PRINTER: NEC 3500 Spinwriter serial printer ($1,795), or Riteman L.Q. ($299)

The NEC is a very versatile printer, if you need letter-quality text and/or wide (203-character) printouts. The Riteman L.Q. is a light letter-quality printer for people on the move.

IBM PC

Entry System

COMPUTER: IBM PC, 256K, one 360K disk drive ($1,795)
DISPLAY: NEC JB-1270MA monochrome monitor ($249)
PRINTER: Silver-Reed EXP-400 daisy-wheel printer ($299)
INTERFACES: Quadram Quadcolor 1 display adapter ($275) or AST Six-Pak multifunction adapter, ($395)

The IBM PC is the most fully-equipped Entry system presented here, because it has more potential for future growth. The Quadram color graphics board allows a 16-color display. The AST Six-Pak, which adds six expansion ports to the PC, is reliable and practical, although the equivalent Quadram unit is a good alternative.

Working System

Add to the above:
STORAGE: 360K IBM disk drive ($425)
MEMORY EXPANSION: 128K RAM to main circuit ($110–$150)
MODEM: Hayes Smartmodem 1200B internal modem ($599)

Buy RAM chips (memory) from a reliable mail-order house and install them yourself with a Radio Shack IC (integrated circuit) inserter—you'll save a bundle.

Dream

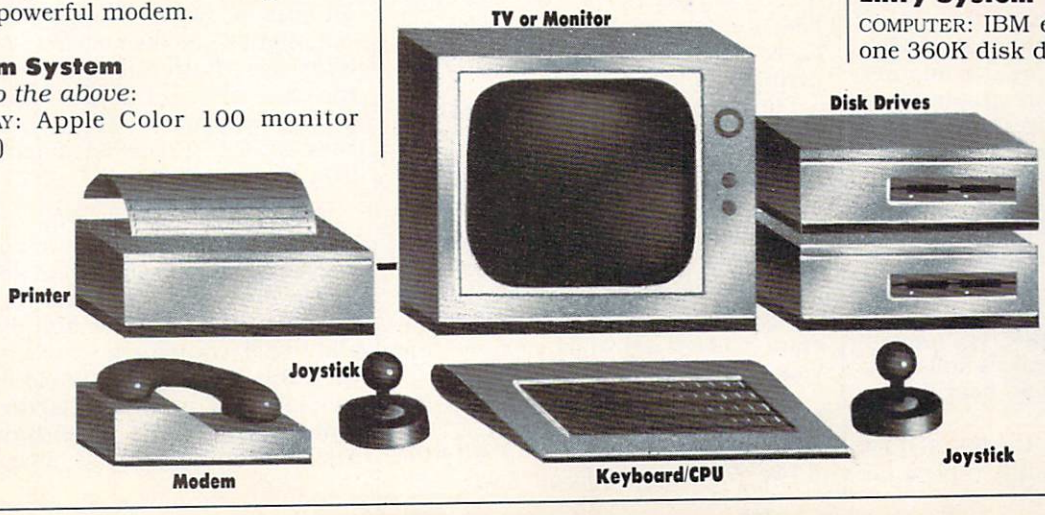
Add to the above:
STORAGE: Iomega Bernoulli Box 10 megabyte hard disk drive ($2,695)
DISPLAYS: Quadram Quadchrome monitor ($695), or Princeton HX-12 RGB monitor ($695)
PRINTERS: Okidata 84 ($1,099) or Star Micronics Gemini 15X ($549), or Hewlett-Packard 7470 plotter ($1,095)
INTERFACE: 384K RAM on AST Six-Pak ($350)
INPUT DEVICES: KoalaPad graphics tablet ($150), PC Mouse ($295)

The Bernoulli Box is a new concept in mass storage (a 10 megabyte floppy disk) that has proved itself practical in a very short time. The Quadram and Princeton monitors are both superb.

IBM PCjr

Entry System

COMPUTER: IBM extended PC*jr*, 128K, one 360K disk drive ($999)



2. WORKING SYSTEM. If you didn't have a printer in the Entry System, add one now. Switch from cassette to disk drive. If you initially bought a disk drive, you might add another. Add a modem for telecommunications.

DISPLAYS: NEC JB-1270MA monochrome monitor ($249); or TV
PRINTER: Silver-Reed EXP 400 daisy-wheel printer ($399)

It doesn't make sense to buy a color monitor for the PC*jr*. Use a color TV until you can afford an RGB monitor, which makes the PC*jr* look great.

Working System
Add to the above:
MODEM: IBM PC*jr* internal 300-baud modem ($199)
MEMORY EXPANSION: Tecmar *jr*Captain multifunction expansion 128K ($395)

While you can use IBM's memory expansion units (they attach to the side of the unit), the Tecmar *jr*Captain mates perfectly with the system unit, and provides expanded memory (to 256K), a clock, and a printer connection (parallel).

Since the IBM modem is internal, the serial port is left free for a printer.

Dream System
Add to the above:
DISPLAY: IBM PC*jr* Color Display ($429)
PRINTERS: Okidata 84 dot-matrix printer ($1,099), or Star Micronics Gemini 15X ($549)
MODEM: Hayes Smartmodem 1200 ($699)
MEMORY EXPANSION: Tecmar *jr*Cadet memory expansion, 64K to 384K ($195–$595)

The IBM PC*jr* Color Display, a superb RGB monitor, performs nearly as well as the pricier IBM PC Color Display. And, it's the only monitor we know of that can sit atop the PC*jr*. Others interfere with the operation of the unit. If you decide to use the Hayes Smartmodem 1200, you'll connect it to the serial port, meaning you'll have to use a parallel printer.

—CHARLES GAJEWAY

ATARI 800XL

The first thing to know about the 800XL—long revered as a computer with great sound and graphics—is that its future is uncertain. Atari's new owner and President, ex-Commodore chief Jack Tramiel, has indicated that the 800XL will probably not be available much beyond Christmas. But, since the 800 line has been around for several years, there's plenty of software and peripherals to support it. Plan on getting equipment fairly quickly, while dealers still carry it. The prices should be heavily discounted.

In addition, because the 800XL has a 40-column display only, there's no point in getting a monochrome monitor. A TV or color monitor will suffice for all Atari software. Finally, the Atari has a nonstandard interface; to connect most printers and modems, except some made expressly for Atari, you'll need a special interface.

Entry System
COMPUTER: Atari 800XL ($199)
STORAGE: Cassette: Atari Program Recorder ($50); or Disk Drives: Atari 1050 ($299), or Indus GT ($485), or Rana 1000 ($449), or Trak AT-D2 ($499)
DISPLAYS: Amdek Color 300 ($349) or Commodore 1702 ($300) monitors; or color TV

The Atari 1050 is not the world's greatest disk drive, but it works, and the price may be right. The Trak drive has a parallel-printer port built into the back, which is a major advantage, and it stores considerably more than the Atari 1050.

Both the Commodore 1702 and Amdek color monitors are very good composite color monitors, and will give better performance than a TV. If you're going to start out with a cassette recorder, you must use the Atari Program Recorder.

Working System
Add to the above:
STORAGE: Disk drive (add to cassette system)
PRINTERS: Inforunner Riteman Plus ($399), or Star Micronics Gemini 10X ($399), or Okimate 10 ($169)
MODEM: Microbits Peripheral 1000c ($149), or Anchor Automation's Volksmodem ($79)
INTERFACES: Atari 850 Interface ($50) or Digital Devices' Ape Face ($79)

If you started your system with a cassette recorder, you should add a disk drive now. Otherwise, adding a printer should be your top priority. The Gemini 10X printer is a good quality dot-matrix printer. The Atari 850 interface, or Digital Devices Ape Face, will be needed to connect some peripherals.

The Axiom printer comes with a direct-connect cable for the Atari. The Okimate 10 is a remarkable color-graphics printer that also prints text, and is sold with an interface/cable ($69) for the Atari (or Commodore). The Microbits Peripheral modem plugs into the joystick port and comes with a communications program. There's an Atari cable for the Volksmodem.

Dream System
PRINTERS: Silver-Reed EXP-400 ($399), or Smith-Corona Fastext-80 ($259), or AlphaPro ($399)
MODEM: Anchor Automation Mark XII 300/1200-baud modem ($399)
INPUT DEVICE: Atari Touch Tablet ($110)

If you want to add a letter-quality printer to your arsenal, consider the Silver-Reed 400, or Alphacom's AlphaPro. Smith-Corona's Fastext-80 is a reasonably priced dot-matrix.

The Atari Touch Tablet is a superb drawing tool. Since the Atari has 256 possible colors, you can create some fascinating graphics with it. The Anchor Mark XII is Hayes-compatible.

COMMODORE 64

The Commodore 64 is known for its great sound and large software base. When thinking in terms of a system, however, it has one limitation: nonstandard interfaces. Thus, when you are connecting peripherals not made by Commodore, you'll need a special interface. On the other hand, a feature that makes adding peripherals easy is the "expansion slot" in the back of the C 64.

Be sure to keep compatibility in mind. For instance, if you plan on getting an 80-column cartridge and an IEEE interface for faster disk drive access, you can't count on all of them to work together. And not all printer interfaces will allow you to print out all the Commodore graphics.

Entry Level
COMPUTER: Commodore 64 ($199)
STORAGE: Cassette: 1530 Datassette Recorder ($70); or Disk Drive: 1541 Disk Drive ($260)
DISPLAYS: Commodore 1702 ($300) monitor; or TV

Working System
STORAGE: MSD Systems dual disk drive ($699)
PRINTERS: Axiom GP 550 CD ($319), or Mannesman-Tally Spirit 80 ($399), or Okimate 10 ($169)
MODEMS: C1600 ($49) or Anchor Automation's Volksmodem ($79)
INTERFACE: Batteries Included Buscard II ($199) and Cardco Card?/+G printer interface ($89)
INPUT DEVICE:: KoalaPad touch tablet ($110)

If you didn't buy a disk drive at first, the MSD dual drive is a possibility. It's the most compatible and reliable of third-party drives for the C 64. However, it's expensive, and requires additional equipment since it uses the IEEE interface. It should only be considered if you're using the computer to help run a small business. The Buscard II is the choice IEEE interface.

The Mannesman-Tally Spirit 80 dot-matrix printer has a good "near letter-quality" text, and can also handle graphics for charts and pictures. Since it's an Epson-compatible printer, many software packages work with it. The Cardco interface (an interface is needed for any non-Commodore printer) allows all the Commodore characters to be printed. The C1600 VICModem (300 baud) is a very good, inexpensive modem that plugs right into the C 64. Anchor Automation's Volksmodem is somewhat more sophisticated—and equally easy to use.

Dream System

Add to the above:

DISPLAY: Monochrome Monitor

PRINTER: Silver-Reed EXP-400 ($399)

MODEM: Hayes Smartmodem 1200 ($699) and VIC 1011A RS-232C interface ($50)

INTERFACE: Batteries Included 80-column adapter ($199)

OTHER: Tech-Sketch LP-10 light pen ($39; $119 w/software) and/or Currah's The Voice Messenger

For the dream system, an 80-column card from Batteries Included has been added, since it will work with the Buscard II IEEE interface. (Note: Many Commodore word-processing programs will not take advantage of 80-column displays; Batteries Included PaperClip does.) If you do add the 80-column display, you'll need a monochrome monitor for a clear display. Currah's Voice Messenger is a superb speech synthesizer, and is relatively easy to program. —LOUIS WALLACE

TRS-80 COLOR COMPUTER

The CoCo, as the Color Computer is known, is designed to be used with a color TV. Special third-party interfaces are required to make it work with a monitor. And, if it's used with a black-and-white TV, the benefit of many of its features is lost.

Text display (only 32 characters-per-line and 16 lines) is not the CoCo's strong suit. Without a third-party hardware add-on, lowercase letters appear as inverse capitals. Despite these limitations, the CoCo can be revved up to be a powerful system.

Entry System

COMPUTER: 16K Extended TRS-80 Color Computer ($159)

DISPLAY: Color TV

STORAGE: CCR-81 Cassette ($59)

We chose the CCR-81 over the new CCR-82 because it does not require an AC adapter; unless you plan to travel with your CoCo, you'll want the security of knowing that low batteries aren't interfering with clear recording. (You can also use your own cassette tape recorder.) The Extended model is highly recommended over the Standard Color Computer ($119). It's much easier to program and allows you to connect a disk drive without an upgrade.

Working System

MEMORY EXPANSION: 16K version to 64K ($69)

STORAGE: Color Disk #1 Kit ($349)

PRINTERS: DMP-105 Dot-Matrix Printer ($199) or CGP-115 Compact Color Graphics Printer ($199)

MODEMS: Deluxe RS-232 Program Pak ($79) and Direct-Connect Modem I ($99) or Auto-Answer, Auto-Dial Direct Connect Modem II ($199) and Multi-Pak Interface ($179)

INPUT DEVICE: TRS-80 Touch Pad ($59)

The CGP color graphics printer prints text, charts, or "doodles" using four colored pens (on 4½-inch roll paper). A modem or a serial printer can be connected directly to the CoCo without the need for an additional interface. The RS-232 Program Pak allows you to connect both at once by giving you access to an additional serial port via the cartridge slot. The Multi-Pak Interface allows the RS-232 Pak and the disk drive both to be connected permanently to the CoCo; however, only one can be used at a time.

Dream System

DISPLAY: High-resolution Video Monitor and Word-Pak II ($149), or Green Mountain Micro LowerKit III ($129)

STORAGE: Color Disk #2 ($279)

PRINTERS: CGP-220 Color Graphics Printer ($699) or DWP-210 Daisy-Wheel Printer ($599)

MODEM: Radio Shack DC212 300/1200-Baud Modem ($399)

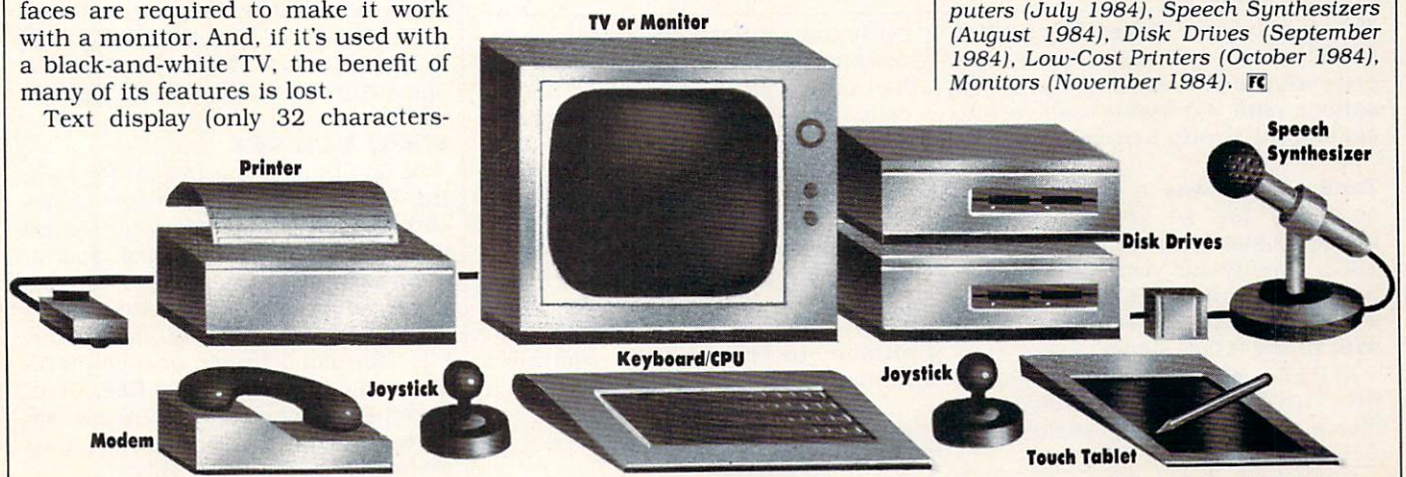
OTHER: Sound/Speech Cartridge ($99), and/or RS-232C Selector Switch ($149), and/or PBJ's PC-Pak Parallel Port and Clock ($132)

The selector switch allows up to three different printers/modems/plotters to be connected permanently to the same serial port. LowerKit gives the CoCo lowercase capability. Word-Pak gives an 80-column display *plus* lowercase. (To use this you'll need a monitor, since TVs don't display 80 columns of text clearly.) LowerKit gives "full-time" lowercase, whereas Word-Pak lowercase has to be supported by software. The PC-Pak allows future use of high-quality parallel printers and gives you the current date and time. —LANCE PAAVOLA

MANUFACTURERS

Space does not permit a listing of manufacturers' addresses here. Authorized computer dealers should have product information for major brands. Many smaller companies that rely on mail order may be found in the pages of Computer Shopper *(P.O. Box F, Titusville, FL 32781; [305] 269-3211). The Electronic Industries Assoc. has listings of major computer manufacturers (EIA, 2001 Eye St., NW, Washington, DC 20006; [202] 457-4919).*

For more product information, refer to past FAMILY COMPUTING *Buyer's Guides: Computers (June 1984), Portable Computers (July 1984), Speech Synthesizers (August 1984), Disk Drives (September 1984), Low-Cost Printers (October 1984), Monitors (November 1984).* FC



3. DREAM SYSTEM. The sky's the limit here—a music and/or speech synthesizer, touch (graphics) tablet, light pen, second printer (maybe color), RGB monitor, and mouse are all fair game. These and other add-ons will make the computer easier and more fun to use, and help expand your potential.

A PREVIEW:

TANDY 1000

BY LANCE PAAVOLA

A LIVELY IBM PC-COMPATIBLE AT A REASONABLE PRICE

The Tandy 1000: compatible with IBM's PC, plus some attractive surprises—and only $1,199 (monitor excluded).

This is a preview of the Tandy 1000, based on a brief look in August at a preproduction model and on conversations with marketing and technical staff at Tandy headquarters.

Tandy Corp. was a leather goods company for 44 years before it bought Radio Shack's nine stores in 1963. Twenty-one years later, Tandy has built Radio Shack into the world's largest electronics retailer, with nearly 9,000 stores.

In 1977, with the introduction of the TRS-80 Model I, Tandy/Radio Shack also became the world's largest manufacturer and retailer of microcomputers. Soon, more Model I's had been sold than all other micros combined. But, as the idea of personal computers caught on and other companies rushed in to produce and sell them, Tandy slowly lost its lead. At the same time, it diversified its product line to cover all sections of the growing market for microcomputers, from hand-held pocket computers to portables, and home machines to heavy-duty business computers.

THE NEW "TANDY" COMPUTERS

The introduction of the Tandy 2000 last December marked the beginning of yet another major change for Radio Shack. The Tandy 2000 forsook Radio Shack's own TRSDOS disk-operating system (a program that allows the computer to work with disk drives) in favor of the de facto standard for business micros, Microsoft's MS-DOS, originally designed for the IBM PC. It discarded the traditional gray, industrial design of earlier TRS-80 computers for a sleeker, white look. And, partly to emphasize these changes and partly to try to escape the "techie" image of Radio Shack stores, Tandy introduced, for the first time, a commercial computer product that was simply labeled "Tandy" instead of "TRS-80."

The second entry in the Tandy line, the Tandy 1000, is also an "IBM compatible." According to Tandy's Director of Market Planning, Ed Juge, the new Tandy 1000 will run "99.9 percent" of all software that runs on both the IBM PC and PC*jr*. Future Computing, a market research firm that tracks the computer industry, rates the 1000 "operationally compatible" with the IBM PC, the firm's highest rating.

What's more, the 1000 reflects some of what Tandy's learned from the success of its briefcase-size TRS-80 Model 100 computer. A multipurpose software package called *Tandy DeskMate*, "bundled" at no extra charge with every Tandy 1000, contains sophisticated versions of the text processing, scheduling, and telecommunication programs that come built into the Model 100—plus spreadsheet and data-base programs.

WHAT YOU GET

In addition to the *DeskMate* disk, the Tandy 1000 ($1,199) also comes with 128K RAM; a 360K double-sided disk drive; the MS-DOS disk operating system; GW BASIC; and connections for: a parallel printer, a TV (which requires an RF modulator, $24.95), monochrome or color monitor, and a high-resolution RGB (Red-Green-Blue) monitor. All of these features, except the disk drive, cost extra on the IBM PC or PC*jr*.

The detached, typewriter-style keyboard has an impressive 90 keys; it's

Lance Paavola is FAMILY COMPUTING's *Technical Director.*

PHOTOGRAPHS: RADIO SHACK, A DIVISION OF TANDY CORP.

the same one that's used on the 1000's big brother, the $2,750 Tandy 2000 business computer. And there's room for a second disk drive inside the main unit.

The tidy Tandy 1000 will take up just a corner of an office desk and perform well with business software like *Lotus 1-2-3*, yet it's comfortable in the home as well. With the same six graphics modes and three-voice sound (through a built-in speaker) as the PC*jr*, plus built-in light-pen interface, and two joystick interfaces, the 1000 can run all sorts of game and educational software. This even includes Microsoft's *Flight Simulator*, which does not run on many so-called "IBM-compatibles."

WHO WILL BUY IT?

Most people aren't going to pay over $1,000 for a computer just to play games, however. Tandy expects its newest computer will be used primarily by professionals or small businesses. The company emphasizes that people with an IBM PC at the office can take their work home and complete it on their Tandy 1000, whereas a lot of IBM PC software will not run on the PC*jr* (normally because of disk-drive requirements).

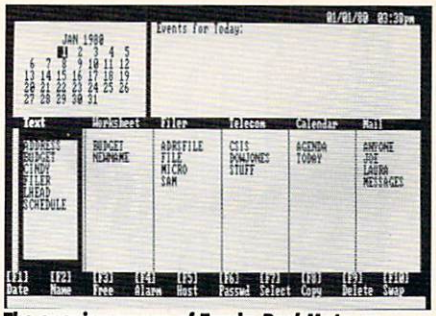
Tandy's Juge feels that the potential market for computers priced around $1,000, currently dominated by Apple and IBM, is a large one, and still more or less untapped. He hopes that people who didn't buy an IBM PC because of cost considerations, whose needs weren't met by the PC*jr*, and who weren't impressed by Apple's IIc will see the Tandy 1000 as providing premium performance for a low price.

SOFTWARE

By year-end, there should be a fair amount of software for the Tandy 1000 available in Radio Shack stores under the Radio Shack label, such as educational programs from the likes of Spinnaker and Sierra; popular games from Electronic Arts, Infocom, Sierra, and others; and *Multiplan*, *Friday!*, *Lotus 1-2-3*, and other business packages.

While the data-base and spreadsheet programs included in *DeskMate* are adequate for typical home uses, no word-processing program is included. The *DeskMate* text-processing program does not include formatting features common to word-processing programs. Therefore, it will probably not be flexible enough for home users who plan to use their computer frequently to write school reports, letters, or memos.

The line of in-store software for the 1000 may not expand much beyond



The opening screen of Tandy *DeskMate*, an integrated software package included with every Tandy 1000. *DeskMate* lets you do some serious computing as soon as the computer's out of the box.

40 or 50 titles, since Tandy wants to make sure its Radio Shack salespeople can demonstrate and support every title they sell. However, you can go into a Radio Shack Computer Center and order third-party software for Tandy and TRS-80 computers through the Express Order Software program.

COMPATIBILITY

Of course, you needn't buy your software in Radio Shack stores. Almost any program written for the IBM PC, and many for the PC*jr*, will run on the Tandy 1000. When a Radio Shack version of an IBM PC program is released, normally the only change is a rewriting of the documentation to reflect keyboard differences. Some of the Tandy 1000's 90 keys, versus 83 on the IBM PC and 62 on the PC*jr*, are named differently than their IBM counterparts.

Although the colors may be different, much PC*jr* disk software should also run on the Tandy 1000—at twice the speed! (The 1000, unlike the PC*jr*, has no cartridge slots, however.)

IBM compatibility has come at the price of compatibility with the Tandy 2000, which uses a high-density format on its disks (720K per disk) and has higher resolution graphics than the 1000 or the IBMs. And because the insides (microprocessors and operating systems) of Radio Shack's own Model 4 and Color Computer are completely different from the Tandy 1000's, programs written for them will not run on the 1000 either.

TANDY 1000 FACTS

MEMORY: 128K RAM, expandable to 640K
VIDEO DISPLAY: TV or monitor (monochrome, composite color, or RGB)
TEXT DISPLAY: 80 char. × 25 lines
GRAPHICS: 6 graphics modes; resolution up to 640 × 200; up to 16 colors (8 on-screen at once)
SOUND: 3 voices
KEYBOARD: Typewriter-style, 90 keys
SUGGESTED RETAIL PRICE: $1,199

PERIPHERALS AND EXPANSION

Being introduced with the Tandy 1000 are an auto-answer, auto-dial internal modem board ($179.95); an RS-232C card for use with serial printers and external modems ($99.95); a second disk drive ($299.95 plus installation); a 128K memory expansion board ($299.95); and two new monitors: a 12-inch green-screen ($159.95) and a 13-inch RGB ($549.95).

In addition, the Tandy 1000 will work with any existing Radio Shack printer or modem. The TRS-80 Touch Pad, made by Koala Technologies, also works with the 1000. And nearly any IBM PC card (circuit board) measuring 10 inches or less can plug right into one of the 1000's three internal expansion slots.

FIRST IMPRESSIONS

The Tandy 1000 is an attractive and versatile machine. It is also a serious machine. However, despite Tandy's efforts to get away from the Radio Shack image, the 1000 lacks the pizzazz of the other new entries in its price class. The PC*jr* and the Apple IIc both have vigorous and provocative national ad campaigns, embody a dramatic innovation in appearance (the *jr*'s infrared keyboard, the IIc's transportable design), and include friendly, carefully designed tutorials aimed at the novice.

The *Tandy DeskMate*, however, provides much more in the way of truly useful programs than do Apple's or IBM's tutorials. And the tutorial and reference manuals, not available at press time, may be well suited to beginners, in the mold of the famous TRS-80 Model I manual.

The 1000 gives users the power and flexibility of an IBM PC at a much more reasonable price. As compared to the similarly priced PC*jr*, the 1000 is faster and more expandable (through standard expansion slots and the provision for a second disk drive), and runs a greater variety of the software written for the PC.

Like the IBM computers, the 1000 is manufactured by a stable, well-run company that will provide good service. In fact, Tandy stocks replacement parts for all its computers for seven years *after* they are discontinued.

If you plan to use your computer primarily for games and education, you may be able to buy one for far less than $1,000 that fills your needs nicely. But if you're looking to spend around that amount for a computer that means business—but still knows how to have fun—you should consider the Tandy 1000. FC

The True Story of Dr. Doolittle

ILLUSTRATIONS BY JODY TAYLOR

ONCE UPON A TIME, DR. DOOLITTLE BOUGHT HIMSELF A COMPUTER...

BY JANE WOLLMAN

On Doolittle Road, in a chocolate-brown house hugged in summer by marigolds, white lilacs, and tiger lilies, lives Dr. Doolittle. There's a wishing well in the front yard, and at Christmastime, when snow covers the ground, a big fir tree stands sparkling with tiny colored lights. Dr. Doolittle has a green parrot that hardly ever stops talking; a smart, playful dog, Sparkie; a good-natured horse named Cocoa; plus several dozen unicorns. And every day you can see the townspeople taking their pets to Dr. Doolittle for care.

That's right. This is the tale of Dr. Doolittle. Not the Dr. Dolittle you're probably thinking of. Not Dr. John Dolittle, the fictional animal doctor, who lived in Puddleby-on-the-Marsh and whose adventures fill Hugh Lofting's series of books that became the basis of a film musical. This is the story of Dr. Walter Doolittle, a *real* animal doctor, who lives on a road named for his father in the small town of Preston, Connecticut.

Like the imaginary Dr. Dolittle, this Dr. Doolittle also had to learn the "language" of animals in order to treat them. However, Dr. Walter Doolittle has learned another important language—computer language. And, he's introduced it, and the whole world of computing, not only to his wife, his children, and his grandchildren, but to scores of friends and neighbors living in the Preston area.

The Doolittles are as much a "computing family" as you're likely to find. They use computers for work, for play, for education, and for engaging in community activities. Just about all the members of the Doolittle clan—which includes five grown children, two daughters-in-law, and six grandchildren, ages newborn-to-9—have absorbed micros into their daily routines. There are computers installed in Dr. Doolittle's offices, in his home, and in the homes of his grandchildren.

JANE WOLLMAN *is a New York-based freelance writer. She has written for* Esquire, The New York Times, *and* Working Woman, *among other publications. Her book on designing the complete workplace for computing at home will be published next year by McGraw-Hill.*

IN THE BEGINNING

It all started with a $600 computer the veterinarian purchased as a family Christmas gift six years ago. "I originally bought the computer because I realized the children would need to [be] computer savvy," says Dr. Doolittle, a tall, soft-spoken man who specializes in treating small animals—mainly dogs and cats and an occasional raccoon or armadillo. "That first computer was intended simply to get the kids and me going." Dr. Doolittle had never used a computer before, but he was determined to learn how and to acquaint his children with the wonders of bits and bytes.

A year passed. The limited 8K of random-access memory, the clumsy keyboard, and the slow, built-in tape drive of the early-model Commodore had begun to so exasperate Dr. Doolittle that he decided to upgrade to a better, more powerful machine. So he traded it in for a Commodore PET 2001 with 32K. [*Editor's Note: The PET 2001, which is no longer manufactured, was mainly targetted to a school audience.*]

Now, Dr. Doolittle was happy to find, his family was becoming increasingly interested in computing. With his wife, Irene, and daughter Pamela, Walter Doolittle enrolled in a course to learn programming in BASIC.

However, the big turning point—when the computer became a tool almost central to the family's life—didn't occur until about two years later. It was then that Walter sold the PET 2001 to buy a model with a faster operating system: the 32K Commodore 8032.

Irene now felt ready to use the computer to manage her husband's two practices—one run from a home-office in Preston, the other located in the nearby town of Groton. Up until then, Irene had assisted by handling clerical chores using a typewriter and carbon paper. Now, with the computer, she began transferring all of the doctor's nearly 3,000 patient histories from conventional file cards to disks. She also uses the micro, which was placed in the ground-floor office of the Doolittle home, for jobs such as preparing reminders to owners that their pets' booster vaccinations are due.

It was Walter's intention to move the computer to Groton for his office staff. But Irene refused to part with the machine. "I didn't want him to take my computer away because it was saving me so much time." The heart of the matter, she says, is that "once you start using a computer, you don't want to go back to the old way of doing things."

Irene easily won the battle, and the "typing terror," as her husband calls her, remained undisturbed, entering patient records—which include pet's name, sex, age, vaccination history, owner's name, address, phone numbers, and a "Remarks" column—into the computer at the rapid rate of 100 records per hour.

With the continuing need, however, for a computer at the Groton office, Walter had little choice but to buy a second machine. Today, he has a complete high-powered system at each location. There are, in his Preston home-office, the Commodore 8032 computer—souped up to 96K RAM with a 64K circuit board; a PET 2001 computer (he bought another); a Commodore 8250 disk drive with 2.12 megabytes of storage space; and a model 8024 Mannesman Tally dot-matrix printer with a wide (132-column) carriage. The Groton office holds a PET 4032 computer, also expanded to 96K, a Commodore 8050 disk drive with 1.05 megabyte storage capacity, and a 132-column Epson FX-100 dot-matrix printer.

The Doolittles in 1981. Since then, two grandchildren have been welcomed to the fold.

Most of the equipment, including disk drives and printers, was acquired through trade-ins. "Everybody in computers learns to wheel and deal—to trade and upgrade—as much as they can," says the doctor.

THE CHILDREN CLIMB ABOARD

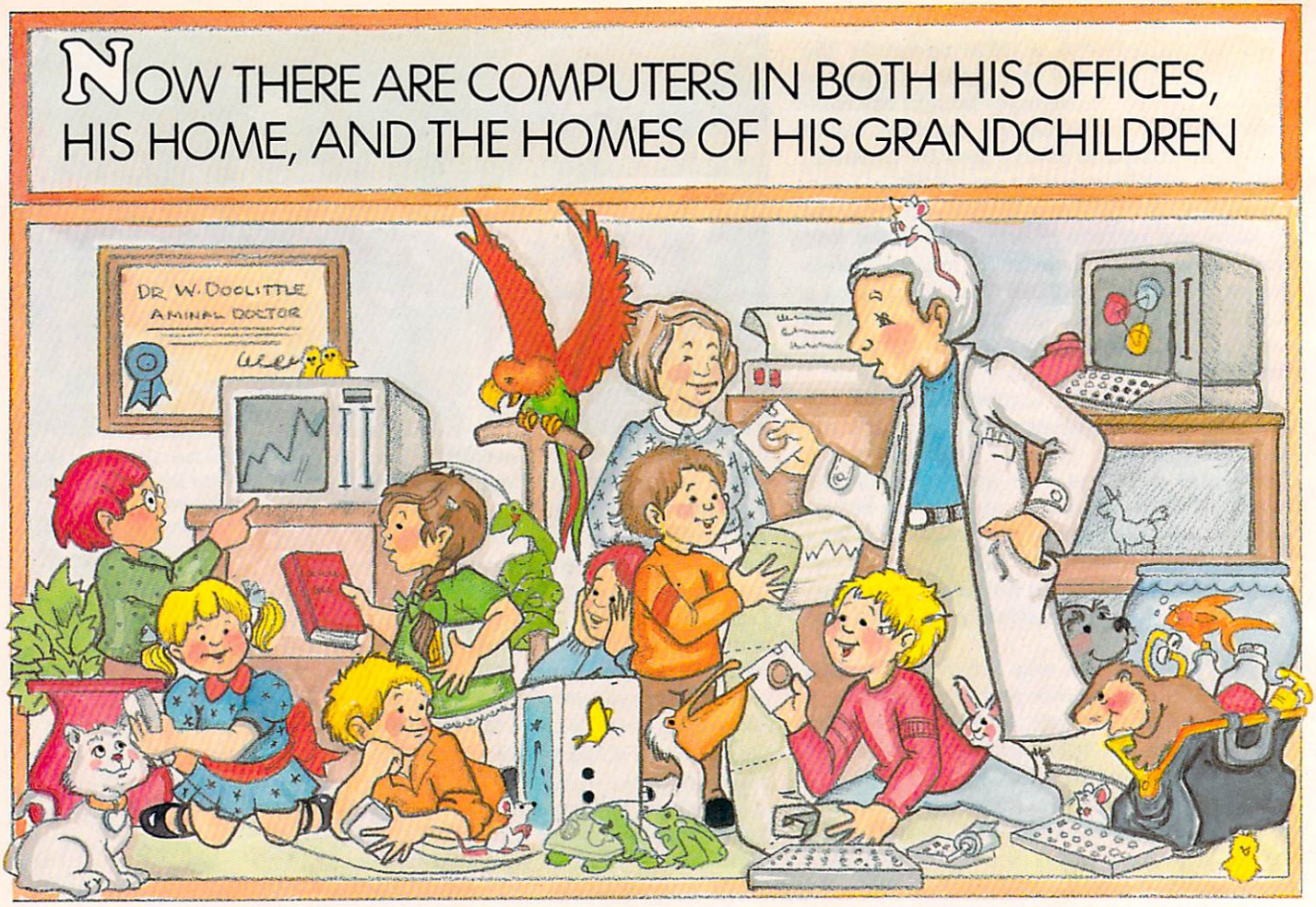
Meantime, back in 1981, while Irene was being charmed by the 8032, the Doolittle children found themselves becoming more and more attached to it, too. Pamela, in fact, decided to seek a job in the computer field, and is now employed doing data entry and word processing at McLaughlin Research Corp. in Waterford, Connecticut. She takes credit for influencing her secretarial school to expand its word-processing-instruction program.

Twenty-year-old Terry, a nursery school teacher, began using the computer extensively to prepare college reports and term papers. Says Irene: "Terry had been saving for an electric typewriter. But when I taught her how easy it is to use the word processor—particularly for making corrections and deletions—she thought it was the greatest."

"ONCE YOU START USING A COMPUTER, YOU DON'T WANT TO GO BACK TO THE OLD WAY OF DOING THINGS."

Once Walter and Irene had started the younger children on computers, they bought daughter Deborah and sons Charles and Philip, who live in nearby towns, each a PET 2001 and a Commodore Datasette tape drive. The Doolittle grandchildren are now using them, too.

Although they now have computers available at home, the youngsters' first request when visiting Grandpa, he says, is to "play with the computer." Then they're off—either tackling a game or using the machines to write



"GET THE PROGRAM THAT DOES WHAT YOU WANT IT TO DO, THEN GET THE COMPUTER TO RUN IT."

letters to friends and relatives.

Deborah's 9-year-old son, Jason, who's saving money to buy a disk drive, says he likes computer games better than video games because "they have a lot more action. With video games, you usually stay on just one level, but with the computer you can go on and on." His Aunt Terry has observed that "Jason likes the type of computer game in which he must figure out things and plan what to do next. He surprised us," she says, "because although he's a very get-up-and-go kid—into sports—he will sit at the computer for hours." Jason plans to be a drummer when he grows up. He says a computer will "tell me how much money I get and when the concerts are."

Right now, Charles and Kathy's 6-year-old, Chuck Jr., who thinks "computers are fun and help you learn stuff," is getting his first taste of debugging. "I try to write some programs, but it says SYNTAX ERROR every time," he explains. "I keep trying to fix it, but I can't. I think I might be able to, though," he adds, undaunted.

Adam, Philip and Barbara's 2-year-old, hasn't yet explored the keyboard, but his brother Jacob, 4, is learning the alphabet with the computer's help. He's already able to type friends' and relatives' names when told which letters to use.

SPREADING THE WORD

Walter is responsible not only for bringing the joy of computing to his own clan, but for introducing computers to other families in Preston and nearby towns. Irene reports that he receives as much mail from members of the New London (Connecticut) Commodore Users' Club as he does for his veterinary practices. New computer owners also telephone for help, and the doctor sometimes even makes house calls to handle a novice's "emergency."

Walter's popularity with local computer users is perhaps exceeded only by the celebrity status he won 15 years ago at the release of the *Dr. Dolittle* film. So many children flocked to his office to take a look at him—it wasn't unusual for 100 youngsters to gather at once in the reception room—that he often was unable to hold office hours. The congestion eased somewhat when he hired someone to ride the children around on Cocoa, then still a colt.

"At times, it was a bit overwhelming—there were so many kids coming to see me that it seemed like a zoo and I was the animal," says Walter, who became a vet mainly because an aptitude test showed him to be suited to a medical career, but he lacked the money to train for an M.D. He says that his name, coincidental to the profession he chose, serves as the

equivalent of "$20 million in free advertising."

When it comes to managing his practices, Walter depends on commercially available software rather than on anything custom designed. He chiefly uses three packages: *WordPro 5 Plus*, from Professional Software,Inc., for word processing—which even "personalizes" form letters he sends to patients (and, in fact, are addressed to each pet, as well as to the owner!); *Jinsam*, a data-base management system from Jini Micro Systems, for maintaining patients' vaccination histories and controlling an equipment-and-supplies inventory, among other uses; and the spreadsheet program, *VisiCalc*, from VisiCorp, for financial record-keeping and income-tax preparation.

Walter's advice to people planning to purchase a computer is to first shop for software. "Get the program that does what you want it to do, then get the computer to run it," he says. "Most people go about buying a computer backwards. They just concern themselves with hardware brands instead of first thinking about what they want to do with the machine."

MORE WAYS THAN ONE

Besides using computers to run two veterinary practices, Walter and Irene have found a variety of other ways their micros can help them. Irene, who doubles as a real-estate broker, relies on the computer to set up mortgage-payment schedules and to ready apartment leases for properties she handles. She also uses it for buildings she and her sons, Charles and Philip, own. The computer is enlisted to calculate buy-sell decisions affecting mutual-fund investments, as well.

Walter sits down at the computer to work financial analyses, and to program and prepare correspondence and reports. One of his major projects involved using the micro to accumulate and update evidence, plus track time and expenses, for a six-year court case. One program he developed enables stroke victims left with inadequate communication skills to express themselves.

In addition, the Doolittles apply computer technology to regional politics. The Commodore 8032, for example, keeps track of donations made to support a local senatorial candidate, and prints labels for the campaign mailings. Another big job, stemming from Walter's role as chairman of the statewide Concerned Tax Payers Organization, called for preparing and distributing a petition to fight a proposed fuel-tax increase.

In total, Walter has invested about $6,000 in computer hardware, including the trade-ins and the systems bought for his children. He is already planning the next upgrade: a disk drive with even greater data capacity than the 2 million-plus megabyte model he currently owns. With such a drive, there will be less need to switch disks to access files. So far, his software library has swelled to about 100 file disks.

One main reason for the Doctor's appreciation of computers is, he says, "they make you think more logically." Unlike the fanciful, fictional Dolittle, Walter Doolittle is a man of science. So you aren't likely to find anything in his house as incredible as the two-headed pushmi-pullyu with which Lofting's Dolittle dwelled. Unless, of course, you count the unicorns. And there are more than 50 of them: 47 in one room, others scattered throughout the upper level of the house, even a couple in the kitchen.

But don't worry—the mythical creatures are actually stuffed, drawn, or sculpted, and make up daughter Terry's prized collection. This story, you'll remember, is a true one. FC

HOW THE DOOLITTLES USE COMPUTERS

Irene, 53. Maintaining and updating patient histories; controlling equipment-and-supplies inventory; word processing for correspondence, completing apartment leases; calculating mortgage-payment schedules; preparing income-tax returns; mutual funds management.

Walter, 52. Financial planning; programming; word processing for correspondence and analyses; updating and indexing material, keeping track of donations and mailings for political campaigns.

Kathy, 27. Helping son, Charles Jr., learn to program.

Philip, 24. Learning to type; game-playing.

Barbara, 23. Game-playing; teaching son, Jacob, word processing.

Pamela, 22. Data entry and word processing at work and at home; maintaining bowling-league scores and handicaps; word processing for personal correspondence.

Terry, 20. Word processing in putting together nursery school lesson plans; word processing for writing term papers, reports, and completing algebra assignments in college.

Jason, 9. Game-playing; programming; word processing for math homework; spelling quizzes.

Ashley, 6. Educational games, especially those teaching arithmetic.

Charles, Jr., 6. Game-playing; programming; creating pictures.

Jacob, 4. Word processing in learning the alphabet and for spelling.

MURDER AT 220 MERRILL

A TEXT-ADVENTURE MYSTERY

BY JEANIE FRANZ RANSOM

Buddy Anderson couldn't wait to get home. He knew there had been a murder, and tonight he felt he finally had enough information to solve the crime and claim the $100,000 reward.

Buddy burst into his small apartment, barely pausing to throw his overcoat on a hook by the door. He went immediately to his computer, which sat on a cluttered desk in the living room. Remnants of the previous evening surrounded the keyboard . . . crumpled wads of paper, clues provided with the text-adventure game, a pizza box with a few remaining hunks of cheese clinging to the inside cover.

He impatiently swept everything onto the floor. He wanted nothing to get in the way of the game tonight.

He was so close, after weeks of working on it night after night. He had thought about the game all day as

he went through the motions of fixing engines and changing tires at Rod's Body Shop. It was while he was installing a new muffler on a customer's car that the answer hit him. It was so obvious. He couldn't wait to wash his hands of the day's drudge and grime and escape into the game.

Buddy sat down at his desk and turned on the computer. The monitor displayed the name of the text-adventure game: MURDER AT 220 MERRILL.

He impatiently scrolled past all the background information he had seen a hundred times before. The information established his character as Detective Harry Honcho. He had been called to the scene of a murder at 220 Merrill, the imposing home of millionaire Dutch Langdorf, who had made his fortune selling gold on the commodities exchange. Now Langdorf was dead, with only his wife, Veronica, and their pet poodle, Fluff, surviving.

Buddy had already been to the Langdorf house many times—via computer, of course. As Detective Harry Honcho, he had questioned Veronica, searched the house, even talked to the servants and made friends with Fluff. He had gathered many important clues along the way, and acquired a kit that was designed to tell real gold from fake gold—if he ever got near any. But until now, Buddy had never had quite enough clues or information to solve the murder . . . the murder that would award him $100,000 from the software manufacturers if he could solve it. Buddy just needed a little more time, a little more information. He knew that tonight was the night . . . he could almost smell that $100,000.

Buddy continued to scroll through the text, until he reached the part where Harry Honcho was on the driveway in front of the towering mansion, set on 18 acres so lushly landscaped you would swear it was a national park. This was where Buddy always hit "N" on the keyboard, advancing Harry to the front door, where he would be admitted by the Langdorf's rather forbidding German maid. But tonight, Buddy decided to try a different avenue. He pushed "W" and the RETURN key. The monitor read, YOU CANNOT GO THAT WAY. DO NOT PRESS "W" AGAIN! Buddy pressed "W" again, more insistently this time. The monitor read, ARE YOU SURE YOU WANT TO DO THIS? Buddy typed YES and pressed RETURN.

Suddenly, he felt his fingertips tingling, and a black veil descended over his eyes. He tried to fight the cloud that was making it impossible to think. He closed his eyes and the room careened sickeningly. Everything went blank.

Buddy awoke with a foreign object quite rudely poking his back. He was staring straight up into the night, with the moon staring right back at him. How had he gotten outside? He knew he wasn't dreaming, and he hadn't even had a beer before sitting down at the computer.

Buddy rolled to one side and reached behind him to find the object of his discomfort. It was a knife. Horrified, he sat straight up and saw a dark form lying near some bushes several yards away. Cautiously, he crept over to the still shape. It was a person, and by the light of the moon, the face matched the description he knew so well from playing the game . . . it was Detective Harry Honcho.

But Harry wasn't dead yet. As Buddy leaned over him, Harry forced open his eyes and gasped, "Come closer." Buddy wasn't sure he wanted to, but his curiosity got the better of him.

Harry struggled to speak. "I got too close to the answer. But somebody's gotta solve this murder . . . the final clue is in my coat pocket . . . ." Harry's sentence trailed off as he bubbled his last breath.

Buddy looked around frantically. This couldn't be happening! And then he saw the unmistakable Tudor mansion in the eerie moonlight and knew . . . somehow he had gotten inside the *220 Merrill* text-adventure game. But how? Then he remembered pressing the forbidden key. Now what was he to do?

Buddy remembered Harry's last words and dug a piece of paper from his coat pocket. It was a candy bar wrapper. He looked again, and found another piece of paper. Examining it under the light of the moon, he saw it was a map. It was a clue he hadn't found in the game before . . . the final clue he needed to wrap up the mystery. Buddy had already figured out that Langdorf had met his messy fate because he had been caught selling fake gold bars to some very important businessmen who didn't appreciate that kind of thing. But Buddy hadn't yet figured out who had actually killed Langdorf, and where the real gold bars were.

He was distracted by a sudden blaze of light from the ominous dark house. It was late now, and he assumed Veronica Langdorf and the servants had gone to sleep long ago. Buddy ventured closer to the house and saw a woman through the open upstairs window. He watched as she disappeared, then returned with clothes heaped in her arms. She must be filling a suitcase, and a very large one at that. It could only be one person, Veronica Langdorf. She mustn't get away—not before Buddy could follow the map.

On a hunch, Buddy ran toward the rear of the house and found the garage. There was only one car inside . . . a powder-blue Mercedes. With expert hands, he popped the hood and tinkered around for a few moments. Veronica Langdorf wouldn't be going anywhere in this car.

Buddy jumped as he heard a door slam. Veronica must be on her way out. He ran from the garage, heading blindly for the back of the house. As he reached the safety of a series of tall, square hedges, he paused to look at the map once more. He was startled to see hedges on the map much like those he was crouching next to. They were arranged in a maze, with a giant "X" marked inside one of the corridors.

Buddy knew he didn't have much time before Veronica would discover her car trouble and start looking around the grounds. He sprinted toward the entrance to the maze and ran up and down the vast corridors, his breath ragged in his throat. He kept glancing at the map as he ran, trying not to stumble. A wrong turn here . . . a dead end there . . . he heard the agonized wheeze of the Mercedes' tortured engine. It was only a matter of minutes now.

Buddy turned and stumbled, falling with a slam against the ground. He pulled himself up, ready to continue, then thought of looking down to see what

---

JEANIE FRANZ RANSOM *has written for* Seventeen, Sunday Woman, *and the* Detroit Free Press. *This winter, she and her husband are planning to write their own adventure game. This is the first piece of fiction she has published.*

ILLUSTRATION BY MARK FRESH

had caused him to trip. He felt around the clipped grass and found an edge with his fingers. Dropping to his knees, he pulled on the sod. It came away in one neat hunk to reveal a steel door with a handle.

Buddy yanked on the handle. Nothing happened. He summoned up all his strength and pulled harder. The door flew open, revealing a spray of light that almost blinded him. Poking his head inside, he thought he was hallucinating. Bars upon bars of gold were stacked from floor to ceiling in a room directly beneath him, with corridors stretching into darkness beyond. Was this the real gold? There was only one way to find out.

Buddy pushed his feet through the opening and dropped to the floor below, his soles stinging from landing on the concrete. Just as he was pulling out the gold test kit provided with the game, he heard a noise above him and looked up into the grinning face of Veronica Langdorf. She had always been described in the game as resembling a battleship, but close up, she looked more like 10 battleships. Her round, fleshy face was flushed from hanging upside down as she peered through the opening.

"What are you doing here?" Her voice echoed in the underground chamber. "Not that it matters. You won't get out of here alive, or rich!" Her face disappeared for a brief moment and then Buddy saw with horror that she was preparing to drop down to the floor beside him. He turned to pick up a gold bar for protection as she landed with a solid "thwunk"—too close for comfort.

"Ah, I see you found the real gold!" Veronica smiled with teeth that revealed even more gold. "But it's all mine now. A reward for working for my husband all these years. You think I killed him, don't you?" She hooked one thin eyebrow at him.

In fact, at first Buddy had thought she'd done it, but that was too obvious. The answer was just a shade less so. He managed to stammer out an answer, watching her warily. "No, I think someone else killed him for you, so you wouldn't have to soil your lily-white hands. I know you were the one who filled all the orders for gold . . . but you substituted fake gold, bit by bit, hiding the genuine article for yourself. Your poor husband never knew he was dealing in fake commodities . . . until somebody got mad enough to kill him!"

Veronica smiled. "That's right. You're a smart one, but not smart enough to live." She lunged toward him and he saw the gleam of a knife, the same type of knife he had found near Harry Honcho. Buddy managed to hurl the bar of gold he had been holding, throwing her bulky body momentarily off-guard. He turned and ran down the nearest corridor. It seemed like all he had done tonight was run for his life. And all he had wanted to do was finish playing his innocent little text-adventure game. He never thought it would become this real. Buddy vowed never to complain about the dullness of his job again.

Buddy heard heavy footsteps behind him as he reached a dead end. The dim light in the corridor was just enough to make out a door blocking his escape. He turned the handle, sure that it would be locked. Miraculously, it swung open.

The scene that greeted his eyes almost seared them with brightness. Gold bars filled the back of a large delivery van, the door open as if somebody was in the middle of loading the cargo.

Buddy realized that *this* must be the real gold. Veronica had thrown him off with the stuff in the other room. He quickly got his gold test kit and climbed into the back of the truck to rub one of the gold bars with a special test paper. It was the real gold, all right. Hearing sounds in the corridor, he lept from the truck, slammed the back door, and ran to the cab. There was no key, but that didn't stop him. He reached into his jeans pocket, pulling out a bit of wire left over from work, and quickly hot-wired the truck. The engine roared. Now he could get away with all this gold . . . and the $100,000 prize money. He laughed until he realized he was still inside the game.

How could he get out? The old-fashioned *Wizard of Oz* trick of tapping shoes together and wishing for home wouldn't work in this new computer age. There was a large garage-type door between him and the outside, with no way to open it except with an electronic device . . . he could see the mechanism from where he sat. Just as he was ready to leave the relative safety of the truck, a face pressed against the window, hideous now. Veronica may not have killed her husband directly, but she certainly looked like she was going to kill Buddy all by herself. He saw the gun and threw his hands up in a futile attempt to shield himself. He heard an explosion and lights danced before his eyes, more brilliantly than a thousand gold bars. Buddy fell blissfully into unconsciousness, dark and cool.

Buddy awoke with a splitting headache. He was on the floor beside his computer. He felt his head gingerly, but there was only a bump. He looked around at the familiar surroundings, his old sofa, the empty pizza box. He was alive. What a nightmare, he thought. But then the full realization of last night's encounter came rushing back at him. Veronica had to be stopped . . . that dame belonged behind bars! Hands trembling, Buddy began to dial the Police Department. Then he remembered. It was only a game. And although he'd come close, he still hadn't gotten the name of the murderer. Veronica had been too smart . . . too smart for all of them.

Still, maybe he could call the software manufacturer, tell what he knew about Veronica, and collect half the prize money. He could sure buy a lot of beer and pizza with $50,000.

Buddy reached for the phone and dialed the software manufacturer. The line was busy. He paced around the living room and tried again.

When a pleasant woman's voice answered the phone, Buddy blurted out, "I'm calling in regards to the *220 Merrill* murder. I don't have the exact name, but . . . ." The woman interrupted him in midsentence.

"I'm sorry, sir, but someone's already solved that one—just this morning. In fact, we mailed out the check a few minutes ago."

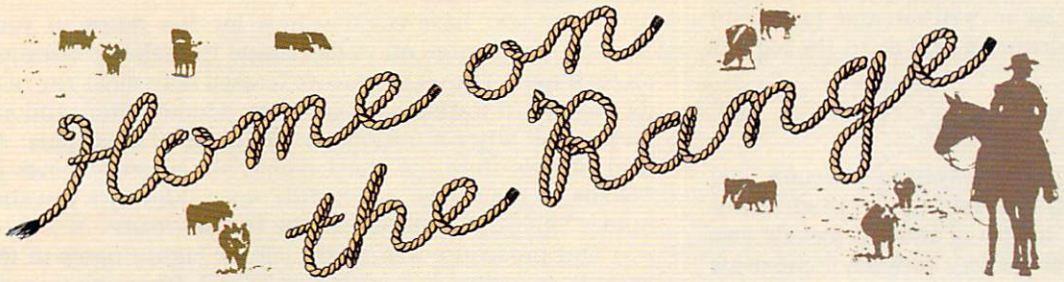
"Could you tell me who solved it, please?" Buddy managed to stammer into the phone.

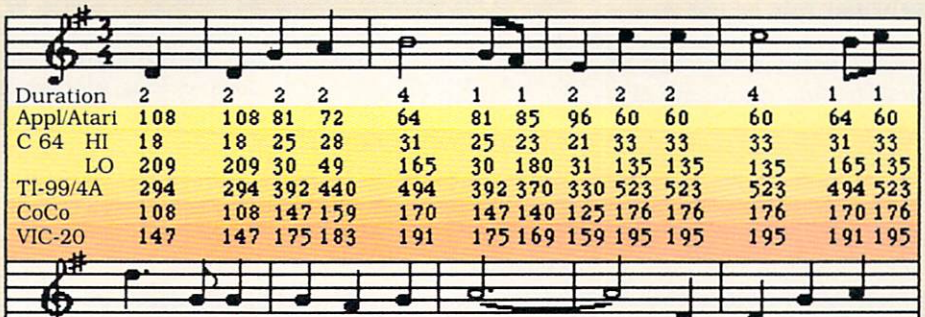
"Someone named Veronica Langdorf. Funny coincidence, huh?" The woman laughed lightly.

As Buddy fainted, he dimly heard her say, "Would you care to send for one of our *new* text-adventure games, sir?" No, Buddy thought, he had had enough excitement for a while. Maybe he would just stick with *Pac-Man*. FC

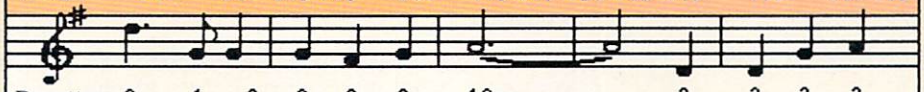
JUST TYPE IN OUR SHORT PROGRAM AND YOU'LL HEAR ONE OF AMERICA'S FAVORITE TUNES

BY MICHAEL HOWARD AND ALAN ARTHUR

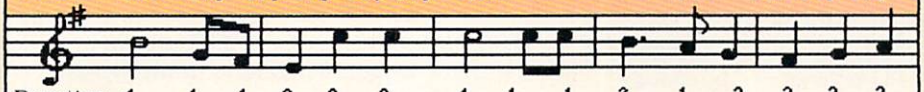




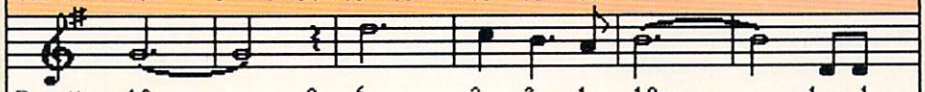
Duration	2	2	2	2	4	1	1	2	2	2	4	1	1	
Appl/Atari	108	108	81	72	64	81	85	96	60	60	60	64	60	
C 64 HI	18	18	25	28	31	25	23	21	33	33	33	31	33	
LO	209	209	30	49	165	30	180	31	135	135	135	165	135	
TI-99/4A	294	294	392	440	494	392	370	330	523	523	523	494	523	
CoCo	108	108	147	159	170	147	140	125	176	176	176	170	176	
VIC-20	147	147	175	183	191	175	169	159	195	195	195	191	195	



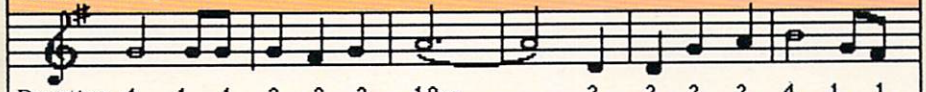
Duration	3	1	2	2	2	2	10--	2	2	2	2
Appl/Atari	53	81	81	81	85	81	72	108	108	81	72
C 64 HI	37	25	25	25	23	25	28	18	18	25	28
LO	162	30	30	30	180	30	49	209	209	30	49
TI-99/4A	587	392	392	392	370	392	440	294	294	392	440
CoCo	185	147	147	147	140	147	159	108	108	147	159
VIC-20	201	175	175	175	169	175	184	147	147	175	183



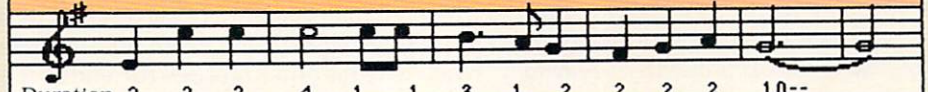
Duration	4	1	1	2	2	2	4	1	1	3	1	2	2	2	2
Appl/Atari	64	81	85	96	60	60	60	60	60	64	72	81	85	81	72
C 64 HI	31	25	23	21	33	33	33	33	33	31	28	25	23	25	28
LO	165	30	180	31	135	135	135	135	135	165	49	30	180	30	49
TI-99/4A	494	392	370	330	523	523	523	523	523	494	440	392	370	392	440
CoCo	170	147	140	125	176	176	176	176	176	170	159	147	140	147	159
VIC-20	191	175	169	159	195	195	195	195	195	191	183	175	169	175	183



Duration	10--		2	6	2	3	1	10--		1	1	
Appl/Atari	81		0	53	60	64	72	64		108	108	
C 64 HI	25		0	37	33	31	28	31		18	18	
LO	30		0	162	135	165	49	165		209	209	
TI-99/4A	392		44733	587	523	494	440	494		294	294	
CoCo	147		0	185	176	170	159	170		108	108	
VIC-20	175		0	201	195	191	183	191		147	147	



Duration	4	1	1	2	2	2	10--	2	2	2	2	4	1	1
Appl/Atari	81	81	81	81	85	81	72	108	108	81	72	64	81	85
C 64 HI	25	25	25	25	23	25	28	18	18	25	28	31	25	23
LO	30	30	30	30	180	30	49	209	209	30	49	165	30	180
TI-99/4A	392	392	392	392	370	392	440	294	294	392	440	494	392	370
CoCo	147	147	147	147	140	147	159	108	108	147	159	170	147	140
VIC-20	175	175	175	175	169	175	183	147	147	175	183	191	175	169



Duration	2	2	2	4	1	1	3	1	2	2	2	2	10--
Appl/Atari	96	60	60	60	60	60	64	72	81	85	81	72	81
C 64 HI	21	33	33	33	33	33	31	28	25	23	25	28	25
LO	31	135	135	135	135	135	165	49	30	180	30	49	30
TI-99/4A	330	523	523	523	523	523	494	440	392	370	392	440	392
CoCo	125	176	176	176	176	176	170	159	147	140	147	159	147
VIC-20	159	195	195	195	195	195	191	183	175	169	175	183	175

The numbers underneath each note represent that note for the computers shown. The first number in each column is the note's duration. Both numbers are used as data in the music programs (next page).

ART CREATED BY JOHN JAINSCHIGG USING THE MACINTOSH, MACPAINT, AND THE IMAGEWRITER

The best way to learn how to program music on your computer is to start by experimenting with a simple, one-line melody. Programming a tune like "Home on the Range" won't tie you up for hours, and it's simple enough

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that you can check your work by humming along. You can just type in the program we've written and hear your computer sing, or, you can read on and learn the logic of music programming.

MELODY

A melody is a string of notes played to a certain beat and at a certain speed. Each note has a pitch (high or low sound) and lasts a specific length of time. A melody also has rests, or brief periods of silence, between some of its notes. The tune proceeds at a particular rate or tempo—what you tap your foot to.

Programming a melody involves expressing four variables—pitches of each note, silences (rests), durations of pitches and rests, and tempo—in terms the computer can understand. To summarize, we'll be learning to make the computer . . .

1. Produce sound at a certain pitch.
2. Turn off sound to produce a rest.
3. Hold a sound or rest for a certain length of time in relation to other notes and rests.
4. Do the above repeatedly at a consistent tempo.

PITCH AND RESTS

Most personal computers generate tones through built-in hardware—either a tone generator or music synthesizer chip. In systems that don't have such components, musical tones can sometimes be produced by using a machine-language routine with POKEs, as we've done here for the Apple.

The mechanics of playing a note differ from one brand of computer to another. Some computers have a SOUND command built into the BASIC language that lets you turn sound on and off, control its pitch, perhaps its tonal quality, and sometimes its duration as well. Other computers don't have such commands—Commodore sound, for example, is controlled by POKEing memory locations.

The one thing all SOUND commands and other systems have in common, however, is that they require numeric input. To produce a sound at a certain pitch you have to express the pitch as a number. The first step in preparing a melody for your computer, therefore, is to convert its pitches into a list of corresponding numbers. (Note: some IBM PC versions of BASIC, and Extended Color BASIC for the TRS-80 Color Computer, offer a PLAY command that lets you express an entire melody line as a string of characters. This is an advanced feature.)

Pitch-numbering systems vary widely from one brand of computer to another. As shown in the sheet music, the note D (above middle C) has a numeric value of 108 on Atari, Apple, and coincidentally, CoCo; 294 for TI; 147 for VIC-20; and 18/209 for Commodore 64 (see the C 64 program notes for an explanation of these two numbers). Look in your owners' or BASIC manual for a note-to-number conversion table.

On most systems, playing a note with a pitch value of zero will turn off the sound (a null value of 44733 will do that for the TI). So when you are converting your melody into a table of pitch values, you can use zeros (or nulls) to mark the rests. For those few machines with pitch-numbering systems that do not include a null value for silence, special programming steps must be taken to create a rest (see CoCo and Apple versions).

DURATION

Once you have pitch values for the notes in your melody, you can go on to determine the relative duration of each note. The technique we've used here takes the note of shortest duration as a common denominator, and expresses all other durations as multiples of this value. As you can see from the sheet music, the shortest notes in "Home on the Range" are eighth notes—the ones you sing under "where the" in "where the Buffalo roam . . . ."

Our procedure was to give all the eighth notes in the melody an arbitrary duration value of 1. Then, by tapping our feet and humming the tune, we decided that some of the notes lasted twice as long as our minimum (quarter notes), other notes three times as long (dotted quarters), some four times (half notes), and some six (dotted halves). The last line in the table below the sheet music shows the relative durations we came up with. Try humming the tune and see if you agree with our findings.

TEMPO

By supplying relative durations, you have told your computer how long each note lasts in relation to the others, but you have not told it what tempo to maintain when counting off the duration of each note. Computers count very fast, so if you asked the computer to play the melody in its current form with the small relative duration values you supplied, the music would end in a matter of nanoseconds. Too fast!

The best way to slow things down is to make each note X times longer. Therefore, multiply each *relative* duration by a certain constant (X) so your melody doesn't sound like a 33 rpm record played at 45 rpms.

The particular multiplier (tempo value) you use depends on two factors—how fast your computer can count, and, of course, how fast you want the melody to play. In the programs that follow, we use tempo constants of up to 100. If you'd prefer a slower or faster tempo, try increasing or decreasing the value of the variable TEMPO in line 10.

PULLING IT ALL TOGETHER

Though the programs presented here are each slightly different, all work more or less as follows: Each note and rest in the melody is represented by a pair of numbers (three numbers each for the Commodore 64) signifying pitch and relative duration. These numbers are stored in DATA statements.

For each note, the computer READs a pitch value and a corresponding relative duration value from the data. It then plays the note or handles the rest (silence) by the following procedure. First, it calculates an *absolute* duration ADUR for the note or rest by multiplying the relative duration by the tempo constant, TEMPO. Then, it plays the note. The process repeats for each note or rest in the melody. When the computer reaches the end of the data, it finds a set of markers we've planted there: −1s. Then the condition PITCH = −1 is satisfied so the program stops. Note: You can modify the programs below to play your own tunes. Simply substitute new music data (numeric values) for the "Home on the Range" data. Remember to mark the end with −1s as explained above.

So there you have it. These programs might be a little confusing at first, but if you keep on going over them as though you were the computer reading each line, you'll soon understand how they work.

the Programmer

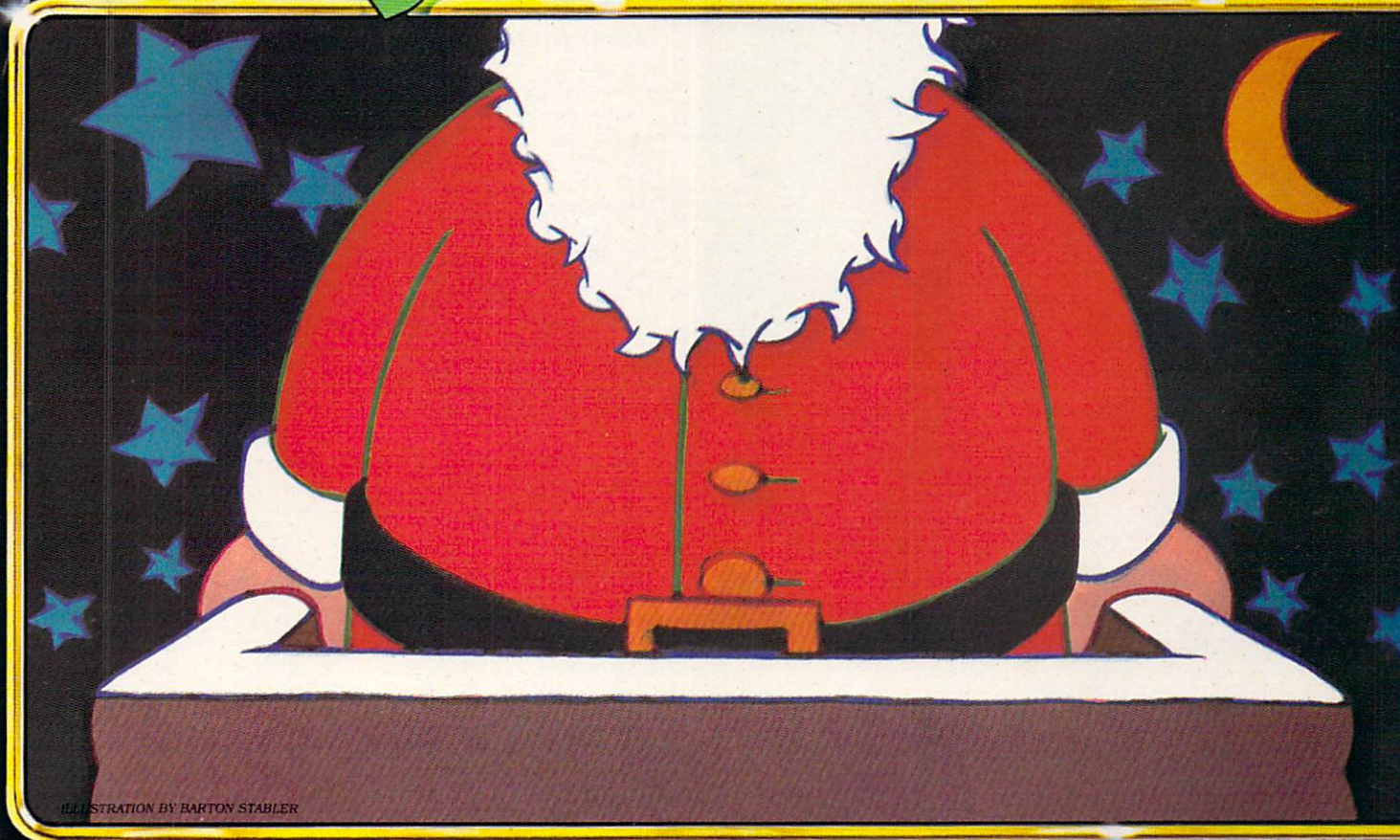


ILLUSTRATION BY BARTON STABLER

★ D E C E M B E R ★

HOLIDAY PROGRAMS
Page 82

A smiling *Santa* and a *New Year's Eve* extravaganza.

PROGRAMMING P.S.
Page 102

Sorry, we goofed! Corrections to previous months' programs.

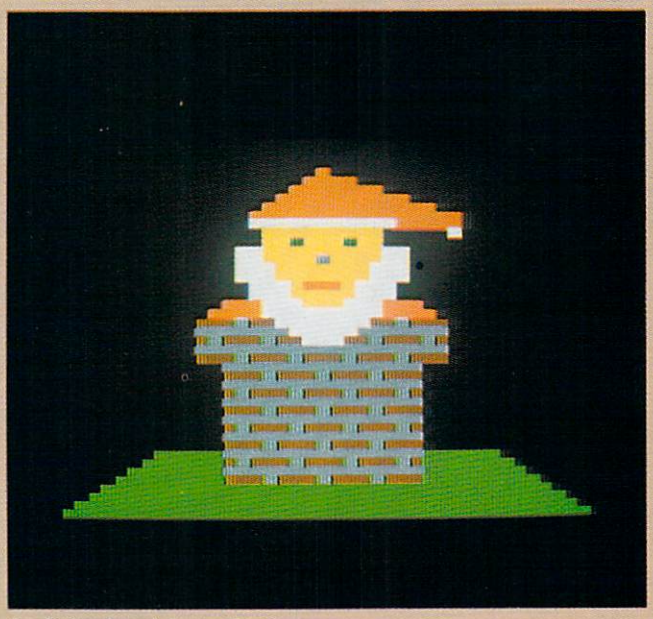
PUZZLE
Page 104

Can you find your way to King Proto's party in time for the New Year's celebration?

ILLUSTRATION BY JIM CHERRY III

SANTA CLAUS

BY JOEY LATIMER



Apple Version of *Santa Claus*

Santa Claus, or St. Nicholas, is an enduring symbol of the Christmas season. In fact, though, the familiar image of the bearded Santa in a red, fur-collared suit is a fairly modern idea. It's based on a newspaper illustration rendered only a little over 100 years ago by the cartoonist Thomas Nast. Now, we've modernized Santa even further by bringing him to your computer screen in living color and animation!

Type in the program as shown, SAVE it to disk or tape, and type RUN. Merry Christmas! Ho! Ho! Ho!

ADAM & Apple/*Santa Claus*

```
10 HOME
20 GR
30 COLOR= 4
40 FOR Q = 32 TO 39
50 HLIN Q,39-Q AT Q
60 NEXT Q
70 FOR Q = 35 TO 17 STEP -1
80 FOR P = 12-2*(Q < 22) TO 26+2*(Q < 22)
90 COLOR= 5
100 IF Q/2 > INT(Q/2) AND (P-Q)/4 > INT((P-Q)/4) THEN CO
LOR= 8
110 PLOT P,Q
120 NEXT P,Q
130 COLOR= 9
140 FOR Q = 0 TO 6
150 HLIN 19-Q+(Q = 6),19+2*(Q-(Q = 6)) AT Q
160 NEXT Q
170 HLIN 12,26 AT 15
180 HLIN 11,27 AT 16
190 FOR Q = 9 TO 19
200 READ X
210 COLOR= 13
220 IF Q < 18 THEN HLIN 20-X,18+X AT Q-2
230 COLOR= 15
240 HLIN 18-X,20+X AT Q
250 NEXT Q
260 HLIN 14,24 AT 6
270 PLOT 29,7
280 COLOR= 4
290 PLOT 17,8
300 PLOT 21,8
310 COLOR= 5
320 PLOT 19,10
330 COLOR= 9
340 HLIN 18,20 AT 13
350 FOR DL = 1 TO RND(1)*2000+500:NEXT DL
360 COLOR= 22-SCRN(17,12)
370 PLOT 17,12
380 PLOT 21,12
390 GOTO 350
1000 DATA 5,5,5,5,4,4,3,3,2,1,0
```

Atari/*Santa Claus*

```
10 S=(PEEK(106)-4)*256
20 POKE 106,S/256
30 GRAPHICS 17
40 SETCOLOR 2,0,15
50 FOR X=S+264 TO S+351
60 READ Q
70 POKE X,Q
80 NEXT X
90 POKE 756,S/256
100 FOR Y=14 TO 19
110 FOR X=19-Y TO Y
120 COLOR 98-((X+Y)/2=INT((X+Y)/2))
130 PLOT X,Y
140 NEXT X
150 NEXT Y
160 FOR Y=9 TO 18
170 COLOR 67
180 IF Y/2=INT(Y/2) THEN COLOR 68
190 FOR X=5-(Y<11) TO 14+(Y<11)
200 PLOT X,Y
210 NEXT X
220 NEXT Y
230 FOR Y=1 TO 4
240 FOR X=10-Y TO 8+Y*2
250 COLOR 229-3*(X=10-Y)-4*(X=8+Y*2)
260 PLOT X,Y-1
270 NEXT X
280 NEXT Y
290 FOR X=5 TO 13
300 COLOR 229-3*(X=5)-4*(X=13)
301 PLOT X,8
302 NEXT X
310 FOR Y=3 TO 12
320 COLOR 197+(Y=3)
330 FOR X=7-(Y=3)+(Y-10)*(Y>9) TO 11+(Y=3)-(Y-10)*(Y>9
)
340 PLOT X,Y
350 NEXT X
360 NEXT Y
370 FOR Q=1 TO 7
380 READ CO,X,Y
390 COLOR CO
400 PLOT X,Y
410 NEXT Q
420 COLOR 200
430 IF RND(0)<0.4 THEN COLOR 203
440 PLOT 8,5
450 PLOT 10,5
460 COLOR 202
470 IF RND(0)<0.4 THEN COLOR 203
480 PLOT 9,8
490 FOR DELAY=1 TO 200
500 NEXT DELAY
510 GOTO 420
1000 DATA 240,248,252,254,255,255,255,255
1010 DATA 15,31,63,127,255,255,255,255
1020 DATA 0,0,239,239,239,239,0,0
1030 DATA 0,0,127,127,127,127,0,0
1040 DATA 255,255,255,255,255,255,255,255
1050 DATA 0,102,60,255,60,102,0,0
```

IN A CLASS BY HERSELF.

When Jennifer's parents discovered DesignWare programs, they put Jennifer in a class by herself.

Because unlike most educational software, DesignWare gives Jennifer individualized attention for months on end.

For starters, DesignWare focuses on important skills—the ones Jennifer learns in school. In fact, all DesignWare programs are developed by educators. And tested by kids.

The graphics, sound and game play are unquestionably superior. If they weren't, they couldn't keep learners like Jennifer involved for as long as they do.

DesignWare programs provide multiple levels of challenges, which let Jennifer continue to grow long after she first starts to use each program.

But best of all, Jennifer won't really outgrow a DesignWare program. Because they're designed to let her type in her own questions and problems.

So Jennifer's parents can tailor her DesignWare program to match her homework assignments. Or Jennifer can change her program to challenge her parents.

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```
1060 DATA 0,0,0,219,219,219,219,0
1070 DATA 126,0,231,231,231,255,255,255
1080 DATA 255,255,255,255,255,255,126,60
1090 DATA 255,255,126,60,24,129,195,255
1100 DATA 255,195,129,24,60,126,255,255
1110 DATA 199,5,9,199,13,9,200,8,5,200,10,5
1120 DATA 233,9,6,202,9,8,198,16,4
```

Commodore 64/*Santa Claus*

```
10 PRINT CHR$(147);CHR$(5)
20 POKE 53281,0
30 GOSUB 1000
40 FOR Q=21 TO 12 STEP -1
50 FOR P=10+2*(Q<14) TO 28-2*(Q<14)
60 CH=3760
70 IF Q/2>INT(Q/2) AND (P-Q)/4>INT((P-Q)/4) THEN CH=28
60
80 GOSUB 2000
90 NEXT P,Q
100 FOR X=1 TO 5
110 GOSUB 1000
120 NEXT X
130 MD=1
140 POKE 1525,203-MD*2
150 POKE 1521,202+MD*11
160 POKE 1360,170+MD*4
170 POKE 1366,170+MD*4
180 FOR DL=1 TO RND(1)*1000+2000
190 NEXT DL
200 MD=1-MD
210 GOTO 140
1000 READ CH,Q,Q1
1010 READ M1,P1,P2
1020 FOR M=1 TO M1
1030 FOR P=P1 TO P2
1040 GOSUB 2000
1050 NEXT P
1060 Q=Q+1
1070 NEXT M
1080 IF Q<Q1 THEN 1010
1090 RETURN
2000 CL=INT(CH/300)
2010 POKE 1024+P+40*Q,CH-CL*300
2020 POKE 55296+P+40*Q,CL
2030 RETURN
3000 DATA 1714,19,25,1,5,34,1,4,35,1,3,36,1,2,37,1,1
3010 DATA 38,1,0,39,760,1,12,1,14,21,1,12,23,1,11,25
3020 DATA 1,11,27,1,11,29,1,28,31,1,29,33,2,19,19,1,10
3030 DATA 28,1,9,29,460,6,18,1,11,27,1,15,16,4,11,27
3040 DATA 2,12,26,1,13,25,1,14,24,1,15,23,1,16,22
3050 DATA 3160,7,16,4,13,25,2,14,24,2,15,23,1,16,22
3060 DATA 3192,12,13,1,18,20,342,8,8,1,33,33
```

IBM PC w/Color Graphics Adapter & IBM PC*jr*/*Santa Claus*

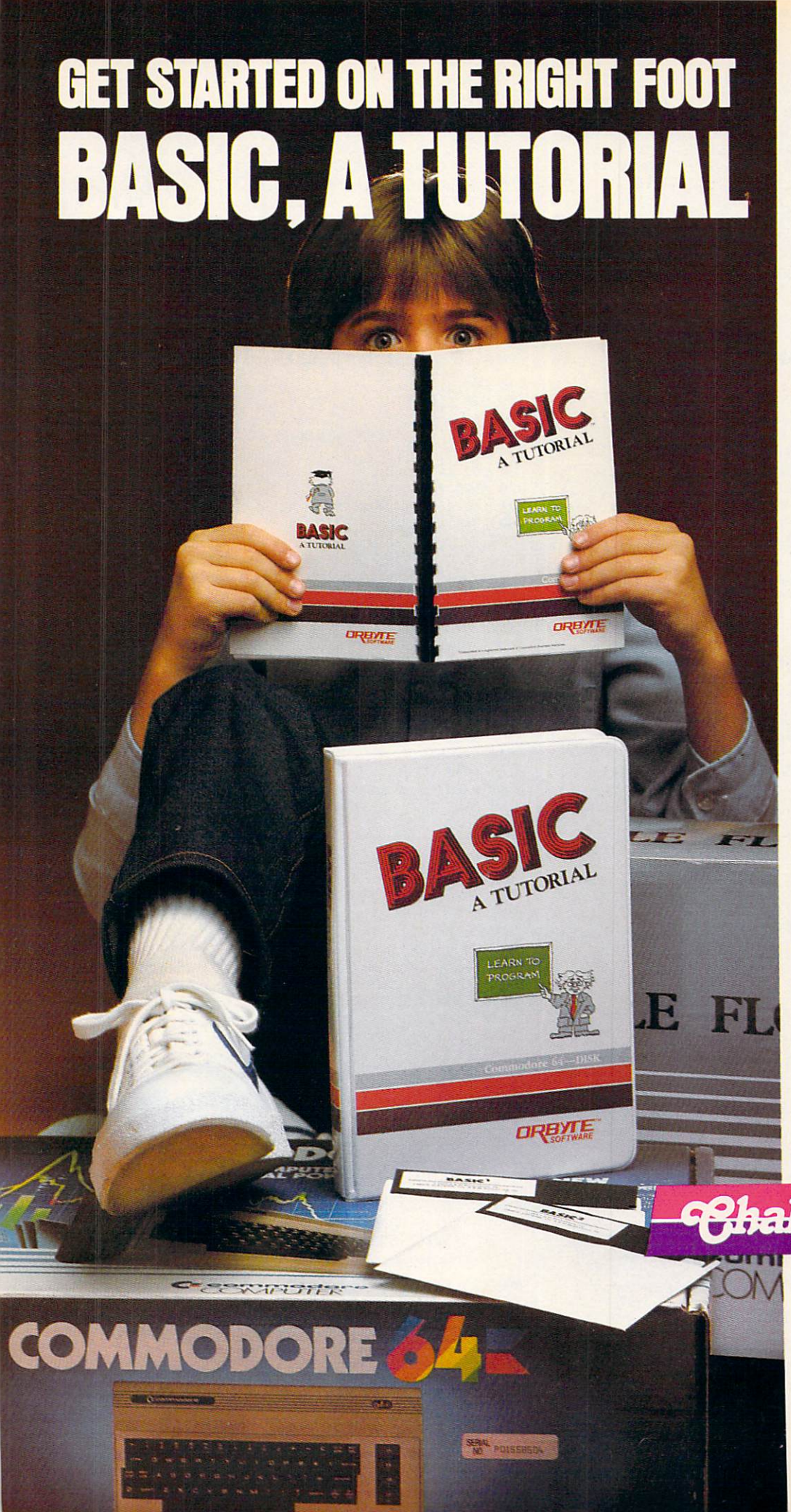
```
10 WIDTH 40
20 SCREEN 0,1
30 COLOR 2,0
40 CLS
50 KEY OFF
60 COL=0
70 FOR Q=25 TO 21 STEP -1
80 LOCATE Q,26-Q,0:PRINT STRING$(Q*2-10,219);
90 NEXT Q
100 FOR Q=23 TO 15 STEP -1
110 FOR P=12+2*(Q<18) TO 26-2*(Q<18)
120 COLOR 7
130 IF Q/2>INT(Q/2) AND (P-Q)/4>INT((P-Q)/4) THEN COLO
R 6
140 LOCATE Q,P:PRINT CHR$(219)
150 NEXT P,Q
160 COLOR 4
170 FOR Q=1 TO 7
180 LOCATE Q,20-Q:PRINT STRING$(3*Q-2,219)
190 NEXT Q
200 LOCATE 13,12:PRINT STRING$(15,219)
210 LOCATE 14,11:PRINT STRING$(17,219)
220 FOR Q=9 TO 18
230 READ X
240 COLOR 15,7
250 IF Q<18 THEN LOCATE Q-1,19-X:PRINT STRING$(X*2+1,3
2)
260 LOCATE Q,17-X:PRINT STRING$(X*2+5,219)
270 NEXT Q
280 LOCATE 7,13:PRINT STRING$(13,219)
290 LOCATE 8,32:PRINT CHR$(219)
300 COLOR 4,7
310 LOCATE 11,19:PRINT CHR$(234)
320 LOCATE 14,17:PRINT STRING$(5,22)
330 LOCATE 14,17:PRINT CHR$(22-5*COL)
340 LOCATE 14,21:PRINT CHR$(22-6*COL)
350 COLOR 15,0
360 LOCATE 9,16:PRINT CHR$(254-239*COL)
370 LOCATE 9,22:PRINT CHR$(254-239*COL)
380 FOR DL=1 TO RND(1)*2000+1000:NEXT DL
390 COL=1-COL
400 COLOR 4,7
410 GOTO 330
1000 DATA 5,5,5,5,4,4,3,3,2,1,0
```

TI-99/4A/*Santa Claus*

```
10 CALL CLEAR
20 CALL SCREEN(2)
30 FOR X=1 TO 11
40 READ CH,S$
50 CALL CHAR(CH,S$)
60 NEXT X
70 FOR X=1 TO 7
80 READ CS,F,B
90 CALL COLOR(CS,F,B)
100 NEXT X
110 FOR X=1 TO 7
120 READ CH,Y,Z
130 FOR RO=Y TO Z STEP -1
140 READ CO,REP
150 CALL HCHAR(RO,CO,CH,REP)
160 NEXT RO
170 NEXT X
180 FOR X=1 TO 9
190 READ CH,CO,RO
200 CALL HCHAR(CO,RO,CH)
210 NEXT X
220 CALL HCHAR(8,15,133)
230 CALL HCHAR(8,18,133)
240 CALL HCHAR(12,15,129)
250 CALL HCHAR(12,18,131)
260 FOR DELAY=1 TO (1000*RND)+1000
270 NEXT DELAY
280 CALL HCHAR(12,15,128)
290 CALL HCHAR(12,18,130)
300 FOR DELAY=1 TO (1000*RND)+1000
310 NEXT DELAY
320 IF RND>0.5 THEN 240
330 CALL HCHAR(8,15,132)
340 CALL HCHAR(8,18,132)
350 FOR DELAY=1 TO 50
360 NEXT DELAY
370 GOTO 220
1000 DATA 128,080C060301000000,129,0000000103060C08
1010 DATA 130,103060C080000000,131,00000 080C0603010
1020 DATA 132,000000FFFF000000,133,00183C7E7E3C1800
1030 DATA 112,FFFFFFFFFF7E3C18,136,181818FFFF181818
1040 DATA 144,FFFFFFFFFFFFFFFF,152,FFFFFFFFFFFFFFFF
```

GET STARTED ON THE RIGHT FOOT

BASIC, A TUTORIAL



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```
1050 DATA 120,FFFFFFFFFFFFFFFF,2,16,1,12,10,10,11,11
1060 DATA 2,13,2,10,14,15,7,15,9,9,16,16,16,112,24
1070 DATA 17,1,32,1,32,1,32,1,32,2,30,3,28,4,26,5,24
1080 DATA 136,24,12,10,14,10,14,10,14,10,14,10,14
1090 DATA 10,14,10,14,10,14,10,14,10,14,9,16,9,16
1100 DATA 9,16,144,11,10,10,14,11,12,152,16,10,16
1110 DATA 2,15,4,14,6,13,8,12,10,12,10,12,10
1120 DATA 120,12,8,15,4,14,6,13,8,12,10,12,10,144
1130 DATA 7,2,12,14,12,14,12,13,13,10,14,8,15,6
1140 DATA 157,7,6,12,10,12,10,42,8,26,133,8,15,133
1150 DATA 8,18,128,10,16,130,10,17,128,12,15,130,12
1160 DATA 18,132,12,16,132,12,17
```

Timex Sinclair 1000 & 1500/*Santa Claus*

```
10 FAST
20 FOR Q=0 TO 21
30 FOR P=0 TO 31
40 LET C=128
50 IF Q>17 AND P>20-Q AND P<Q+11 THEN LET C=10
60 IF Q>11 AND Q<22 AND P>6-(Q<14) AND P<25+(Q<14) THE
N LET C=134
70 IF Q>0 AND Q<8 AND P>9 AND P>14-Q AND P<19+Q THEN L
ET C=136
80 IF Q>9 AND Q<12 AND P>18-Q AND P<Q+12 THEN LET C=13
6
90 IF Q>5 AND Q<12 AND P>9 AND P<21 THEN LET C=0
100 IF Q>11 AND Q<16 AND P>Q-2 AND P<32-Q THEN LET C=0
110 PRINT AT Q,P;CHR$ C
120 NEXT P
130 NEXT Q
140 PRINT AT 9,15;"V";AT 8,26;CHR$ 151;AT 11,15;CHR$ 1
31
150 SLOW
160 LET CO=0
170 PRINT AT 7,13;CHR$ (21+CO*2);AT 7,17;CHR$ (21+CO*2
)
180 PRINT AT 11,14;CHR$ (131+3*CO);AT 11,16;CHR$ (131-
125*CO)
190 LET CO=1-CO
200 PAUSE 140+RND*80
210 GOTO 170
```

TRS-80 Color Computer/*Santa Claus*

```
10 CLS(0)
20 FOR X=1 TO 8
30 READ M(X),L(X)
40 NEXT X
50 FOR X=1 TO 6
60 READ Y,Z,CH,KO
70 FOR RO=Y TO Z STEP -1
80 READ A,B
90 FOR CO=A TO B
100 PRINT @ CO+32*RO,CHR$(CH+KO);
110 NEXT CO,RO,X
120 FOR X=1 TO 7
130 READ LO,CH,KO
140 PRINT @ LO,CHR$(CH+KO);
150 NEXT X
160 PRINT @ 173,CHR$(142+16);
170 PRINT @ 179,CHR$(141+16);
180 FOR FL=0 TO 1
190 FOR X=1 TO 4
200 PRINT @ L(X+4*FL),CHR$(M(X+4*FL)+16);
210 NEXT X
220 FOR DE=1 TO RND(1000)+1000
230 NEXT DE
240 NEXT FL
250 IF RND(10)>4 THEN 160
260 PRINT @ 173,CHR$(143+16);
270 PRINT @ 179,CHR$(143+16);
280 FOR DE=1 TO 175
290 NEXT DE
300 GOTO 160
1000 DATA 141,302,139,334,143,338,141,306,143,302,137
1010 DATA 334,143,306,134,338,15,11,137,48,4,28,4,28,4
1020 DATA 28,3,29,3,29,10,9,143,112,5,27,7,25,14,5
1030 DATA 143,64,14,18,12,20,11,21,10,22,10,22,9,23,8
1040 DATA 24,8,24,8,24,8,24,11,4,143,16,14,18,13,19
1050 DATA 13,19,13,19,12,20,11,21,10,22,8,24,5,0,143
1060 DATA 112,27,28,25,28,24,27,9,26,10,25,12,23,3,3
1070 DATA 143,64,8,23,173,142,16,179,141,16,240,128,0
1080 DATA 335,131,16,336,131,16,337,131,16,221,137,64
```

TRS-80 Model III/*Santa Claus*

```
10 CLS
20 DIM L(4),M(8)
30 FOR X=1 TO 4
40 READ L(X),M(X*2-1),M(X*2)
50 NEXT X
60 FOR X=1 TO 2
70 READ Y,Z,CH
80 FOR RO=Y TO Z STEP -1
90 READ A,B
100 FOR CO=A TO B
110 IF (RO>7 AND (CO=21 OR CO=44)) OR (CO=45 AND RO<8)
 THEN HO=149 ELSE HO=CH
120 PRINT @ CO+64*RO,CHR$(HO);
130 NEXT CO,RO,X
140 FOR X=1 TO 3
150 READ Y,Z
160 FOR RO=Y TO Z STEP -1
170 READ A,B
180 FOR CO=A TO B
190 IF X=3 THEN RESET(CO,RO) ELSE SET(CO,RO)
200 NEXT CO,RO,X
210 FOR X=1 TO 9
220 READ LO,CH
230 PRINT @ LO,CHR$(CH);
240 NEXT X
250 FL=0
260 FOR X=1 TO 4
270 POKE 15360+L(X),M(X*2-FL)
280 NEXT X
290 FOR DELAY=1 TO RND(500)+500
300 NEXT DELAY
310 FL=1-FL
320 GOTO 260
1000 DATA 419,129,144,414,130,160,286,140,193
1010 DATA 291,140,193,15,12,191,0,62,3,60,6,57
1020 DATA 9,54,15,7,183,22,44,22,44,22,44,22
1030 DATA 44,22,44,22,44,22,44,22,44,21,45
1040 DATA 28,4,63,69,62,74,59,74,58,75,57,76
1050 DATA 55,78,54,78,54,79,51,79,50,80,46,85
1060 DATA 50,81,50,81,50,81,50,81,50,81,50,81
1070 DATA 50,90,50,81,50,50,50,50,51,52,53,55
1080 DATA 56,63,64,75,14,5,96,97,94,97,91,96
1090 DATA 95,96,93,94,89,92,86,88,84,85,80,83
1100 DATA 76,79,22,12,60,71,59,72,59,72,57,74
1110 DATA 56,75,56,75,54,77,54,77,53,78,51,80
1120 DATA 51,80,406,152,427,164,415,140,416,140
1130 DATA 417,140,418,140,352,164,353,152,368,42
```

VIC-20/*Santa Claus*

```
10 PRINT CHR$(147)
20 POKE 36879,8
30 FOR X=1 TO 7
40 READ Y,Z,CH,KO
50 FOR RO=Y TO Z STEP -1
60 READ A,B
70 FOR CO=A TO B
```

→

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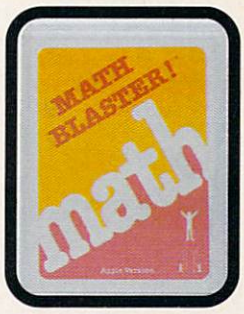

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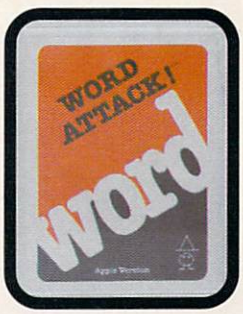

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```
80 POKE 7680+CO+22*RO,CH
90 POKE 38400+CO+22*RO,KO
100 NEXT CO,RO,X
110 FOR X=1 TO 5
120 READ CH,KO,LO
130 POKE LO,CH
140 POKE LO+30720,KO
150 NEXT X
160 MD=1
170 FOR DELAY=1 TO RND(1)*1000+2000
180 NEXT DELAY
190 IF RND(1)>0.5 THEN 240
200 POKE 7843,174+MD*54
210 POKE 7845,174+MD*54
220 FOR DELAY=1 TO 300
230 NEXT DELAY
240 POKE 7931,202+MD*11
250 POKE 7933,203-MD*2
260 MD=1-MD
270 GOTO 170
1000 DATA 22,19,214,1,0,20,1,19,2,18,3,17,22,11,219,4
1010 DATA 4,16,4,16,4,16,4,16,4,16,4,16,4,16,4,16,4,16
1020 DATA 3,17,3,17,3,17,10,9,160,2,4,16,5,15,15,8,160
1030 DATA 1,10,10,9,11,8,12,7,13,7,13,6,14,6,14,6,14
1040 DATA 11,7,160,3,9,11,8,12,8,12,7,13,6,14,6,1,160
1050 DATA 2,15,17,15,17,6,16,7,15,8,14,9,13,6,5,160
1060 DATA 1,6,14,6,14,198,3,7932,150,3,7888,174,3
1070 DATA 7843,174,3,7845,42,1,7852
```

NEW YEAR'S EVE

BY JOEY LATIMER

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Type in the program exactly as shown, and SAVE it to disk or tape. Be especially careful when entering the DATA statements! We advise you to test RUN the program well before the hour of midnight. That way, you can correct any typing errors before they can spoil the fun (*see Tips to the Typist*).

When you RUN the program, the first thing you'll see is a prompt telling you to enter the current time in hours, minutes, and seconds. Enter the time in six digits, without any intervening spaces or punctuation (example: 9:55:02 p.m. is entered as 095502); press RETURN or ENTER. At five seconds to midnight, things should start popping!

ILLUSTRATIONS BY JOSH GOSFIELD

TIPS TO THE TYPIST

1. When you type program lines into your computer, be sure to copy them *exactly* as written. Numbers, punctuation marks, and spaces are very important!

2. Remember to press RETURN or ENTER *after* every completed program line.

3. Run the program when you finish typing it in by typing RUN and pressing the RETURN or ENTER key. If the computer gives you an error message, don't panic. Mistakes can be fixed. List the program by typing the word LIST and pressing the RETURN or ENTER key and double-check each line. A foolproof way to correct a mistake is to type in the entire line again (including its line number). When you list the program again, you should find the new line in place of the old.

4. If you need more help, read the programming guide written for your computer. It will answer questions that can't possibly be covered here.

5. When all else fails . . . turn off the computer and relax.

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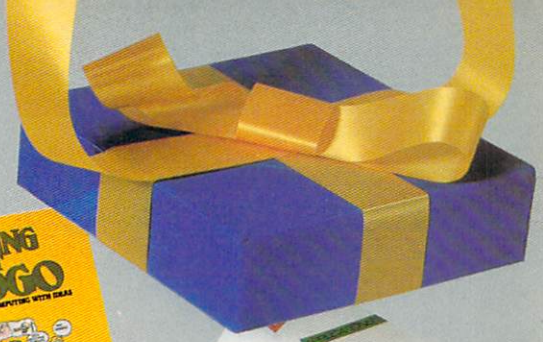

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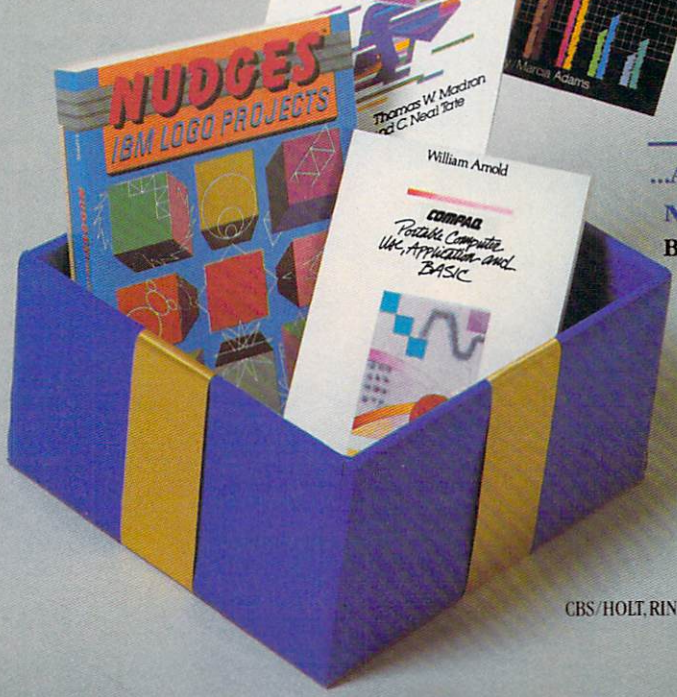

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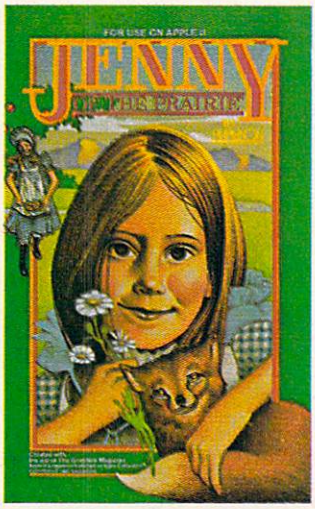
ADAM/*New Year's Eve*

```
10 LOMEM: 29000
20 DIM bin(7),lt(29),f(30),s(30),d(30)
30 FOR x = 0 TO 7
40 bin(x) = 2^x
50 NEXT x
60 FOR x = 1 TO 29
70 READ lt(x)
80 NEXT x
90 FOR x = 1 TO 30
100 READ f(x),s(x),d(x)
110 NEXT X
120 FOR x = 28000 to 28005
130 READ ml
140 POKE x,ml
150 NEXT x
160 fl = 0
170 HOME
180 PRINT "TO SET THE COMPUTER CLOCK,"
190 PRINT "PLEASE INPUT THE TIME IN"
200 PRINT "HOURS, MINUTES, AND SECONDS"
210 PRINT "(E.G., 095502); THEN PRESS"
220 PRINT "<RETURN>."
230 PRINT
240 INPUT "WHAT TIME IS IT NOW?";tim$
250 IF LEN(tim$) <> 6 THEN 170
260 ts = 0
270 FOR x = 1 TO 6
280 IF VAL(MID$(tim$,x,1)) = 0 AND MID$(tim$,x,1)<>"0"
 THEN ts = 1:x = 6
290 NEXT x
300 IF ts = 1 THEN 170
310 hrs = VAL(LEFT$(tim$,2))
320 min = VAL(MID$(tim$,3,2))
330 sec = VAL(RIGHT$(tim$,2))
340 IF hrs < 1 OR hrs > 12 OR min < 0 OR min > 59 OR s
ec < 0 OR sec > 59 THEN 170
350 tim = hrs*3600+min*60+sec
360 HOME
370 IF tim >= 43195 AND tim <= 43200 THEN 490
380 FOR de = 1 TO 908
390 NEXT de
400 tim = tim+1
410 IF tim >= 46800 THEN tim = 3600
420 hrs = INT(tim/3600)
430 min = INT((tim-hrs*3600)/60)
440 sec = tim-hrs*3600-min*60
450 HTAB 13
460 VTAB 10
470 PRINT STR$(hrs);":";CHR$(48*(min < 10));STR$(min);
":";CHR$(48*(sec < 10));STR$(sec);" "
480 GOTO 370
490 HOME
500 GR
510 FOR x = 700 TO 100 STEP -10
520 pitch = 112406/x
530 two = INT(pitch/16)
540 one = 128+pitch-(two*16)
550 POKE 28006,one:CALL 28000
560 POKE 28006,two:CALL 28000
570 POKE 28006,144:CALL 28000
580 FOR d = 1 TO 70-(x/10)
590 NEXT d
600 NEXT x
610 POKE 28006,159:CALL 28000
620 FOR x = 1 TO 50
630 GOSUB 1000
640 NEXT x
650 COLOR= INT(RND(1)*15)+1
660 FOR bitmap = 1 TO 29
670 l = lt(bitmap)
680 FOR q = 7 TO 0 STEP -1
690 IF l < bin(q) THEN 760
700 l = l-bin(q)
710 IF fl = 1 THEN COLOR= INT(RND(1)*15)+1
720 VLIN 4*(7-q),4*(7-q)+1 AT bitmap+4
730 IF fl = 1 THEN COLOR= INT(RND(1)*15)+1
740 VLIN 4*(7-q)+2,4*(7-q)+3 AT bitmap+4
750 GOSUB 1000
760 NEXT q
770 NEXT bitmap
780 FOR x = 1 TO 30
790 POKE 28006,f(x):CALL 28000
800 POKE 28006,s(x):CALL 28000
810 POKE 28006,144:CALL 28000
820 FOR de = 1 TO d(x)*200
830 NEXT de
840 POKE 28006,159:CALL 28000
850 NEXT x
860 fl = NOT fl
870 GOTO 510
1000 POKE 28006,240:CALL 28000
1010 POKE 28006,228:CALL 28000
1020 FOR de = 1 TO 20
1030 NEXT de
1040 POKE 28006,255:CALL 28000
1050 RETURN
2000 DATA 0,0,129,255,1,0,0
2010 DATA 0,224,160,161,255,1,0,0
2020 DATA 0,239,145,145,239,0,0,0
2030 DATA 0,226,145,145,142,0
3000 DATA 141,35,2,141,26,3,135,28,1,141,26,2,132,21,2
3010 DATA 142,23,3,133,25,1,142,23,2,132,21,1,142,23,1
3020 DATA 141,26,3,141,26,1,132,21,2,142,17,2,143,15,6
3030 DATA 143,15,2,142,17,3,132,21,1,132,21,2,141,26,2
3040 DATA 142,23,3,133,25,1,142,23,2,132,21,1,142,23,1
3050 DATA 141,26,3,142,31,1,142,31,2,141,35,2,141,26,6
4000 DATA 58,102,109,211,255,201
```

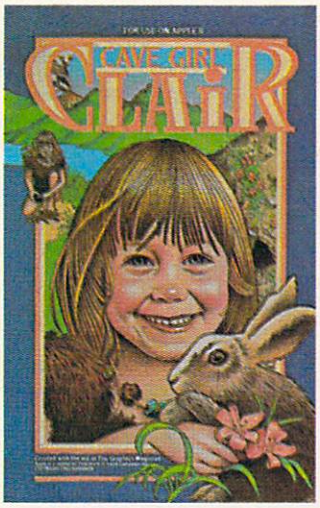
Apple/*New Year's Eve*

```
10 DIM BIN(7),LT(29),N(30),D(30)
20 FOR X = 0 TO 7
30 BIN(X) = 2^X
40 NEXT X
50 FOR X = 1 TO 29
60 READ LT(X)
70 NEXT X
80 FOR X = 1 TO 30
90 READ N(X),D(X)
100 NEXT X
110 FOR X = 0 TO 28
120 READ ML
130 POKE 768+X,ML
140 NEXT X
150 FL = 0
160 HOME
170 PRINT "TO SET THE COMPUTER CLOCK, PLEASE"
180 PRINT "INPUT THE TIME IN HOURS, MINUTES,"
190 PRINT "AND SECONDS (E.G., 095502);"
200 PRINT "THEN PRESS <RETURN>."
210 PRINT
220 INPUT "WHAT TIME IS IT NOW?";TIM$
230 IF LEN(TIM$) <> 6 THEN 160
240 TS = 0
250 FOR X = 1 TO 6
260 IF VAL(MID$(TIM$,X,1)) = 0 AND MID$(TIM$,X,1) <> "
0" THEN TS = 1:X = 6
270 NEXT X
280 IF TS = 1 THEN 160
290 HRS = VAL(LEFT$(TIM$,2))
300 MIN = VAL(MID$(TIM$,3,2))
310 SEC = VAL(RIGHT$(TIM$,2))
320 IF HRS < 1 OR HRS > 12 OR MIN < 0 OR MIN > 59 OR S
EC < 0 OR SEC > 59 THEN 160
330 TIM = HRS*3600+MIN*60+SEC
340 HOME
350 IF TIM >= 43195 AND TIM <= 43200 THEN 470
360 FOR DE = 1 TO 561
370 NEXT DE
```

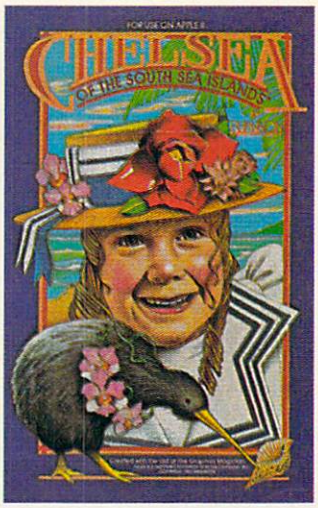
WE'VE DISCOVERED A NEW WORD IN SOFTWARE. GIRLS.



Jenny of The Prairie
The first story in the series is about a brave pioneer girl and how she faces winter alone.



Cave Girl Clair
Alone in pre-historic times, Clair must learn to gather food and tend fire to survive.



Chelsea of the South Sea Islands
A 19th-century British girl is stranded on a tropical island and surrounded by danger.

Lauren of the 25th Century
Lauren's challenges include maintaining a reclamation project in the desert and protecting fragile life forms.

Meet Jenny, Clair, Chelsea, and Lauren, four software adventure stories designed especially for young girls from 7-12.

With strong young girls as heroines and survival as a goal, these stories are fun and fascinating. But they're more than that. They're educational, too.

Rhiannon Software-Adventure Stories help girls become familiar with computer keyboards and develop computer literacy. In fact, a leading computer magazine said "...as an introduction to computers and computer games (Rhiannon Software) is super, and it's bound to be a catalyst for some female computer geniuses."

But unlike alien-zapping computer games, Rhiannon Software encourages creativity and problem-solving along with computer skills.

The players have to be quick and imaginative to help the heroines survive in hostile environments. How can Jenny find enough food to get through the winter? Will a cave be a safe shelter or should she build a lean-to? And how can she avoid the wild animals–like mountain lions and rattlesnakes–that also live on the prairie?

Jenny, Clair, Chelsea, and Lauren are compatible with the Apple II, IIe and IIc, IBM PC, PCjr., Commodore 64, and Atari computers. And with young girls everywhere.

Ask for Jenny, Clair, Chelsea, and Lauren at any store that sells quality software.

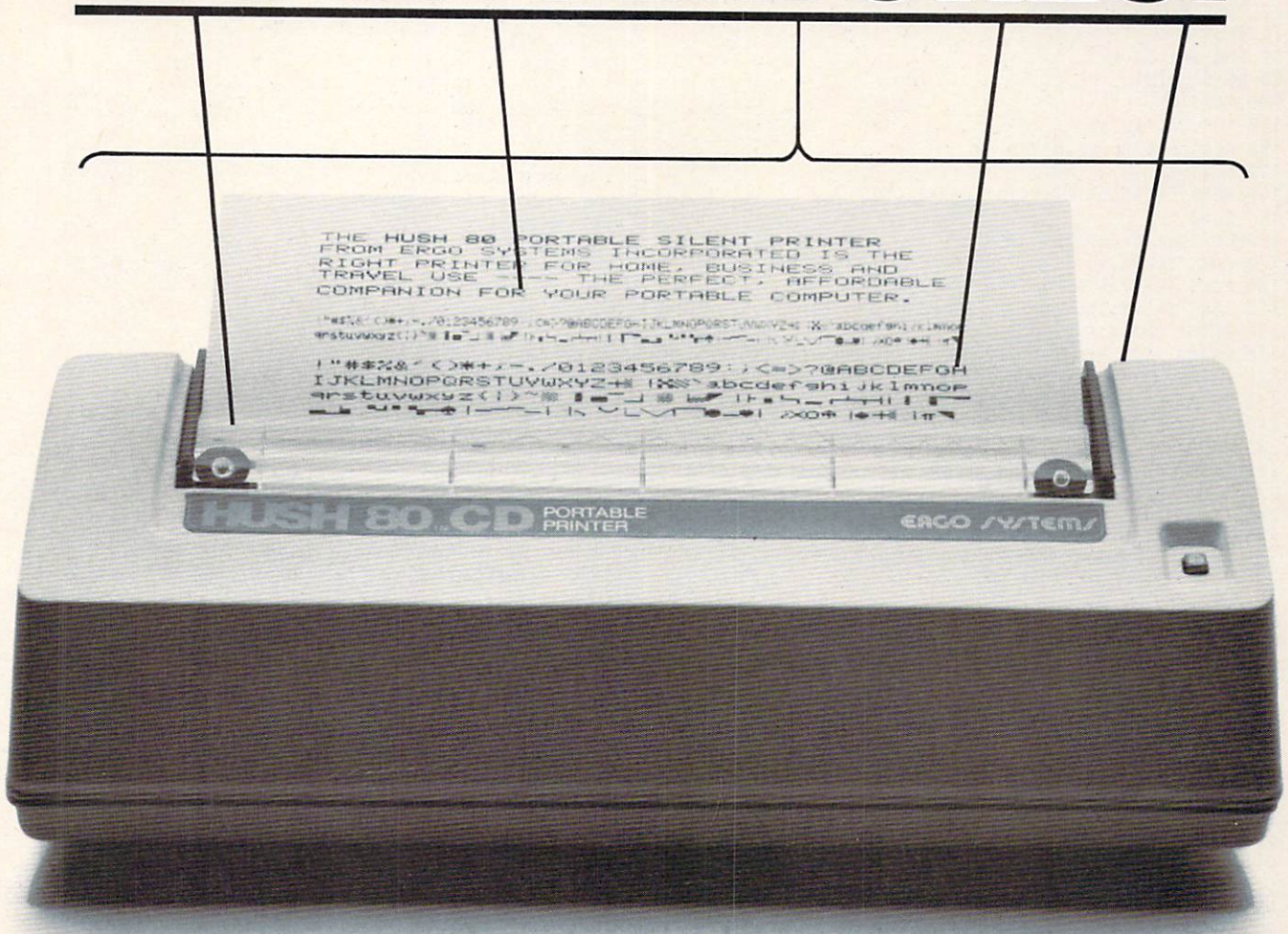
Rhiannon Software
Adventure Stories for Girls
Addison-Wesley
Reading, Massachusetts 01867

```
380 TIM = TIM+1
390 IF TIM >= 46800 THEN TIM = 3600
400 HRS = INT(TIM/3600)
410 MIN = INT((TIM-HRS*3600)/60)
420 SEC = TIM-HRS*3600-MIN*60
430 HTAB 17
440 VTAB 10
450 PRINT STR$(HRS);":";CHR$(48*(MIN < 10));STR$(MIN);
":";CHR$(48*(SEC < 10));STR$(SEC);" "
460 GOTO 350
470 HOME
480 GR
490 FOR X = 2 TO 151
500 POKE 8,X
510 POKE 6,5
520 CALL 768
530 NEXT X
540 FOR X = 1 TO 50
550 A = PEEK(-16336)
560 FOR D = 1 TO INT(RND(1)*5)+1
570 NEXT D
580 NEXT X
590 COLOR= INT(RND(1)*15)+1
600 FOR BITMAP = 1 TO 29
610 L = LT(BITMAP)
620 FOR Q = 7 TO 0 STEP -1
630 IF L < BIN(Q) THEN 700
640 L = L-BIN(Q)
650 IF FL = 1 THEN COLOR= INT(RND(1)*15)+1
660 VLIN 4*(7-Q),4*(7-Q)+1 AT BITMAP+5
670 IF FL = 1 THEN COLOR= INT(RND(1)*15)+1
680 VLIN 4*(7-Q)+2,4*(7-Q)+3 AT BITMAP+5
690 A = PEEK(-16336)
700 NEXT Q
710 NEXT BITMAP
720 FOR X = 1 TO 30
730 POKE 8,N(X)
740 POKE 6,D(X)*25
750 CALL 768
760 NEXT X
770 FL = NOT FL
780 GOTO 490
1000 DATA 0,0,129,255,1,0,0
1010 DATA 0,224,160,161,255,1,0,0
1020 DATA 0,239,145,145,239,0,0,0
1030 DATA 0,226,145,145,142,0
2000 DATA 121,2,91,3,96,1,91,2,72,2,81,3
2010 DATA 85,1,81,2,72,1,81,1,91,3,91,1
2020 DATA 72,2,60,2,53,6,53,2,60,3,72,1
2030 DATA 72,2,91,2,81,3,85,1,81,2,72,1
2040 DATA 81,1,91,3,108,1,108,2,121,2,91,6
3000 DATA 165,8,74,133,10,164,8,173,48,192,136,234
3010 DATA 234,208,251,165,7,56,229,10,133,7,176,237
3020 DATA 198,6,208,233,96
```

Atari/*New Year's Eve*

```
10 DIM BIN(7),TIM$(6)
20 FL=1
30 FOR X=0 TO 7
40 BIN(X)=2^X
50 NEXT X
60 PRINT CHR$(125);
70 PRINT "TO SET THE COMPUTER CLOCK, PLEASE"
80 PRINT "INPUT THE TIME IN HOURS, MINUTES,"
90 PRINT "AND SECONDS (E.G., 095502);"
100 PRINT "THEN PRESS <RETURN>."
110 PRINT
120 PRINT "WHAT TIME IS IT NOW";
130 TRAP 60
140 INPUT TIM$
150 POKE 20,0
160 HRS=VAL(TIM$(1,2))
170 MIN=VAL(TIM$(3,4))
180 SEC=VAL(TIM$(5,6))
190 IF HRS<1 OR HRS>12 OR MIN<0 OR MIN>59 OR SEC<0 OR
SEC>59 THEN 60
200 TIM=HRS*3600+MIN*60+SEC
210 GRAPHICS 2+16
220 TRAP 40000
230 IF TIM>=43195 AND TIM<=43200 THEN 370
240 IF PEEK(20)<60 THEN 240
250 POKE 20,0
260 TIM=TIM+1
270 IF TIM>=46800 THEN TIM=3600
280 HRS=INT(TIM/3600)
290 MIN=INT((TIM-HRS*3600)/60)
300 SEC=TIM-HRS*3600-MIN*60
310 TIM$=":00:00"
320 TIM$(3-(MIN>9),3)=STR$(MIN)
330 TIM$(6-(SEC>9),6)=STR$(SEC)
340 POSITION 6,5
350 PRINT #6;STR$(HRS);TIM$;" "
360 GOTO 230
370 GRAPHICS 3+16
380 FOR X=0 TO 151
390 SOUND 1,X,10,10
400 FOR DELAY=1 TO 5
410 NEXT DELAY
420 NEXT X
430 SOUND 1,121,8,15
440 FOR X=1 TO 10
450 GOSUB 1000
460 NEXT X
470 SOUND 1,0,0,0
480 FOR BITMAP=3 TO 32
490 READ L
500 FOR Q=7 TO 0 STEP -1
510 IF L<BIN(Q) THEN 590
520 L=L-BIN(Q)
530 COLOR FL+1
540 PLOT BITMAP,2*(7-Q)
550 COLOR 2
560 PLOT BITMAP,2*(7-Q)+1
570 SOUND 1,30,8,10
580 SOUND 1,0,0,0
590 NEXT Q
600 NEXT BITMAP
610 FOR X=1 TO 31
620 READ N,D
630 GOSUB 1000
640 SOUND 1,0,0,0
650 SOUND 1,N,10,10
660 FOR DELAY=1 TO D
670 NEXT DELAY
680 NEXT X
690 FL= NOT FL
700 RESTORE
710 GOTO 380
1000 I1=INT(RND(0)*15)+1
1010 I2=INT(RND(0)*14)+1
1020 I2=I1+I2-15*((I1+I2)>15)
1030 FG1=INT(RND(0)*16)
1040 FG2=FG1+I1-16*((FG1+I1)>15)
1050 BG=FG1+I2-16*((FG1+I2)>15)
1060 SETCOLOR 0,FG1,INT(RND(0)*9)+6
1070 SETCOLOR 1,FG2,INT(RND(0)*9)+6
1080 SETCOLOR 4,BG,INT(RND(0)*5)
1090 RETURN
2000 DATA 0,0,129,255,255,1,0,0
2010 DATA 0,224,160,161,255,1,0,0
2020 DATA 0,239,145,145,239,0,0,0
2030 DATA 0,226,145,145,142,0
3000 DATA 121,30,91,55,96,5,91,30,72,30,81,55
3010 DATA 85,5,81,30,72,5,81,5,91,55,91,5
3020 DATA 72,30,60,30,53,155,53,30,60,55,72,5
3030 DATA 72,30,91,30,81,55,85,5,81,30,72,5
3040 DATA 81,5,91,55,108,5,108,30,121,30
3050 DATA 91,130,0,30
```

BIG ON FEATURES.



$139.99*

SMALL ON PRICE.

You read that right. A full 80 column, 80 character-per-second, dot matrix thermal printer, complete (with a 90 ft. paper roll, interface cable and power pack), ready-to-run—at 800 words per minute—as low as $139.99. But your wallet isn't the only thing the HUSH 80 is compatible with. Its Commodore, Centronics Parallel or RS232 interfaces assure compatibility with most popular computers.

And you'll find the HUSH 80 printer is big on lots of small things too. It weighs about one-half the amount of its nearest competitor (its compact size fits conveniently into a briefcase). And it's extremely quiet, with fewer working parts, which means less noise and less to go wrong.

Ask your local computer store or dealer for the HUSH 80 today. And if he doesn't carry it, call us at 415/786-ERGO. And find out where to get the little printer that does the big jobs.

HUSH™ 80 PRINTER

LESS PRICE, LESS NOISE, LESS SIZE.

ERGO SYSTEMS, INC. 26254 Eden Landing Road, Hayward, CA 94545-3718

*Commodore compatible version. Centronics parallel and RS232 versions slightly higher.

Commodore 64/*New Year's Eve*

```
10 DIM BIN(7),LT(19),H(30),L(30),D(30),CR(5)
20 FOR X=0 TO 7
30 BIN(X)=2^X
40 NEXT X
50 FOR X=54272 TO 54296
60 POKE X,0
70 NEXT X
80 FOR X=1 TO 19
90 READ LT(X)
100 NEXT X
110 FOR X=1 TO 30
120 READ H(X),L(X),D(X)
130 NEXT X
140 READ CR(1),CR(2),CR(3),CR(4),CR(5)
150 FL=0
160 BG=INT(RND(0)*16)
170 POKE 54296,15
180 POKE 54277,120
190 POKE 54278,100
200 PRINT CHR$(147);
210 PRINT "TO SET THE COMPUTER CLOCK, PLEASE"
220 PRINT "INPUT THE TIME IN HOURS, MINUTES,"
230 PRINT "AND SECONDS (E.G., 095502); THEN"
240 PRINT "PRESS <RETURN>."
250 PRINT
260 INPUT "WHAT TIME IS IT NOW";T$
270 IF LEN(T$)<>6 THEN 200
280 TS=0
290 FOR X=1 TO 6
300 IF VAL(MID$(T$,X,1))=0 AND MID$(T$,X,1)<>"0" THEN
TS=1:X=6
310 NEXT X
320 IF TS=1 THEN 200
330 HRS=VAL(LEFT$(T$,2))
340 MIN=VAL(MID$(T$,3,2))
350 SEC=VAL(RIGHT$(T$,2))
360 IF HRS<1 OR HRS>12 OR MIN<0 OR MIN>59 OR SEC<0 OR
SEC>59 THEN 200
370 TI$=T$
380 PRINT CHR$(147);
390 IF VAL(TI$)>=115955 AND VAL(TI$)<=120000 THEN 450
400 IF TI$="130000" THEN TI$="010000"
410 ZR=-(LEFT$(TI$,1)="0")
420 PRINT CHR$(19);TAB(16);MID$(TI$,ZR+1,2-ZR);":";
430 PRINT MID$(TI$,3,2);":";RIGHT$(TI$,2);" "
440 GOTO 390
450 PRINT CHR$(147)
460 POKE 54276,33
470 FOR X=100 TO 0 STEP -.5
480 POKE 54273,X
490 FOR D=1 TO 5
500 NEXT D
510 NEXT X
520 POKE 54276,129
530 FOR X=1 TO 50
540 POKE 54273,RND(0)*255
550 GOSUB 1000
560 POKE 53281,CO
570 NEXT X
580 BG=CO
590 GOSUB 1000
600 CH=CR(1-FL*(INT(RND(0)*4)+1))
610 FOR BITMAP=1 TO 37 STEP 2
620 L=LT((BITMAP+1)/2)
630 FOR Q=7 TO 0 STEP -1
640 IF L<BIN(Q) THEN 800
650 L=L-BIN(Q)
660 POKE 54276,129
670 SC=1063+BITMAP+80*(7-Q)
680 POKE SC,CH
690 POKE SC+1,CH
700 POKE SC+40,CH
710 POKE SC+41,CH
720 IF FL THEN GOSUB 1000
730 CL=55335+BITMAP+80*(7-Q)
740 POKE CL,CO
750 POKE CL+1,CO
760 IF FL THEN GOSUB 1000
770 POKE CL+40,CO
780 POKE CL+41,CO
790 POKE 54276,0
800 NEXT Q
810 NEXT BITMAP
820 BG=CO
830 POKE 54276,33
840 FOR X=1 TO 30
850 GOSUB 1000
860 POKE 53281,CO
870 POKE 54272,L(X)
880 POKE 54273,H(X)
890 FOR D=1 TO D(X)*100
900 NEXT D
910 NEXT X
920 FL=NOT FL
930 GOTO 470
1000 P=INT(RND(0)*14)+1
1010 CO=BG+P+16*((BG+P)>15)
1020 RETURN
2000 DATA 0,128,255,0
2010 DATA 224,160,160,255,0,0
2020 DATA 239,145,145,239,0
2030 DATA 226,145,145,142
3000 DATA 16,195,2,22,96,3,21,31,1,22,96,2,28,49,2
3010 DATA 25,30,3,23,181,1,25,30,2,28,49,1,25,30,1
3020 DATA 22,96,3,22,96,1,28,49,2,33,135,2,37,162,6
3030 DATA 37,162,2,33,135,3,28,49,1,28,49,2,22,96,2
3040 DATA 25,30,3,23,181,1,25,30,2,28,49,1,25,30,1
3050 DATA 22,96,3,18,209,1,18,209,2,16,195,2,22,96,6
4000 DATA 160,81,102,42,90
```

IBM PC w/Color Graphics Adapter & IBM PC*jr*/*New Year's Eve*

```
10 DIM BIN(7),LT(29),N(30),D(30),CR(5)
20 FOR X=0 TO 7
30 BIN(X)=2^X
40 NEXT X
50 FOR X=1 TO 29
60 READ LT(X)
70 NEXT X
80 FOR X=1 TO 30
90 READ N(X),D(X)
100 NEXT X
110 READ CR(1),CR(2),CR(3),CR(4),CR(5)
120 FL=0
140 WIDTH 40
150 SCREEN 0,1
160 COLOR 1,7
170 KEY OFF
180 CLS
190 PRINT "TO SET THE COMPUTER CLOCK, PLEASE"
200 PRINT "INPUT THE TIME IN HOURS, MINUTES,"
210 PRINT "AND SECONDS (E.G., 095502);"
220 PRINT "THEN PRESS <ENTER>."
230 PRINT
240 INPUT "WHAT TIME IS IT NOW";T$
250 IF LEN(T$)<>6 THEN 180
260 TS=0
270 FOR X=1 TO 6
280 IF VAL(MID$(T$,X,1))=0 AND MID$(T$,X,1)<>"0" THEN
TS=1:X=6
290 NEXT X
300 IF TS=1 THEN 180
310 HRS=VAL(LEFT$(T$,2))
320 MIN=VAL(MID$(T$,3,2))
330 SEC=VAL(RIGHT$(T$,2))
340 IF HRS<1 OR HRS>12 OR MIN<0 OR MIN>59 OR SEC<0 OR
SEC>59 THEN 180
```

→

["Hi, we're from Europe. Where's the gold?"]

A SECOND CHANCE *to* GET *the* NEW WORLD RIGHT.

IF COLUMBUS HAD LANDED IN NEW JERSEY; if Cortez had been nicer to Montezuma; if Pizarro had been a more generous soul, would the world today be any different?

If you've ever wondered about things like that, you'll like *Seven Cities of Gold* very much indeed.

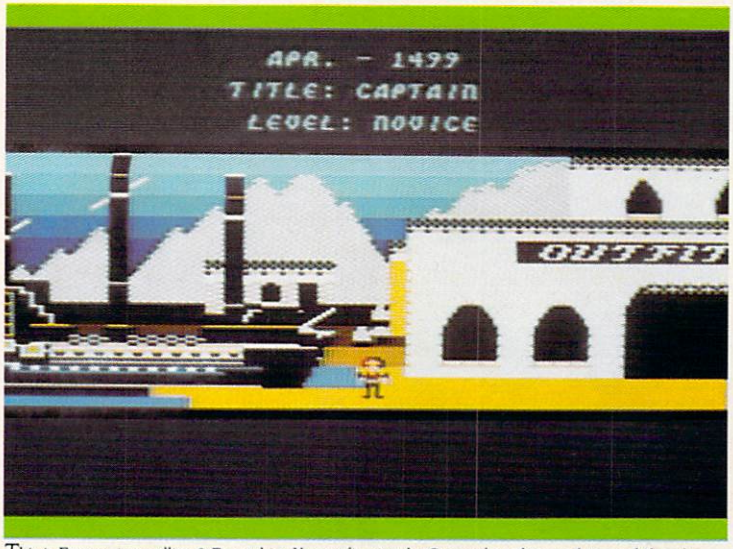
It's a kind of adventure. An unusually rich and technically impressive one with new continents to explore, natives to encounter, resources to manage and trade routes to establish. But beyond all the neat stuff *Seven Cities* throws up on the screen, there's something else happening here.

It feels quite odd to look at the map and see nothing. Of course you have to explore the more than 2800 screen new world in order to map it. But the way the natives act, the way you get older, the way seasons change and your men behave, and the way your reputation preceeds you gives you a sort of feeling that's unexpected in computer games. It's deeper. Maybe a little disquieting. It plays as much in your head as it does inside your computer.

Seven Cities does all this with the real world or, better still (since the "new" world really isn't anymore), it will construct any number of completely detailed hemispheres for you to try your hand with.

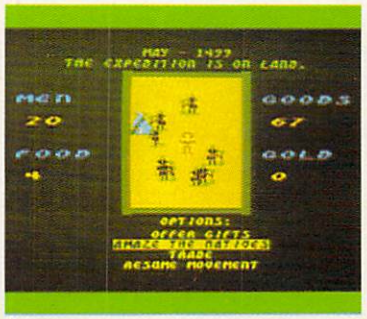
Designed by Ozark Softscape (the people who made M.U.L.E., *Infoworld's* "Strategy Game of 1983"), *Seven Cities* is about as near a recreation of history as has ever been accomplished, with or without a computer.

Find it. Stomp around in it. See if you can't do a better job than all the celebrated figures who got us into the mess we have to deal with today.



This is Europe, in scrolling 3-D graphics. You outfit, visit the Crown, launch your ships, and if you're cut out for this, you return later to tell all sorts of wild stories about what it's like over there.

There are over 2800 screens to explore in the new world. As you scroll through them, seasons change.



Animated natives surround you. They have no reason to trust you. The drum beat quickens.

Trading with the Aztecs is tricky. You could wind up with enough gold to build an empire. Or as soup.

Home again you view your maps, pat yourself on the back, and consider your place in history.

SEVEN CITIES *of* GOLD™

from ELECTRONIC ARTS™

MACHINE REQUIREMENTS: *Seven Cities of Gold* is available for the Apple II, II+, IIe & IIc, Commodore 64 and Atari home computers.

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```
350 CLS
360 TIM=HRS*3600+MIN*60+SEC
370 IF TIM>=43195! AND TIM<=43200! THEN 510
380 FOR D=1 TO 510
390 NEXT D
400 TIM=TIM+1
410 IF TIM>=46800! THEN TIM=3600
420 HRS=INT(TIM/3600)
430 MIN=INT((TIM-HRS*3600)/60)
440 SEC=TIM-HRS*3600-MIN*60
450 TIM$=":00:00"
460 MID$(TIM$,2-(MIN<10))=MID$(STR$(MIN),2)
470 MID$(TIM$,5-(SEC<10))=MID$(STR$(SEC),2)
480 LOCATE 10,17
490 PRINT STR$(HRS);TIM$;" "
500 GOTO 370
510 FOR X=950 TO 100 STEP -10
520 SOUND X,1
530 NEXT X
540 FOR X=1 TO 50
550 BG=INT(RND(1)*8)
560 COLOR ,BG
570 CLS
580 SOUND 50,1
590 NEXT X
600 GOSUB 1000
610 COLOR CC
620 CLS
630 CH=CR(1-(FL*(INT(RND(1)*4)+1)))
640 FOR BITMAP=1 TO 29
650 L=LT(BITMAP)
660 FOR Q=7 TO 0 STEP -1
670 IF L<BIN(Q) THEN 770
680 L=L-BIN(Q)
690 IF FL THEN GOSUB 1000:COLOR CC
700 LOCATE 2*(7-Q)+1,BITMAP+5
710 PRINT CHR$(CH)
720 IF FL THEN GOSUB 1000:COLOR CC
730 LOCATE 2*(7-Q)+2,BITMAP+5
740 PRINT CHR$(CH)
750 SOUND 45,1
760 SOUND 100,0
770 NEXT Q
780 NEXT BITMAP
790 FOR X=1 TO 30
800 SOUND N(X),D(X)
810 NEXT X
820 FL=NOT FL
830 GOTO 510
1000 P=INT(RND(1)*14)+1
1010 CC=BG+P+15*((BG+P)>15)
1020 RETURN
2000 DATA 0,0,129,255,1,0,0
2010 DATA 0,224,160,161,255,1,0,0
2020 DATA 0,239,145,145,239,0,0,0
2030 DATA 0,226,145,145,142,0
3000 DATA 196,8,262,12,247,4,262,8,330,8,294,12,277,4
3010 DATA 294,8,330,4,294,4,262,12,262,4,330,8,392,8
3020 DATA 440,24,440,8,392,12,330,4,330,8,262,8,294,12
3030 DATA 277,4,294,8,330,4,294,4,262,12,220,4,220,8
3040 DATA 196,8,262,24
4000 DATA 219,1,2,15,177
```

Note: If you have an IBM PCjr and are using Cartridge BASIC, you must add line 130 to the program: 130 PLAY "MF"

TI-99/4A/*New Year's Eve*

```
10 DIM BIN(7),LT(29),N(30),D(30),CB(5),CF(5)
20 RANDOMIZE
30 CALL CLEAR
40 FOR X=0 TO 7
50 BIN(X)=2^X
60 NEXT X
70 FOR X=1 TO 29
80 READ LT(X)
90 NEXT X
100 FOR X=1 TO 30
110 READ D(X),N(X)
120 NEXT X
130 READ CB(1),CB(2),CB(3),CB(4),CB(5)
140 READ CF(1),CF(2),CF(3),CF(4),CF(5)
150 FOR X=88 TO 127 STEP 8
160 CALL CHAR(X,"FFFFFFFFFFFFFFFF")
170 CALL CHAR(X+1,"AA55AA55AA55AA55")
180 CALL CHAR(X+2,"1824429999422418")
190 CALL COLOR(X/8-3,CF(X/8-10),1)
200 NEXT X
210 FL=0
220 CALL CLEAR
230 PRINT "TO SET THE COMPUTER CLOCK,"
240 PRINT "PLEASE INPUT THE TIME IN"
250 PRINT "HOURS, MINUTES, AND SECONDS"
260 PRINT "(E.G., 095502);"
270 PRINT "THEN PRESS <ENTER>."
280 PRINT
290 INPUT "WHAT TIME IS IT NOW?":T$
300 IF LEN(T$)<>6 THEN 220
310 TS=0
320 FOR X=1 TO 6
330 IF (ASC(SEG$(T$,X,1))>47)*(ASC(SEG$(T$,X,1))<58)TH
EN 360
340 TS=1
350 X=6
360 NEXT X
370 IF TS=1 THEN 220
380 HRS=VAL(SEG$(T$,1,2))
390 MN=VAL(SEG$(T$,3,2))
400 SEC=VAL(SEG$(T$,5,2))
410 IF (HRS<0)+(HRS>12)+(MN<0)+(MN>59)+(SEC<0)+(SEC>59
)THEN 220
420 CALL CLEAR
430 TIM=HRS*3600+MN*60+SEC
440 IF (TIM>=43195)*(TIM<=43200)THEN 610
450 FOR DL=1 TO 60
460 NEXT DL
470 TIM=TIM+1
480 IF TIM<46800 THEN 500
490 TIM=3600
500 IF TIM/2<>INT(TIM/2)THEN 440
510 HRS=INT(TIM/3600)
520 MN=INT((TIM-HRS*3600)/60)
530 SEC=TIM-HRS*3600-MN*60
540 M$="0"&STR$(MN)
550 S$="0"&STR$(SEC)
560 T$=STR$(HRS)&":"&SEG$(M$,LEN(M$)-1,2)&":"&SEG$(S$,
LEN(S$)-1,2)&" "
570 FOR X=1 TO LEN(T$)
580 CALL HCHAR(10,12+X,ASC(SEG$(T$,X,1)))
590 NEXT X
600 GOTO 440
610 CALL CLEAR
620 FOR X=1000 TO 200 STEP -18
630 CALL SOUND(100,X,0)
640 NEXT X
650 FOR X=1 TO 20
660 CALL SCREEN(CB(INT(RND*5)+1))
670 CALL SOUND(50,-5,0)
680 NEXT X
690 CALL SCREEN(1)
700 CH=FL*(INT(RND*2)+1)
710 CS=INT(RND*5)
720 FOR BITMAP=1 TO 29
730 L=LT(BITMAP)
```

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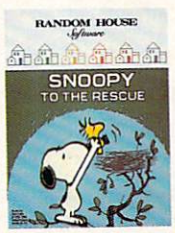

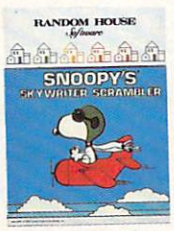

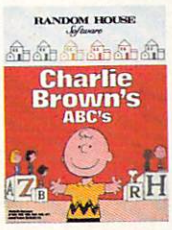

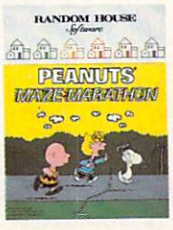

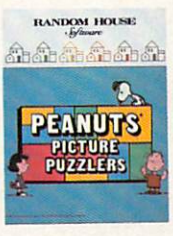

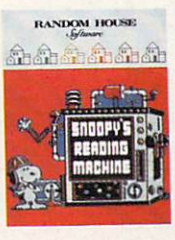

RANDOM HOUSE *Software*

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†For Apple II+, IIe, IIc. Soon for Commodore 64–disk drive only. (Trademarks of Apple Computer, Inc. & Commodore Electronics Ltd.) © 1984 Random House, Inc. All rights reserved.

```
740 FOR Q=7 TO 0 STEP -1
750 IF L<BIN(Q)THEN 810
760 L=L-BIN(Q)
770 CALL SOUND(20,-5,0)
780 IF FL=0 THEN 800
790 CS=INT(RND*5)
800 CALL VCHAR(2*(7-Q)+1,BITMAP,88+CH+CS*8,2)
810 NEXT Q
820 NEXT BITMAP
830 FOR X=1 TO 30
840 CALL SCREEN(CB(INT(RND*5)+1))
850 CALL SOUND(D(X),N(X),0)
860 NEXT X
870 FL=1-FL
880 GOTO 620
1000 DATA 0,0,129,255,1,0,0
1010 DATA 0,224,160,161,255,1,0,0
1020 DATA 0,239,145,145,239,0,0,0
1030 DATA 0,226,145,145,142,0
2000 DATA 250,262,375,349,125,330,250,349,250,440
2010 DATA 375,392,125,370,250,392,125,440,125,392
2020 DATA 375,349,125,349,250,440,250,523,750,587
2030 DATA 250,587,375,523,125,440,250,440,250,349
2040 DATA 375,392,125,370,250,392,125,440,125,392
2050 DATA 375,349,125,294,250,294,250,262,750,349
3000 DATA 2,5,7,13,15,4,6,10,12,16
```

Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/*New Year's Eve*

```
10 DIM B(8)
20 DIM L(28)
30 FAST
40 FOR X=1 TO 8
50 LET B(X)=2**(X-1)
60 NEXT X
70 LET FL=0
80 LET P1=1
90 LET P2=2
100 LET D$="0,0,129,255,1,0,0,0,224,160,161,255,1,0,0,
0,239,145,145,239,0,0,0,226,145,145,142,0,"
110 FOR X=1 TO 28
120 GOSUB 1000
130 LET L(X)=VAL N$
140 NEXT X
150 SLOW
160 CLS
170 PRINT "TO SET THE COMPUTER CLOCK,"
180 PRINT "PLEASE INPUT THE TIME IN HOURS,"
190 PRINT "MINUTES, AND SECONDS"
200 PRINT "(E.G., 095502); THEN"
210 PRINT "PRESS <ENTER>."
220 PRINT
230 PRINT "WHAT TIME IS IT NOW?"
240 INPUT T$
250 IF LEN T$<>6 THEN GOTO 160
260 LET TS=0
270 FOR X=1 TO 6
280 IF CODE T$(X)>27 AND CODE T$(X)<38 THEN GOTO 300
290 LET TS=1
300 NEXT X
310 IF TS=1 THEN GOTO 160
320 LET HRS=VAL T$(1 TO 2)
330 LET MIN=VAL T$(3 TO 4)
340 LET SEC=VAL T$(5 TO 6)
350 IF HRS<0 OR HRS>12 OR MIN<0 OR MIN>59 OR SEC<0 OR
SEC>59 THEN GOTO 160
360 LET TIM=HRS*3600+MIN*60+SEC
370 CLS
380 PAUSE 25
390 IF TIM>=43195 AND TIM<=43200 THEN GOTO 510
400 LET TIM=TIM+1
410 IF TIM=46800 THEN LET TIM=3600
420 IF TIM/5<>INT(TIM/5) THEN GOTO 380
430 LET HRS=INT(TIM/3600)
440 LET MIN=INT((TIM-HRS*3600)/60)
450 LET SEC=TIM-HRS*3600-MIN*60
460 LET T$=":00:00"
470 LET T$(2+(MIN<10) TO 3)=STR$ MIN
480 LET T$(5+(SEC<10) TO 6)=STR$ SEC
490 PRINT AT 10,10;HRS;T$;" "
500 GOTO 380
510 CLS
520 FAST
530 LET CH=INT(RND*12)+128
540 FOR M=1 TO 28
550 LET L=L(M)
560 IF L=0 THEN GOTO 630
570 FOR Q=8 TO 1 STEP -1
580 IF L<B(Q) THEN GOTO 620
590 LET L=L-B(Q)
600 PRINT AT 2*(8-Q),M;CHR$ CH
610 PRINT AT 2*(8-Q)+1,M;CHR$ CH
620 NEXT Q
630 NEXT M
640 SLOW
650 PAUSE 125
660 LET FL=NOT FL
670 GOTO 530
1000 IF D$(P2)="," THEN GOTO 1030
1010 LET P2=P2+1
1020 GOTO 1000
1030 LET N$=D$(P1 TO P2-1)
1040 LET P2=P2+2
1050 LET P1=P2-1
1060 RETURN
```

TRS-80 Color Computer/*New Year's Eve*

```
10 DIM BIN(7)
20 FL=0
30 BIN(0)=1
40 FOR X=1 TO 7
50 BIN(X)=BIN(X-1)*2
60 NEXT X
70 CLS
80 PRINT "TO SET THE COMPUTER CLOCK,"
90 PRINT "PLEASE INPUT THE TIME IN HOURS,"
100 PRINT "MINUTES, AND SECONDS"
110 PRINT "(E.G., 095502);"
120 PRINT "THEN PRESS <RETURN>."
130 PRINT
140 INPUT "WHAT TIME IS IT NOW";T$
150 IF LEN(T$)<>6 THEN 70
160 TS=0
170 FOR X=1 TO 6
180 IF VAL(MID$(T$,X,1))=0 AND MID$(T$,X,1)<>"0" THEN
TS=1:X=6
190 NEXT X
200 IF TS=1 THEN 70
210 HRS=VAL(LEFT$(T$,2))
220 MIN=VAL(MID$(T$,3,2))
230 SEC=VAL(RIGHT$(T$,2))
240 IF HRS<1 OR HRS>12 OR MIN<0 OR MIN>59 OR SEC<0 OR
SEC>59 THEN 70
250 TIM=HRS*3600+MIN*60+SEC
260 CLS
270 IF TIM>=43195 AND TIM <=43200 THEN 390
280 FOR DLY=1 TO 323
290 NEXT DLY
300 TIM=TIM+1
310 IF TIM>=46800 THEN TIM=3600
320 HRS=INT(TIM/3600)
```

→

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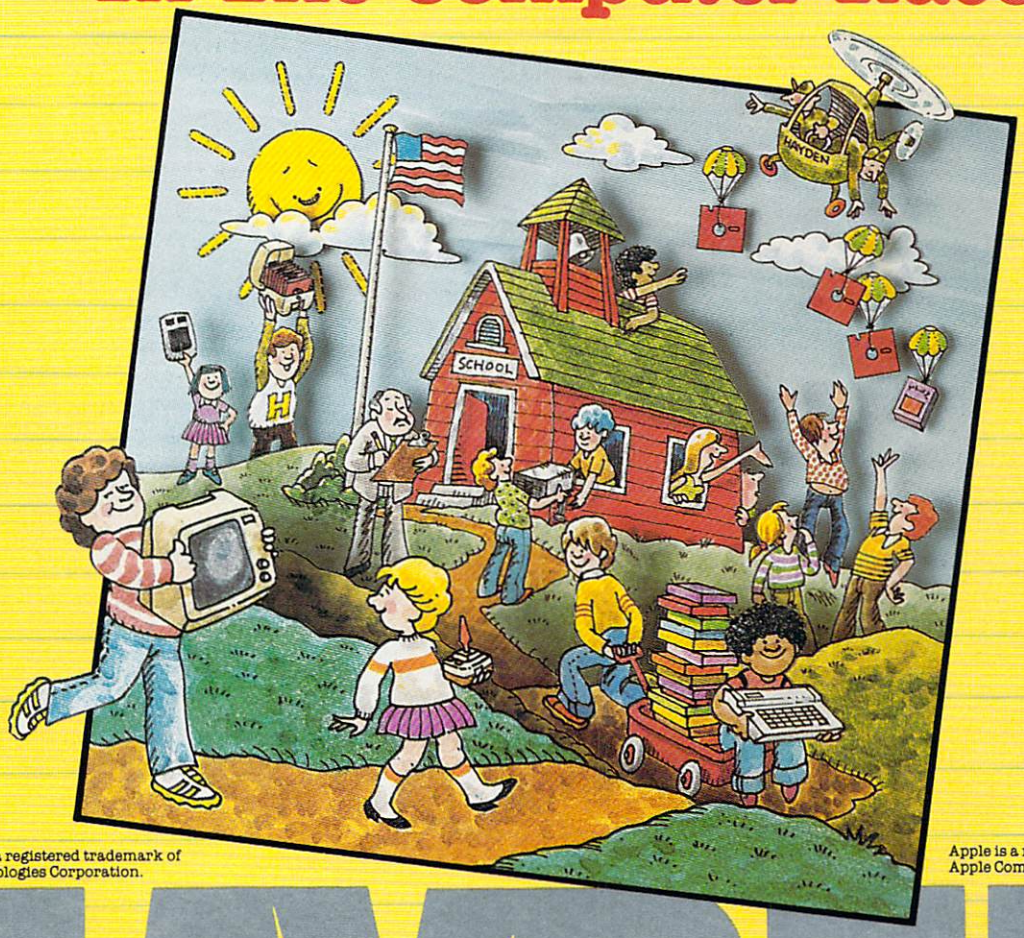

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```
330 MIN=INT((TIM-HRS*3600)/60)
340 SEC=TIM-HRS*3600-MIN*60
350 PRINT@172,STR$(HRS);":";
360 PRINT CHR$(-(MIN<10)*48);RIGHT$(STR$(MIN),LEN(STR$
(MIN))-1);":";
370 PRINT CHR$(-(SEC<10)*48);RIGHT$(STR$(SEC),LEN(STR$
(SEC))-1);" "
380 GOTO 270
390 CLS
400 FOR X=255 TO 30 STEP -3
410 SOUND X,1
420 NEXT X
430 FOR X=1 TO 10
440 CLS(RND(9)-1)
450 SOUND RND(128),1
460 NEXT X
470 BG=RND(9)-1
480 CLS(BG)
490 GOSUB 1000
500 CH=128+RND(15)
510 FOR BITMAP=1 TO 29
520 READ L
530 FOR Q=7 TO 0 STEP -1
540 IF L<BIN(Q) THEN 610
550 L=L-BIN(Q)
560 IF FL THEN GOSUB 1000
570 PRINT@BITMAP+64*(7-Q),CHR$(CH+FG);
580 IF FL THEN GOSUB 1000
590 PRINT@BITMAP+64*(7-Q)+32,CHR$(CH+FG);
600 SOUND 1,1
610 NEXT Q
620 NEXT BITMAP
630 FOR X=1 TO 30
640 READ NT,DR
650 SOUND NT,DR*3
660 NEXT X
670 FL=NOT FL
680 RESTORE
690 GOTO 400
1000 P=RND(6-(BG<2))
1010 FG=P+(P>=(BG-1))*(BG>1)
1020 FG=FG*16
1030 RETURN
2000 DATA 0,0,129,255,1,0,0
2010 DATA 0,224,160,161,255,1,0,0
2020 DATA 0,239,145,145,239,0,0,0
2030 DATA 0,226,145,145,142,0
3000 DATA 89,2,133,3,125,1,133,2,159,2,147,3,140,1
3010 DATA 147,2,159,1,147,1,133,3,133,1,159,2,176,2
3020 DATA 185,6,185,2,176,3,159,1,159,2,133,2,147,3
3030 DATA 140,1,147,2,159,1,147,1,133,3,108,1,108,2
3040 DATA 89,2,133,6
```

TRS-80 Model III/*New Year's Eve*

```
10 DIM BIN(7)
20 CLK=16919
30 FL=0
40 POKE 16420,1
50 BIN(0)=1
60 FOR X=1 TO 7
70 BIN(X)=BIN(X-1)*2
80 NEXT X
90 CLS
100 PRINT "PLEASE INPUT THE CURRENT TIME IN HOURS, MIN
UTES, AND SECONDS"
110 PRINT "(E.G., 095502); THEN PRESS <ENTER>."
120 PRINT
130 INPUT "WHAT TIME IS IT NOW";T$
140 IF LEN(T$)<>6 THEN 90
150 TS=0
160 FOR X=1 TO 6
170 IF VAL(MID$(T$,X,1))=0 AND MID$(T$,X,1)<>"0" THEN
TS=1:X=6
180 NEXT X
190 IF TS=1 THEN 90
200 HRS=VAL(LEFT$(T$,2))
210 MIN=VAL(MID$(T$,3,2))
220 SEC=VAL(RIGHT$(T$,2))
230 IF HRS<1 OR HRS>12 OR MIN<0 OR MIN>59 OR SEC<0 OR
SEC>59 THEN 90
240 POKE CLK,SEC
250 POKE CLK+1,MIN
260 POKE CLK+2,HRS
270 CLS
280 IF RIGHT$(TIME$,8)="12:00:00" THEN 320
290 IF PEEK(CLK+2)=13 THEN POKE CLK+2,1
300 PRINT@345,RIGHT$(TIME$,8+(MID$(TIME$,10,1)="0"));"
 "
310 GOTO 280
320 CLS
330 CH=191-(RND(6)*FL)
340 FOR BITMAP=1 TO 30
350 READ L
360 FOR Q=7 TO 0 STEP -1
370 IF L<BIN(Q) THEN 410
380 L=L-BIN(Q)
390 PRINT@BITMAP*2+128*(7-Q),CHR$(CH);CHR$(CH);
400 PRINT@BITMAP*2+128*(7-Q)+64,CHR$(CH);CHR$(CH);
410 NEXT Q
420 NEXT BITMAP
430 FOR X=1 TO 100
440 PRINT CHR$(23);CHR$(28);
450 NEXT X
460 FL=NOT FL
470 RESTORE
480 GOTO 330
1000 DATA 0,0,129,255,255,1,0,0
1010 DATA 0,224,160,161,255,1,0,0
1020 DATA 0,239,145,145,239,0,0,0
1030 DATA 0,226,145,145,142,0
```

VIC-20/*New Year's Eve*

```
10 DIM BIN(7),LT(20),N(30),D(30),CR(5)
20 FOR X=0 TO 7
30 BIN(X)=2^X
40 NEXT X
50 FOR X=1 TO 20
60 READ LT(X)
70 NEXT X
80 FOR X=1 TO 30
90 READ N(X),D(X)
100 NEXT X
110 READ CR(1),CR(2),CR(3),CR(4),CR(5)
120 FL=0
130 BG=INT(RND(0)*8)
140 POKE 36878,15
150 PRINT CHR$(147);
160 PRINT "TO SET THE COMPUTER"
170 PRINT "CLOCK, PLEASE INPUT"
180 PRINT "THE TIME IN HOURS,"
190 PRINT "MINUTES, AND SECONDS"
200 PRINT "(E.G., 095502);"
210 PRINT "THEN PRESS <RETURN>."
220 PRINT
230 PRINT "WHAT TIME IS IT NOW?"
240 INPUT T$
250 IF LEN(T$)<>6 THEN 150
260 TS=0
270 FOR X=1 TO 6
280 IF VAL(MID$(T$,X,1))=0 AND MID$(T$,X,1)<>"0" THEN
TS=1:X=6
```

→

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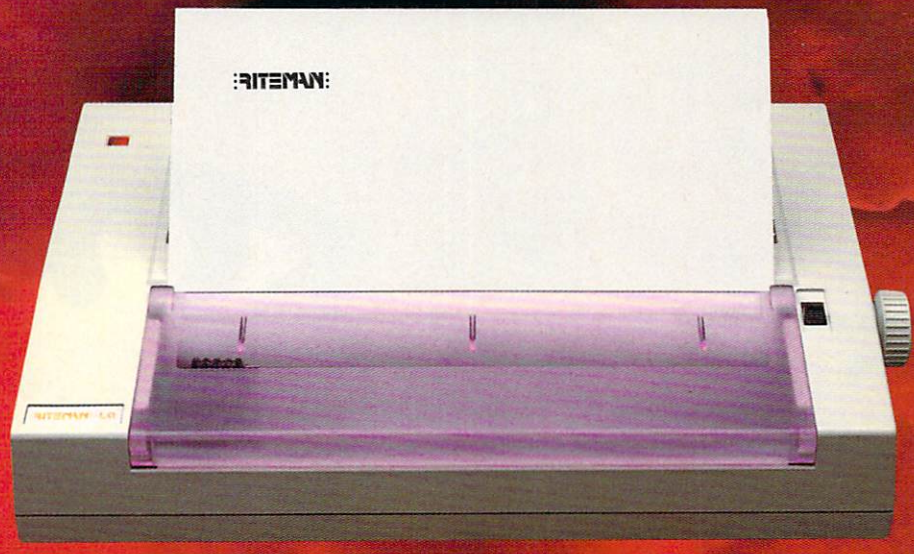

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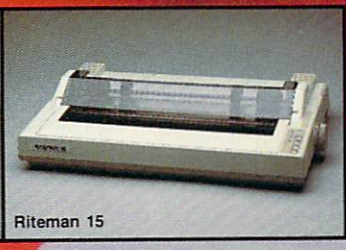

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```
290 NEXT X
300 IF TS=1 THEN 150
310 HRS=VAL(LEFT$(T$,2))
320 MIN=VAL(MID$(T$,3,2))
330 SEC=VAL(RIGHT$(T$,2))
340 IF HRS<1 OR HRS>12 OR MIN<0 OR MIN>59 OR SEC<0 OR
SEC>59 THEN 150
350 TI$=T$
360 PRINT CHR$(147);
370 IF VAL(TI$)>=115955 AND VAL(TI$)<=120000 THEN 430
380 IF TI$="130000" THEN TI$="010000"
390 ZR=-(LEFT$(TI$,1)="0")
400 PRINT CHR$(19);TAB(7);MID$(TI$,ZR+1,2-ZR);":";
410 PRINT MID$(TI$,3,2);":";RIGHT$(TI$,2);" "
420 GOTO 370
430 PRINT CHR$(147)
440 FOR X=254 TO 128 STEP -.50
450 POKE 36876,X
460 FOR D=1 TO 5
470 NEXT D
480 NEXT X
490 POKE 36876,0
500 FOR X=1 TO 50
510 POKE 36877,RND(0)*126+128
520 GOSUB 1000
530 POKE 36879,(PEEK(36879) AND 15) OR (CO*16)
540 NEXT X
550 BG=CO
560 GOSUB 1000
570 CH=CR(1-FL*(INT(RND(0)*4)+1))
580 FOR BITMAP=1 TO 20
590 L=LT(BITMAP)
600 FOR Q=7 TO 0 STEP -1
610 IF L<BIN(Q) THEN 710
620 L=L-BIN(Q)
630 POKE 36877,200
640 POKE 7724+BITMAP+44*(7-Q),CH
650 POKE 7746+BITMAP+44*(7-Q),CH
660 IF FL THEN GOSUB 1000
670 POKE 38444+BITMAP+44*(7-Q),CO
680 IF FL THEN GOSUB 1000
690 POKE 38466+BITMAP+44*(7-Q),CO
700 POKE 36877,0
710 NEXT Q
720 NEXT BITMAP
730 BG=CO
740 FOR X=1 TO 30
750 GOSUB 1000
760 POKE 36879,(PEEK(36879) AND 15) OR (CO*16)
770 POKE 36876,N(X)
780 FOR D=1 TO D(X)*100
790 NEXT D
800 NEXT X
810 FL=NOT FL
820 GOTO 440
1000 P=INT(RND(0)*7)+1
1010 CO=BG+P+8*((BG+P)>7)
1020 RETURN
2000 DATA 0,129,255,1,0
2010 DATA 224,160,161,255,1,0
2020 DATA 239,145,145,239,0
2030 DATA 226,145,145,142
3000 DATA 175,2,195,3,191,1,195,2,207,2,201,3
3010 DATA 199,1,201,2,207,1,201,1,195,3,195,1,207,2
3020 DATA 215,2,219,6,219,2,215,3,207,1,207,2,195,2
3030 DATA 201,3,199,1,201,2,207,1,201,1,195,3,183,1
3040 DATA 183,2,175,2,195,6
4000 DATA 160,81,102,42,90
```

PROGRAMMING P.S.

Corrections to Previous Months' Programs

Apple/*Name That Monster!* *(October, page 90)*
Use the ADAM version as instructed, but leave line 340 unchanged and instead change line 320 to read

```
320 FOR T = 1 TO 120
```

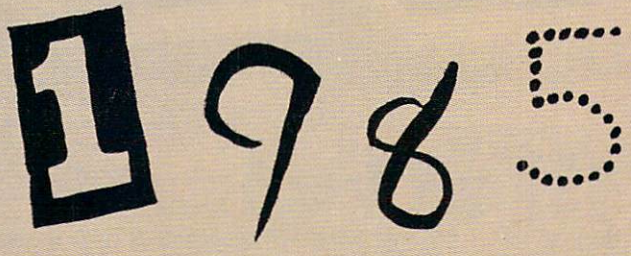
IBM PC & PC*jr*/*Brain Terrain* *(August, page 90)*
You can improve the sound effects that go with this puzzle by changing lines 260, 300, and 310 to read as follows:

```
260 CLS:FOR X=440 TO 1046:SOUND X,.01:NEXT X:SOUND 327
67,0
300 CLS:N$="WHOOOOSH!":LOCATE 8:GOSUB 2000
310 FOR X=440 TO 1046:SOUND X,.03:SOUND 1500-X,.01:NEX
T X:SOUND 32767,0
```

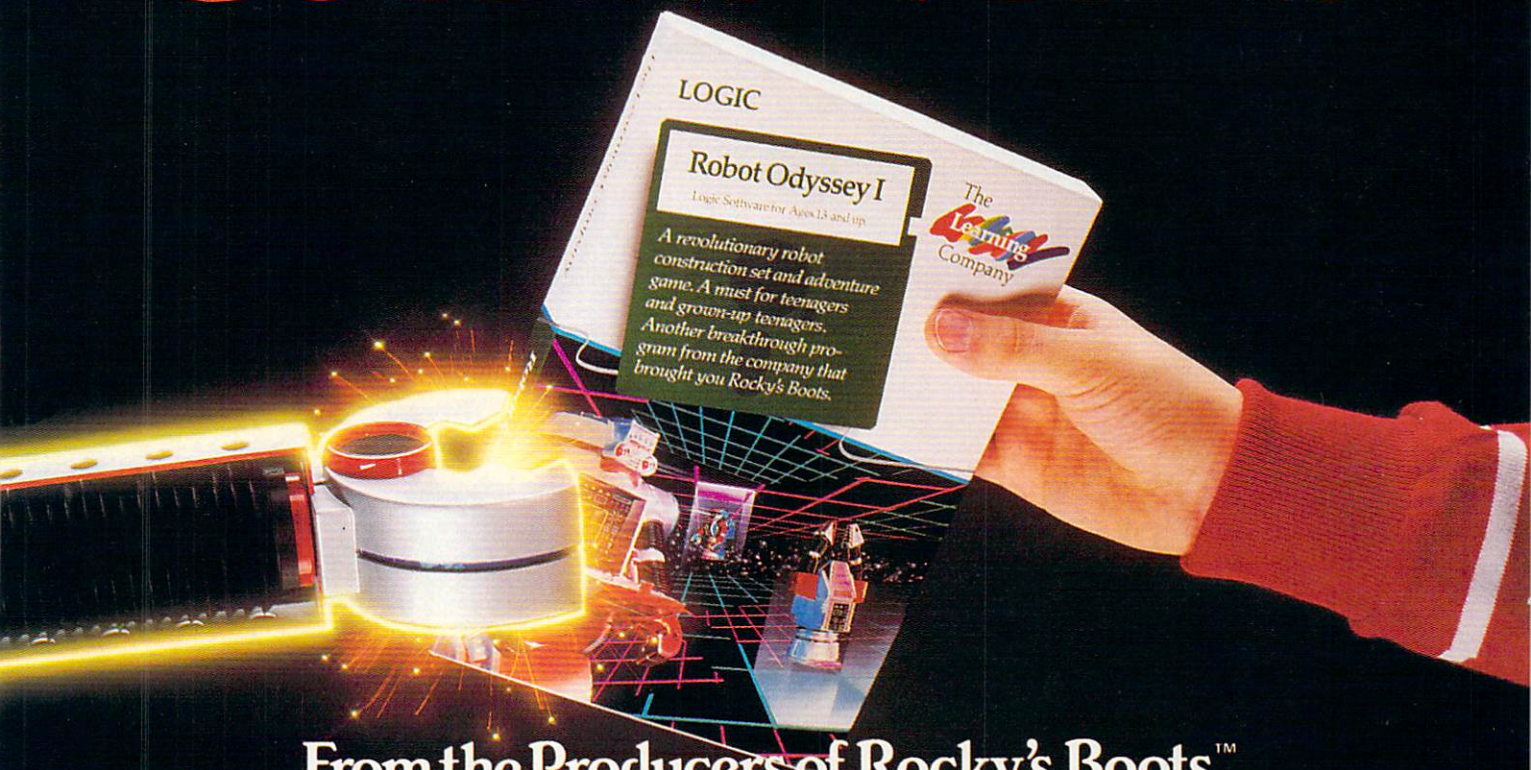
TRS-80 Model 4/*Mummy Maneuvers* *(October, page 74)*
Line 4000 contains a syntax error as published. Here is the correct version:

```
4000 PRINT@(Y-1,X-1),"";:RETURN
```

Also, you can improve the appearance of the pyramid door and the display for day five by substituting `XP=32` for `XP=33` in line 10 and `TX=1` for `TX=0` in line 20.



LEARNING & FUN GO HAND 'N' HAND



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A Revolutionary New Educational Software Program for Teenagers and Young Adults.

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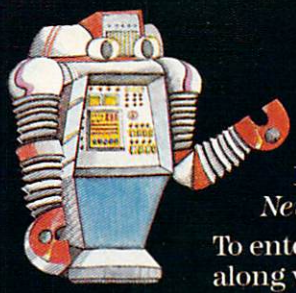

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To enter, send your name and address along with the phrase, "Robot Odyssey I Sweepstakes," to The Learning Company (address below). All entrants receive a free color poster.

Entries must be received by December 20, 1984. This offer cannot be used in conjunction with any other offer. Void where prohibited taxed or restricted by law. Please allow 6-8 weeks for delivery.

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BY INVITATION ONLY
An Exclusive New Year's Eve Party You Won't Want To Miss!

PUZZLE BY PETER FAVARO
PROGRAM BY STEVEN C.M. CHEN

It arrives in the mail on Dec. 31, 1984, in a curious-looking envelope decorated with what at first appear to be candy canes. On closer inspection they turn out to be question marks — hundreds of them.

"What kind of odd holiday greeting could this be?" you wonder. You check the postmark and with great difficulty make out the letters D O R M I R. The name sounds familiar but you're not quite sure why. "Do I have an aunt or a cousin living on a Dormir Road or a Dormir Lane?" you ask. "No, that's not it . . . ."

You examine the envelope more closely and notice that the flap is sealed shut with a seal that reads: FROM THE ROYAL PALACE OF PROTO. "Proto? Where have I heard *that* name before?"

As you slide your thumb under the flap and pop it open you make the connection: *Proto and The Dormirians*! That's it! They were in one of my favorite FAMILY COMPUTING puzzles! (*April 1984 issue.*)

Eagerly you tear the envelope open. Inside is an invitation to a very exclusive New Year's Eve party being thrown by King Proto and all of the characters from FAMILY COMPUTING's 1984 puzzles! Everyone will be there: The high school sweethearts Kurt and Dede (*February 1984*); the mischievous chefs (*June 1984*); and even Frank ("Fingers") Larson, temporarily released from jail!

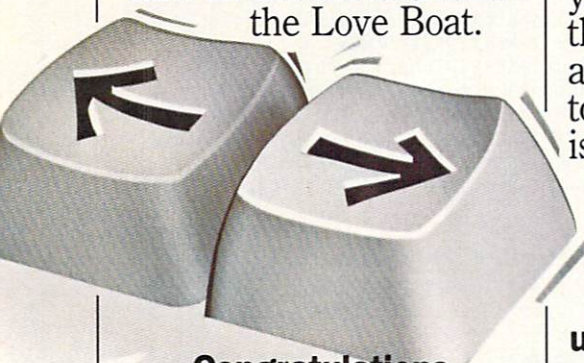
But where is the party being held? Although the postmark shows that the envelope was mailed from the planet Dormir, the invitation states that the party will be held on Earth—and not necessarily at King Proto's summer home! A map (*shown*) is included with the invitation and shows the nine places where the party could be held. It also includes your home. But unfortunately, the directions to the party are in code. In dismay you read...

ILLUSTRATION BY JOSH GOSFIELD

Why do you think they call it a picture tube?

Because it's a TV tube. And you watch pictures on TV.

So, is it any wonder that you're disappointed with an expensive computer that shows you nothing but words? That sort of suggests you might want to go home, turn on the set and *read* the Love Boat.



Congratulations. You've just learned 50% of Homeword.™

That's because these two buttons control fifty different pictures.

Those pictures are your powerful commands to run Homeword,™ the remarkable new home word processor.

So, other than a few keys to move you around the screen, all you need to remember is nothing.

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That's why *Family Computing Magazine* calls Homeword,™ "...a program of unbelievable simplicity. And its performance has not been sacrificed to its ease of use." You can't argue with that!

Just how fast do pictures work? HOMEWORD.™ It became the #1 home word processor in just six weeks.

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HOMEWORD™

The Personal Word Processor

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LOTJ YOMT
JG XWVL
PQNJ SAOP
WPVKN YQQFU
BJ IJMOC
RKQFI ZIBXOFKD
DMSDQ GNTRD
JLAXBB OAXV
UBZ KHVD

The sun is beginning to set and soon the party will begin. You know you don't have time to chase from place to place at random, but if you carefully study the map, you'll find the keys to decode the directions. When you have figured out the code, use your Deluxe Dash Decoder machine (your computer) to unravel it.

HOW TO PLAY

Set your computer to all uppercase letters before playing *By Invitation Only*. After you type in your name, the Deluxe Dash Decoder machine will be ready to go. Two alphabets will appear on the screen. The bottom alphabet will remain stationary. To shift the top alphabet press "B" (to go backward) or "F" (to go forward.) For example, if you press the "F" key once, the top alphabet will shift forward by one letter so that the upper A will be positioned over the lower B. This sets the machine to decode all A's to Bs, all Cs to Ds, etc.

When you discover the proper setting to decode each line of the instructions, press "D" to decode. Type in one line of the coded directions, then press RETURN or ENTER.

A "decoded" line will appear on the screen. You will then be asked if the line is correctly decoded. If English words are formed (and you have not made any typos), press "Y" for yes. (The computer will not accept any directions with typos.) If gibberish appears on the screen, press "N" and adjust the Deluxe Dash Decoder machine to a different offset or enter another line to be decoded at the same setting.

The decoder machine will store every correctly decoded line. These can be read at any point by typing "R". If you have trouble decoding any of the directions, type "H" (after typing "R") for a helpful hint.

Once you have correctly decoded all nine lines, the full directions to the party will appear on the screen. Press a key, and you will arrive at the party. We hope you have a wonderful time and a very happy new year! *(The solution will appear in next month's issue.)*

Base Version (TRS-80 Model III)/ *By Invitation Only*

```
10 CLEAR 900:DIM D1$(10),D2$(9),M$(3)
20 WL=64:PI=6:TRU=-1:TX=0:DL=100:TA$=""
50 TS=(WL-26)/2+TX:TD=(WL-13)/2+TX:C=0
60 READ M$(0):M$(1)="":READ M$(2):M$(3)="          "
70 FOR I=1 TO 9:D2$(I)="************":NEXT I:S1$="A"
80 FOR I=66 TO 90:S1$=S1$+CHR$(I):NEXT I
90 S2$=S1$:P$="PRESS ANY KEY TO CONTINUE."
100 FOR I=1 TO 10:T$="":FOR J=1 TO 2+TRU*(I=10)*6
110 READ A$:V=ASC(LEFT$(A$,1))-64:FOR Z=2 TO LEN(A$)
120 N=ASC(MID$(A$,Z,1))-V
130 T$=T$+CHR$(N+TRU*26*(N<65)):NEXT Z:T$=T$+" "
140 NEXT J:D1$(I)=LEFT$(T$,LEN(T$)-1):NEXT I
150 CLS:PRINT "WHAT IS YOUR NAME";
160 INPUT NA$:IF NA$="" OR LEN(NA$)>WL-1 THEN 150
170 CLS:N$="DELUXE DASH DECODER":GOSUB 2000:PRINT
180 PRINT TAB(TS);"CURRENT SETTING:"
190 Y=3:X=TS+17-TRU*(C=0):GOSUB 3000:B=SGN(C)+1
200 PRINT M$(B);TA$;ABS(C);M$(1+2*TRU*(B=1));" "
210 PRINT TAB(TS);S1$:PRINT TAB(TS);S2$:GOSUB 4000
220 R$="SET DECODER USING <B> (BACKWARD) OR <F>"
230 R$=R$+" (FORWARD) KEY; PRESS <D> TO DECODE OR <R>"
240 R$=R$+" TO READ DECODED DIRECTIONS.":GOSUB 1000
250 K$=INKEY$:IF K$="B" OR K$="F" THEN 340
260 ON ABS(K$="D") GOTO 380:IF K$<>"R" THEN 250
270 CLS:PRINT:N$="DECODED DIRECTIONS":GOSUB 2000
280 PRINT:FOR I=1 TO 9:PRINT TAB(TD);D2$(I):NEXT I
290 PRINT:R$="PRESS <H> FOR HELP OR ANY OTHER KEY TO C
ONTINUE.":GOSUB 1000
300 K$=INKEY$:IF K$="" THEN 300 ELSE IF K$<>"H" THEN 1
70
310 CLS:R$=D1$(10)+".":GOSUB 1000:GOSUB 4000
320 N$=P$:GOSUB 2000
330 IF INKEY$="" THEN 330 ELSE 170
340 IF (C>24 AND K$="F") OR (C<-24 AND K$="B") THEN 25
0
350 C=C+TRU*((K$="F")-(K$="B")):IF K$="F" THEN 370
360 S1$=MID$(S1$,2)+LEFT$(S1$,1):GOTO 190
370 S1$=RIGHT$(S1$,1)+LEFT$(S1$,25):GOTO 190
380 Y=7:X=0:GOSUB 3000:PRINT "CODED WORDS";:WC$=""
390 INPUT WC$:IF WC$="" THEN 380
400 WD$="":FOR I=1 TO LEN(WC$):T$=MID$(WC$,I,1)
410 IF T$<"A" OR T$>"Z" THEN 440
420 IC=ASC(T$)+C
430 T$=CHR$(IC+TRU*26*((IC<65)-(IC>90)))
440 WD$=WD$+T$:NEXT I:PRINT TAB(13);WD$
450 PRINT:PRINT "CORRECTLY DECODED?";
460 K$=INKEY$:IF K$="N" THEN 170
470 IF K$<>"Y" THEN 460
480 CC=0:FOR I=1 TO 9:IF D1$(I)=WD$ THEN D2$(I)=WD$
490 IF D1$(I)=D2$(I) THEN CC=CC+1
500 NEXT I:IF CC<>9 THEN 170
510 CLS:N$="DIRECTIONS TO PARTY":GOSUB 2000:PRINT
520 FOR I=1 TO 9:PRINT TAB(TD);D2$(I):NEXT I
530 PRINT:N$=P$:GOSUB 2000
540 IF INKEY$="" THEN 540
550 CLS:R$="YOU FOLLOW THESE DIRECTIONS AND ARRIVE"
560 R$=R$+" AT THE PARTY, WHERE YOU HEAR ..."
570 GOSUB 1000:LN=LEN(NA$):BG=TRU*(LN<WL-17)
580 FOR D=1 TO 2000:NEXT D:FOR I=1 TO 100
590 CLS:Y=RND(15):X=RND(WL-LN-1-BG*16)+TX
600 GOSUB 3000:PRINT "HAPPY NEW YEAR,";
610 PRINT STRING$(1+(1-BG)*(WL-16),32);NA$;"!"
630 FOR D=1 TO DL:NEXT D,I:CLS:END
1000 IF LEN(R$)<=WL THEN N$=R$:GOSUB 2000:RETURN
1010 J=WL+1:K=1:FOR I=J TO 2 STEP -1
1020 IF MID$(R$,I,1)=" " THEN K=0:J=I:I=2
1030 NEXT I:N$=LEFT$(R$,J-1):GOSUB 2000
1040 R$=RIGHT$(R$,LEN(R$)-J+K):GOTO 1000
2000 IF LEN(N$)=WL THEN PRINT N$;:RETURN
2010 PRINT TAB((WL-LEN(N$))/2+TX);N$:RETURN
3000 PRINT@(Y-1)*WL+X,"";:RETURN
4000 FOR I=1 TO PI:PRINT:NEXT I:RETURN
5000 DATA BACKWARD,FORWARD,SYBGW,EXNLS,QSP,SIHGW
5010 DATA JDEBX,IFNBC,EZSYNQ,LIAAPE,IPX,QEFIKY
5020 DATA NIBHWZ,DGPIEVMRK,RWFLWJ,FNUAYK,KLNCZDD
5030 DATA VBNKI,TVCA,MEBPX,IRW,NRIS,MZRNFHER
5040 DATA FEUA,TWUH,PIEBLU,WQEFP,EUZEEQJ
```

Atari/*By Invitation Only*

```
10 DIM A$(9),CL$(1),D1$(128),D2$(88),DP(10),M$(24)
20 DIM T$(41),NA$(39),P$(26),S1$(26),S2$(26),SP$(25),W
C$(16),WD$(16)
30 SP$=" ":SP$(25)=SP$:SP$(2)=SP$:C=0:CL$=CHR$(125)
40 OPEN #1,4,0,"K:":POKE 82,0
50 M$="BACKWARD":M$(17)="FORWARD "
60 FOR I=9 TO 16:M$(I,I)=CHR$(31-(I>12)):NEXT I
70 D2$="*":D2$(88)="*":D2$(2)=D2$
80 FOR I=65 TO 90:S1$(I-64)=CHR$(I):NEXT I
90 S2$=S1$:P$="PRESS ANY KEY TO CONTINUE."
100 FOR I=1 TO 10:T$="":FOR J=1 TO 2+(I=10)*6
110 READ A$:V=ASC(A$)-64:FOR Z=2 TO LEN(A$)
120 N=ASC(A$(Z))-V:T$(LEN(T$)+1)=CHR$(N+26*(N<65))
130 NEXT Z:T$(LEN(T$)+1)=" ":NEXT J
140 DP(I)=LEN(D1$)+1:D1$(DP(I))=T$(1,LEN(T$)-1):NEXT I
150 PRINT CL$;"WHAT IS YOUR NAME";
160 INPUT NA$:IF NA$="" THEN 150
170 POKE 752,1
180 PRINT CL$;SP$(1,10);"DELUXE DASH DECODER":PRINT
190 PRINT SP$(7,7);"CURRENT SETTING:"
200 POSITION 24,2:PRINT SP$
210 B=SGN(C)+1:POSITION 24-(B=1),2
```

→

Give The Gift Of Education

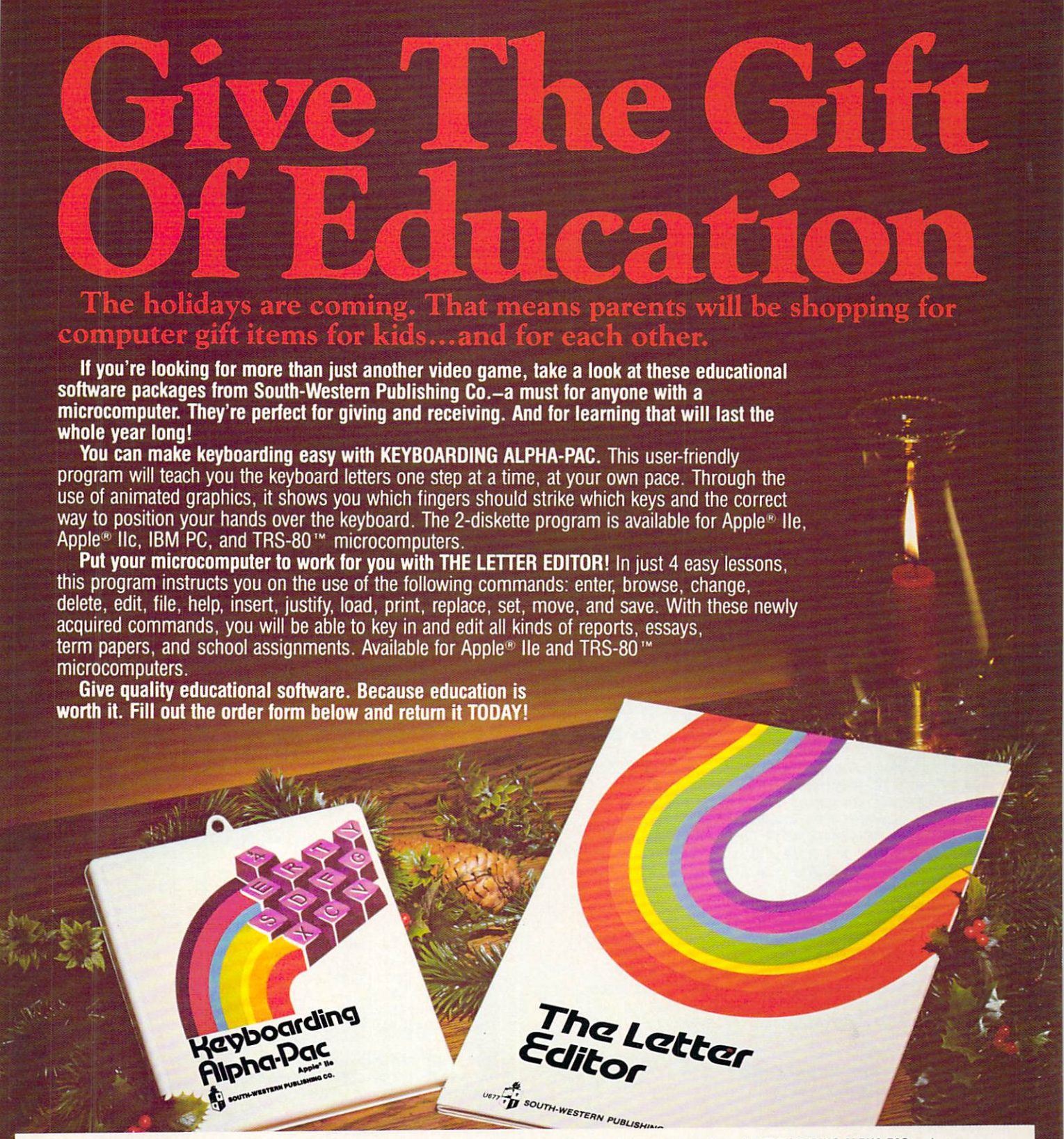
The holidays are coming. That means parents will be shopping for computer gift items for kids...and for each other.

If you're looking for more than just another video game, take a look at these educational software packages from South-Western Publishing Co.–a must for anyone with a microcomputer. They're perfect for giving and receiving. And for learning that will last the whole year long!

You can make keyboarding easy with KEYBOARDING ALPHA-PAC. This user-friendly program will teach you the keyboard letters one step at a time, at your own pace. Through the use of animated graphics, it shows you which fingers should strike which keys and the correct way to position your hands over the keyboard. The 2-diskette program is available for Apple® IIe, Apple® IIc, IBM PC, and TRS-80™ microcomputers.

Put your microcomputer to work for you with THE LETTER EDITOR! In just 4 easy lessons, this program instructs you on the use of the following commands: enter, browse, change, delete, edit, file, help, insert, justify, load, print, replace, set, move, and save. With these newly acquired commands, you will be able to key in and edit all kinds of reports, essays, term papers, and school assignments. Available for Apple® IIe and TRS-80™ microcomputers.

Give quality educational software. Because education is worth it. Fill out the order form below and return it TODAY!



ORDER FORM

Please send me_____ **KEYBOARDING ALPHA-PAC** diskette package(s) for the following: ☐ Apple® IIe or Apple® IIc, 64K minimum ☐ TRS-80™ Model III or 4, 48K minimum ☐ IBM-PC, DOS-1.1, 64K minimum 2.1 or 2.0-128K and _____ **THE LETTER EDITOR** diskette package(s) for the following hardware: ☐ TRS-80™ Model III or 4, 48K minimum ☐ Apple® IIe, 64K minimum

NAME_____

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Mail your order to:

SOUTH-WESTERN PUBLISHING CO., ATTN: Consumer/Professional Products Division, 5101 Madison Rd., Cincinnati, OH 45227

```
220 PRINT M$(B*8+1,B*8+8-(B=2));" ";ABS(C)
230 PRINT SP$(1,7);S1$:PRINT SP$(1,7);S2$:POSITION 0,1
7
240 PRINT "SET DECODER USING <B> (BACKWARD) OR <F>"
250 PRINT " (FORWARD) KEY; PRESS <D> TO DECODE OR"
260 PRINT SP$(1,4);"<R> TO READ DECODED DIRECTIONS.";
270 GET #1,K:IF K=66 OR K=70 THEN 380
280 ON K=68 GOTO 420:IF K<>82 THEN 270
290 PRINT CL$;SP$(1,10);"DECODED DIRECTIONS"
300 PRINT :FOR I=1 TO 9
310 PRINT SP$(1,13);D2$(DP(I),DP(I+1)-1):NEXT I:PRINT
320 PRINT " PRESS <H> FOR HELP OR ANY OTHER KEY TO"
330 PRINT SP$(1,15);"CONTINUE."
340 GET #1,K:IF K<>72 THEN 180
350 PRINT CL$;SP$(1,3);D1$(DP(10),121)
360 PRINT SP$(1,16);D1$(123,128);"."
370 POSITION 7,17:PRINT P$:GET #1,K:GOTO 180
380 IF (C>24 AND K=66) OR (C<-24 AND K=70) THEN 270
390 C=C+(K=70)-(K=66):IF K=70 THEN 410
400 T$=S1$(1,1):S1$=S1$(2):S1$(26)=T$:GOTO 200
410 T$=S1$(26):T$(2,26)=S1$:S1$=T$:GOTO 200
420 POKE 752,0:POSITION 0,7:PRINT "CODED WORDS";
430 INPUT WC$:IF WC$="" THEN 420
440 WD$="":FOR I=1 TO LEN(WC$):T$=WC$(I,I)
450 IF T$<"A" OR T$>"Z" THEN 470
460 IC=ASC(T$)+C:T$=CHR$(IC+26*((IC<65)-(IC>90)))
470 WD$(LEN(WD$)+1)=T$:NEXT I:POKE 85,12:PRINT WD$
480 PRINT :PRINT "CORRECTLY DECODED?";
490 GET #1,K:IF K=78 THEN 170
500 IF K<>89 THEN 490
510 POKE 752,1:CC=0:FOR I=1 TO 9
520 IF D1$(DP(I),DP(I+1)-1)=WD$ THEN D2$(DP(I),DP(I+1)
-1)=WD$
530 IF D1$(DP(I),DP(I+1)-1)=D2$(DP(I),DP(I+1)-1) THEN
CC=CC+1
540 NEXT I:IF CC<>9 THEN 170
550 PRINT CL$;SP$(1,10);"DIRECTIONS TO PARTY":PRINT
560 FOR I=1 TO 9:PRINT SP$(1,13);D2$(DP(I),DP(I+1)-1):
NEXT I
570 PRINT :PRINT SP$(1,7);P$:GET #1,K
580 PRINT CL$;" YOU FOLLOW THESE DIRECTIONS AND ARRIVE
"
590 PRINT SP$(1,4);"AT THE PARTY, WHERE YOU HEAR ..."
600 FOR D=1 TO 1000:NEXT D
610 LN=LEN(NA$):BG=LN<23:FOR I=1 TO 100
620 PRINT CL$:SETCOLOR 2,RND(0)*16,6
630 POSITION INT(RND(0)*(39-LN-BG*16)),RND(0)*22
640 PRINT "HAPPY NEW YEAR,";SP$(1,(1-BG)*24+1);NA$;"!"
650 FOR T=150 TO 40 STEP -20:SOUND 0,T,10,10:FOR D=1 T
O 10:NEXT D:NEXT T
660 SOUND 0,0,0,0:FOR D=1 TO 50:NEXT D:NEXT I
670 SOUND 0,200,4,14:SOUND 1,100,4,6
680 FOR D=1 TO 600:NEXT D:GRAPHICS 0:POKE 82,2:END
1000 DATA SYBGW,EXNLS,QSP,SIHGW
1010 DATA JDEBX,IFNBC,EZSYNQ,LIAAPE,IPX,QEFIKY
1020 DATA NIBHWZ,DGPIEVMRK,RWFLWJ,FNUAYK,KLNCZDD
1030 DATA VBNKI,TVCA,MEBPX,IRW,NRIS,MZRNFHER
1040 DATA FEUA,TWUH,PIEBLU,WQEFP,EUZEEQJ
```

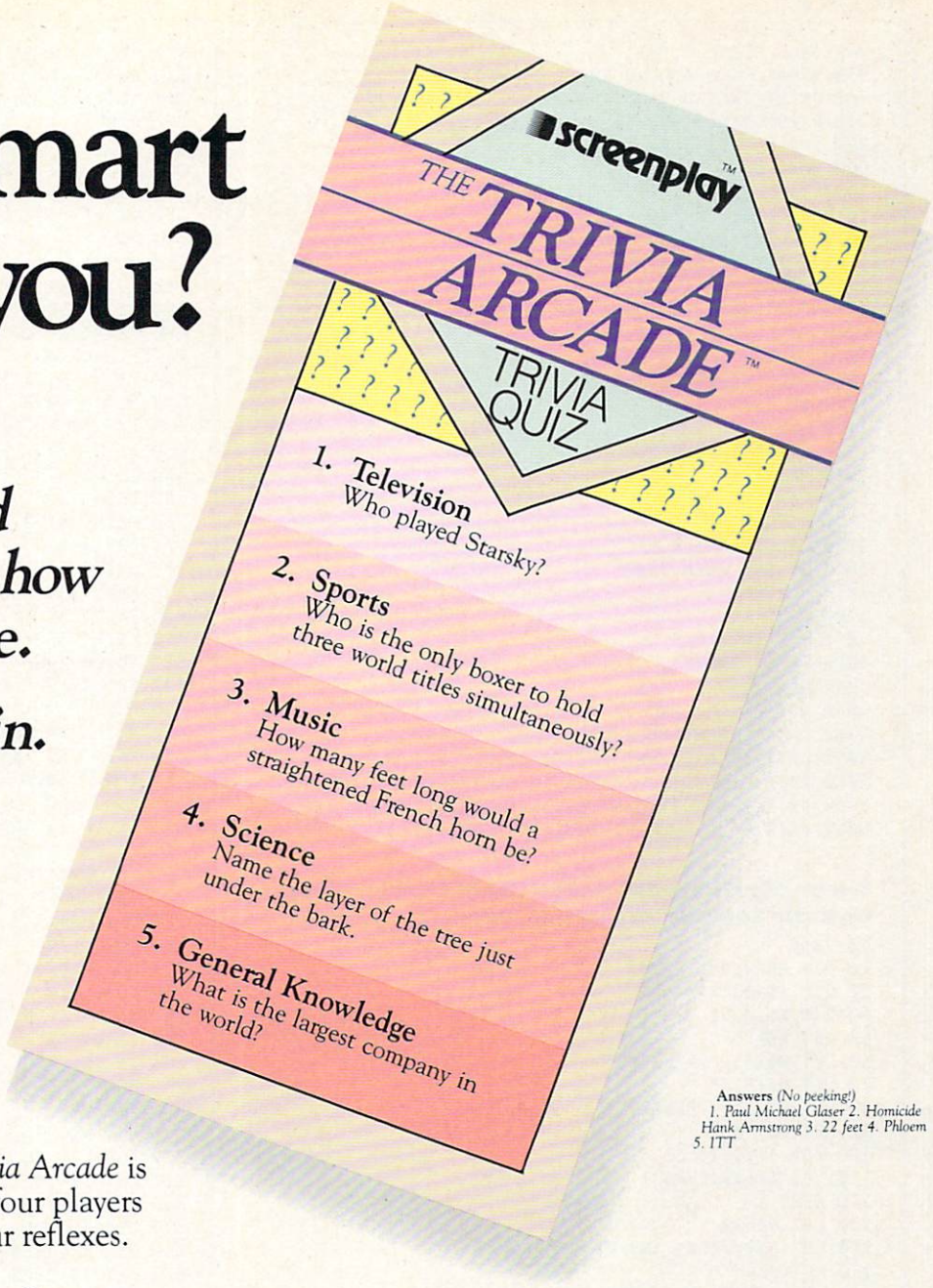
TI-99/4A/*By Invitation Only*

```
10 DIM D1$(10),D2$(9),M$(2)
20 RANDOMIZE
30 M$(0)=" BACKWARD"
40 M$(1)=""
50 M$(2)=" FORWARD"
60 FOR I=1 TO 9
70 D2$(I)="**********"
80 NEXT I
90 S1$="A"
100 FOR I=66 TO 90
110 S1$=S1$&CHR$(I)
120 NEXT I
130 S2$=S1$
140 P$=" PRESS ANY KEY TO CONTINUE."
150 FOR I=1 TO 10
160 T$=""
170 FOR J=1 TO 2-(I=10)*5
180 READ A$
190 V=ASC(SEG$(A$,1,1))-64
200 FOR Z=2 TO LEN(A$)
210 N=ASC(SEG$(A$,Z,1))-V
220 T$=T$&CHR$(N-26*(N<65))
230 NEXT Z
240 T$=T$&" "
250 NEXT J
260 D1$(I)=SEG$(T$,1,LEN(T$)-1)
270 NEXT I
280 CALL CLEAR
290 INPUT "WHAT IS YOUR NAME? ":NA$
300 IF (NA$="")+(LEN(NA$)>27)THEN 280
310 GOSUB 2000
320 PRINT TAB(6);"DELUXE DASH DECODER"
330 B=SGN(C)+1
340 PRINT :"CURRENT SETTING:";M$(B);ABS(C):S1$:S2$
350 GOSUB 2000
360 PRINT TAB(4);"SET DECODER USING <B>"
370 PRINT "(BACKWARD) OR <F> (FORWARD)"
380 PRINT "KEY; PRESS <D> TO DECODE OR"
390 PRINT TAB(5);"<R> TO READ DECODED"
400 PRINT TAB(9);"DIRECTIONS."
410 GOSUB 3000
420 IF (K=66)+(K=70)THEN 580
430 IF K=68 THEN 650
440 IF K<>82 THEN 410
450 GOSUB 2000
460 PRINT :TAB(5);"DECODED DIRECTIONS"
470 GOSUB 4000
480 PRINT :TAB(4);"PRESS <H> FOR HELP OR"
490 PRINT " ANY OTHER KEY TO CONTINUE."
500 GOSUB 3000
510 IF K<>72 THEN 310
520 CALL CLEAR
530 PRINT D1$(10)&"."
540 GOSUB 2000
550 PRINT P$
560 GOSUB 3000
570 GOTO 310
580 IF ((C>24)*(K=70)+(C<-24)*(K=67))THEN 410
590 C=C+(K=66)-(K=70)
600 IF K=70 THEN 630
610 S1$=SEG$(S1$,2,25)&SEG$(S1$,1,1)
620 GOTO 310
630 S1$=SEG$(S1$,26,1)&SEG$(S1$,1,25)
640 GOTO 310
650 PRINT
660 INPUT "CODED WORDS? ":WC$
670 IF WC$="" THEN 660
680 WD$=""
690 FOR I=1 TO LEN(WC$)
700 T$=SEG$(WC$,I,1)
710 IF (T$<"A")+(T$>"Z")THEN 740
720 IC=ASC(T$)+C
730 T$=CHR$(IC-26*((IC<65)-(IC>90)))
740 WD$=WD$&T$
750 NEXT I
760 PRINT TAB(14);WD$
770 PRINT :"CORRECTLY DECODED?";
780 GOSUB 3000
790 IF K=78 THEN 310
800 IF K<>89 THEN 780
810 CC=0
820 FOR I=1 TO 9
830 IF D1$(I)<>WD$ THEN 850
840 D2$(I)=WD$
850 IF D1$(I)<>D2$(I)THEN 870
860 CC=CC+1
870 NEXT I
880 IF CC<>9 THEN 310
890 CALL CLEAR
900 PRINT :TAB(5);"DIRECTIONS TO PARTY"
910 GOSUB 4000
920 PRINT :P$
930 GOSUB 3000
```

How smart are you?

Take this 15 second trivia quiz and see how smart you really are.

Begin.



Answers *(No peeking!)*
1. Paul Michael Glaser 2. Homicide Hank Armstrong 3. 22 feet 4. Phloem 5. ITT

Time's up.

Wish you'd done better? Had you been playing *The Trivia Arcade*™ from Screenplay, you might have breezed through this test. *The Trivia Arcade* is a brain-wracking game for one to four players that taxes your recall and tests your reflexes.

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```
940 CALL CLEAR
950 PRINT "YOU FOLLOW THESE DIRECTIONS"
960 PRINT TAB(2);"AND ARRIVE AT THE PARTY,"
970 PRINT TAB(5);"WHERE YOU HEAR ..."
980 FOR D=1 TO 500
990 NEXT D
1000 CALL CLEAR
1010 FOR I=1 TO 100
1020 RA=INT(RND*(14-(15-LEN(NA$))*(LEN(NA$)>15)))
1030 PRINT :TAB(RA);"HAPPY NEW YEAR,"
1040 PRINT TAB(RA);NA$;"!"
1050 FOR J=440 TO 1000 STEP 100
1060 CALL SOUND(20,J,0)
1070 NEXT J
1080 CALL SOUND(10,110,30)
1090 NEXT I
1100 END
2000 FOR I=1 TO 8
2010 PRINT
2020 NEXT I
2030 RETURN
3000 CALL KEY(3,K,S)
3010 IF S=0 THEN 3000
3020 RETURN
4000 PRINT
4010 FOR I=1 TO 9
4020 PRINT TAB(7);D2$(I)
4030 NEXT I
4040 RETURN
5000 DATA SYBGW,EXNLS,QSP,SIHGW
5010 DATA JDEBX,IFNBC,EZSYNQ,LIAAPE,IPX,QEFIKY
5020 DATA NIBHWZ,DGPIEVMRK,RWFLWJ,FNUAYK,KLNCZDD
5030 DATA VBNKI,TVCA,MEBPX,IRW,NRIS,MZRNFHER
5040 DATA FEUA,TWUH,PIEBLUJXYI,EUZEEQJ
```

Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/*By Invitation Only*

```
10 FAST
20 DIM E$(9,14)
30 DIM F$(9,14)
40 DIM M$(3,9)
50 LET X$=""
60 LET M$(1)="BACKWARD"
70 LET M$(2)=" "
80 LET M$(3)="FORWARD"
90 LET A$="A"
100 FOR I=39 TO 63
110 LET A$=A$+CHR$ I
120 NEXT I
130 LET B$=A$
140 LET P$="PRESS ANY KEY TO CONTINUE."
150 LET S$=" "
160 LET Z$="SYBGW,EXNLS,QSP,SIHGW,JDEBX,IFNBC,EZSYNQ,L
IAAPE,IPX,QEFIKY,NIBHWZ,DGPIEVMRK,RWFLWJ,FNUAYK,KLNCZD
D,VBNKI,TVCA,MEBPX,IRW,NRIS,MZRNFHER,FEUA,TWUH,PIEBLU,
WQEFP,EUZEEQJ"
170 LET C=0
180 LET DI=6
190 LET DJ=1
200 FOR I=1 TO 9
210 LET F$(I)="**************"
220 LET T$=""
230 FOR J=1 TO 2
240 GOSUB 3000
250 LET T$=T$+" "
260 LET S$=S$+"  "
270 NEXT J
280 LET E$(I)=T$( TO LEN T$-1)
290 NEXT I
300 LET T$=""
310 FOR I=1 TO 8
320 GOSUB 3000
330 LET T$=T$+" "
340 NEXT I
350 LET G$=T$( TO 40)+"."
360 SLOW
370 PRINT "WHAT IS YOUR NAME?"
380 INPUT N$
390 IF N$="" OR LEN N$>31 THEN GOTO 380
400 CLS
410 PRINT TAB 7;"DELUXE DASH DECODER"
420 PRINT AT 2,3;"CURRENT SETTING: "
430 PRINT AT 17,6;"SET DECODER USING <B>"
440 PRINT "(BACKWARD) OR <F> (FORWARD) KEY;"
450 PRINT " PRESS <D> TO DECODE OR <R> TO"
460 PRINT TAB 4;"READ DECODED DIRECTIONS."
470 LET B=SGN C+2
480 LET P=20-(C=0)
490 PRINT AT 2,P;S$( TO 11);AT 2,P;M$(B, TO 9-8*(B=2)-
(B=3));ABS C
500 PRINT AT 3,3;A$;AT 4,3;B$
510 GOSUB 2000
520 IF K$="B" OR K$="F" THEN GOTO 690
530 IF K$="D" THEN GOTO 760
540 IF K$<>"R" THEN GOTO 510
550 CLS
560 PRINT AT 2,6;"DECODED DIRECTIONS"
570 FOR I=1 TO 9
580 PRINT AT I+3,9;F$(I)
590 NEXT I
600 PRINT AT 14,0;"PRESS <H> FOR HELP OR ANY OTHER"
610 PRINT TAB 7;"KEY TO CONTINUE."
620 GOSUB 2000
630 IF K$<>"H" THEN GOTO 400
640 CLS
650 PRINT TAB 2;G$( TO 28);AT 1,9;G$(29 TO 41)
660 PRINT AT 15,3;P$
670 GOSUB 2000
680 GOTO 400
690 IF (C>24 AND K$="F") OR (C<-24 AND K$="B") THEN GO
TO 510
700 LET C=C+(K$="F")-(K$="B")
710 IF K$="F" THEN GOTO 740
720 LET A$=A$(2 TO 26)+A$(1)
730 GOTO 470
740 LET A$=A$(26)+A$(1 TO 25)
750 GOTO 470
760 PRINT AT 6,0;"CODED WORDS? ";
770 INPUT C$
780 IF C$="" OR LEN C$>14 THEN GOTO 770
790 PRINT C$
800 FAST
810 LET D$=""
820 FOR I=1 TO LEN C$
830 LET T$=C$(I)
840 IF T$<"A" OR T$>"Z" THEN GOTO 880
850 LET IC=CODE T$+C
860 LET T=IC+26*((IC<38)-(IC>63))
870 LET T$=CHR$ T
880 LET D$=D$+T$
890 NEXT I
900 SLOW
910 PRINT TAB 13;D$
920 PRINT AT 9,0;"CORRECTLY DECODED?";
930 GOSUB 2000
940 IF K$="N" THEN GOTO 400
950 IF K$<>"Y" THEN GOTO 930
960 FAST
970 CLS
980 LET CC=0
990 FOR I=1 TO 9
1000 IF E$(I, TO LEN D$)=D$ THEN LET F$(I)=D$
1010 IF E$(I)=F$(I) THEN LET CC=CC+1
1020 NEXT I
1030 SLOW
1040 IF CC<>9 THEN GOTO 410
1050 PRINT TAB 6;"DIRECTIONS TO PARTY"
1060 PRINT
1070 FOR I=1 TO 9
1080 PRINT AT I+1,9;F$(I)
1090 NEXT I
1100 PRINT AT 12,3;P$
1110 GOSUB 2000
```

A computerized instructional system so advanced it'll actually teach your kids 2+2=4.

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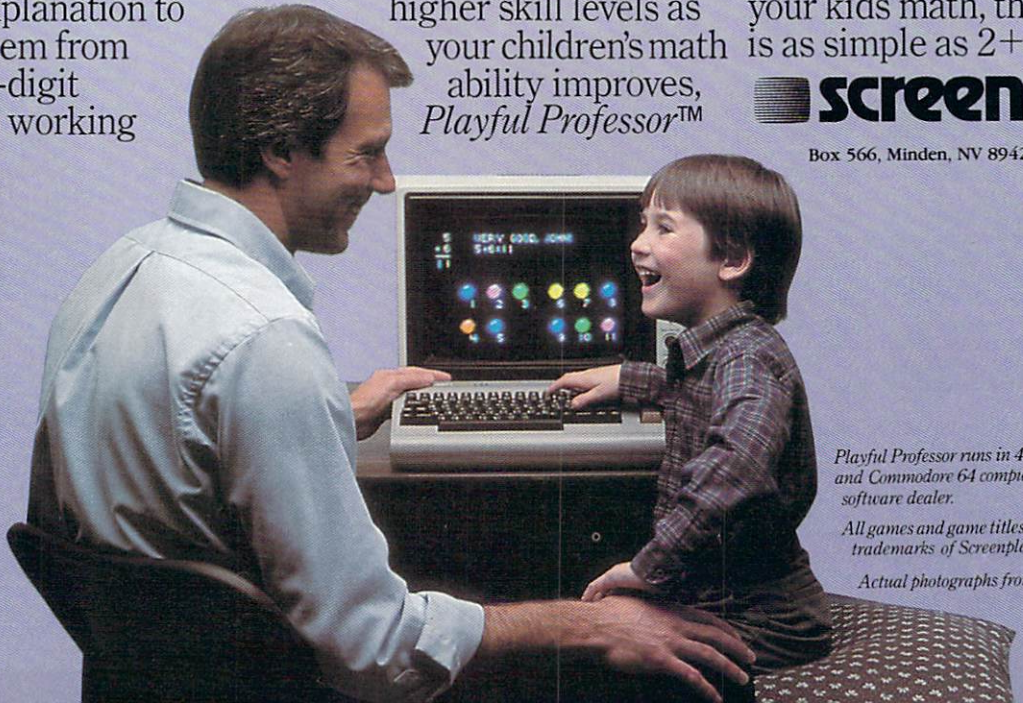

Playful Professor runs in 48K on the Atari and Commodore 64 computers. See your local software dealer.

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Actual photographs from Commodore 64.

```
1120 CLS
1130 PRINT "YOU FOLLOW THESE DIRECTIONS AND"
1140 PRINT "ARRIVE AT THE PARTY, WHERE YOU"
1150 PRINT TAB 12;"HEAR ..."
1160 LET LN=LEN N$
1170 LET BG=(LN<15)
1180 PAUSE 600
1190 FOR I=1 TO 100
1200 CLS
1210 LET Y=RND*15
1220 LET X=RND*(31-LN-BG*16)
1230 LET T$="HAPPY NEW YEAR,"+S$( TO 1+(1-BG)*16)+N$+"
."
1240 PRINT AT Y,X;T$
1250 PAUSE 30
1260 NEXT I
1270 CLS
1280 STOP
2000 LET K$=INKEY$
2010 IF K$="" THEN GOTO 2000
2020 RETURN
3000 IF Z$(DI)="," THEN GOTO 3040
3010 LET DI=DI+1
3020 IF DI>LEN Z$ THEN GOTO 3040
3030 GOTO 3000
3040 LET X$=Z$(DJ TO DI-1)
3050 LET DJ=DI+1
3060 LET DI=DJ+1
3070 LET V=CODE X$(1)-37
3080 FOR Z=2 TO LEN X$
3090 LET N=CODE X$(Z)-V
3100 LET N=N+26*(N<38)
3110 LET T$=T$+CHR$ N
3120 NEXT Z
3130 RETURN
```

VIC-20/*By Invitation Only*

```
10 DIM D1$(10),D2$(9),M$(2):CL$=CHR$(147)
20 C=0:S$=" ":FOR I=1 TO 10:S$=S$+" ":NEXT I
30 READ M$(0):M$(1)="":READ M$(2)
40 BL$=CHR$(31):BA$=CHR$(144):POKE 649,1
50 FOR I=1 TO 9:D2$(I)="**********":NEXT I:S1$="A"
60 FOR I=66 TO 90:S1$=S1$+CHR$(I):NEXT I:S2$=S1$
70 FOR I=1 TO 10:T$="":FOR J=1 TO 2-(I=10)*5
80 READ A$:V=ASC(LEFT$(A$,1))-64:FOR Z=2 TO LEN(A$)
90 N=ASC(MID$(A$,Z,1))-V
100 T$=T$+CHR$(N-26*(N<65)):NEXT Z:T$=T$+" "
110 NEXT J:D1$(I)=LEFT$(T$,LEN(T$)-1):NEXT I
120 PRINT CL$;CHR$(31);"WHAT IS YOUR NAME";:NA$=""
130 INPUT NA$:IF NA$="" OR LEN(NA$)>21 THEN 120
140 PRINT CL$;BA$;" DELUXE DASH DECODER";BL$
150 PRINT TAB(3);"CURRENT SETTING:"
160 Y=1:X=5:GOSUB 1000:PRINT S$:X=0:GOSUB 1000
170 T$=M$(SGN(C)+1)+STR$(ABS(C))
180 PRINT SPC((22-LEN(T$))/2+(C=0));T$
190 PRINT:PRINT TAB(4);LEFT$(S1$,13)
200 PRINT TAB(4);BA$;LEFT$(S2$,13);BL$
210 PRINT TAB(26);MID$(S1$,14)
220 PRINT TAB(4);BA$;MID$(S2$,14);BL$
230 Y=14:X=0:GOSUB 1000:PRINT "SET DECODER USING <B>"
240 PRINT SPC(2);"(BACKWARD) OR <F>"
250 PRINT " (FORWARD) KEY; PRESS"
260 PRINT " <D> TO DECODE OR <R>";SPC(4);
270 PRINT "TO READ DECODED";SPC(9);"DIRECTIONS."
280 GET K$:IF K$="B" OR K$="F" THEN 380
290 ON -(K$="D") GOTO 420:IF K$<>"R" THEN 280
300 PRINT CL$;"  DECODED DIRECTIONS"
310 PRINT:FOR I=1 TO 9:PRINT TAB(4);D2$(I):NEXT I
320 PRINT:PRINT "  PRESS <H> FOR HELP"
330 PRINT " OR ANY OTHER KEY TO";SPC(8);"CONTINUE."
340 GET K$:ON -(K$="") GOTO 340:IF K$<>"H" THEN 140
350 PRINT CL$;D1$(10)+".":Y=17:X=3:GOSUB 1000
360 PRINT "PRESS ANY KEY TO";SPC(10);"CONTINUE."
370 GET K$:ON -(K$="") GOTO 370:GOTO 140
```

→

ANNOUNCING

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

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

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

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

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

GRAND PRIZE:
An exotic family getaway to a CLUB MED resort with computer facility

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

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

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

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

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

CONTEST RULES:

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

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

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

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

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

6. No cash substitutions for prizes.

HOW TO ENTER:

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Judges: All entries will be judged by a panel of Scholastic employees. **Deadline:** All entries must be postmarked by March 15, 1985. **Winners:** The winners will be announced in the September 1985 issue of FAMILY COMPUTING.

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From the Experts

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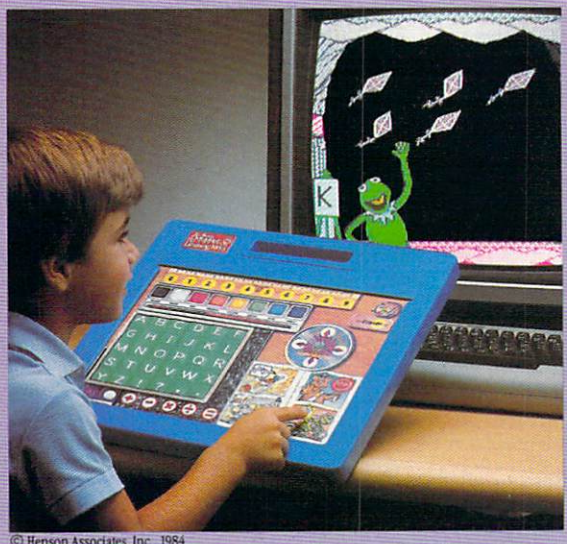

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(DISK) APPLE II & ATARI			
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PUZZLE

```
380 IF (C>24 AND K$="F") OR (C<-24 AND K$="B") THEN 28
0
390 C=C-(K$="F")+(K$="B"):IF K$="F" THEN 410
400 S1$=MID$(S1$,2)+LEFT$(S1$,1):GOTO 160
410 S1$=RIGHT$(S1$,1)+LEFT$(S1$,25):GOTO 160
420 Y=9:X=0:GOSUB 1000:PRINT "CODED WORDS?":WC$=""
430 INPUT WC$:IF WC$="" THEN 420
440 WD$="":FOR I=1 TO LEN(WC$):T$=MID$(WC$,I,1)
450 IF T$<"A" OR T$>"Z" THEN 470
460 IC=ASC(T$)+C:T$=CHR$(IC-26*((IC<65)-(IC>90)))
470 WD$=WD$+T$:NEXT I:PRINT TAB(2);BA$;WD$;BL$
480 PRINT "CORRECTLY DECODED?";
490 GET K$:IF K$="N" THEN 140
500 IF K$<>"Y" THEN 490
510 CC=0:FOR I=1 TO 9:IF D1$(I)=WD$ THEN D2$(I)=WD$
520 IF D1$(I)=D2$(I) THEN CC=CC+1
530 NEXT I:IF CC<>9 THEN 140
540 PRINT CL$;" DIRECTIONS TO PARTY":PRINT
550 FOR I=1 TO 9:PRINT TAB(5);D2$(I):NEXT I:PRINT
560 PRINT SPC(3);"PRESS ANY KEY TO";SPC(9);"CONTINUE."
570 GET K$:IF K$="" THEN 570
580 PRINT CL$;SPC(3);"YOU FOLLOW THESE"
590 PRINT "DIRECTIONS AND ARRIVE"
600 PRINT " AT THE PARTY, WHERE";SPC(7);"YOU HEAR ..."
610 FOR D=1 TO 2000:NEXT D:LN=LEN(NA$):BG=-(LN>5)
620 FOR I=1 TO 100:PRINT CL$;:Y=RND(0)*21
630 X=RND(0)*(7-(1+LN)*(1-BG)-(15-LN)*(LN>15)):GOSUB 1
000
640 PRINT "HAPPY NEW YEAR,";SPC(1+BG*6);NA$;"!"
650 POKE 36878,15:FOR J=128 TO 254 STEP 10
660 POKE 36876,J:FOR D=1 TO 50:NEXT D
670 NEXT J,I:PRINT CL$;:POKE 36878,0:END
1000 POKE 214,Y:PRINT:PRINT TAB(X):RETURN
2000 DATA BACKWARD,FORWARD,SYBGW,EXNLS,QSP,SIHGW
2010 DATA JDEBX,IFNBC,EZSYNQ,LIAAPE,IPX,QEFIKY
2020 DATA NIBHWZ,DGPIEVMRK,RWFLWJ,FNUAYK,KLNCZDD
2030 DATA VBNKI,TVCA,MEBPX,IRW,NRIS,MZRNFHER
2040 DATA FEUA,TWUHMIFPY,WQEFP,EUZEEQJ
```

MODIFICATIONS FOR OTHER COMPUTERS

ADAM & Apple/*By Invitation Only*

Use the base version, with the following alterations: Change `CLS` to `HOME` in lines 150, 170, 270, 310, 510, 550, and 630. Add line 620:

```
620 PRINT CHR$(7);
```

Change lines 10, 190, 250, 300, 330, 380, 460, 540, 590, 610, and 3000 to read as follows:

```
10 DIM D1$(10),D2$(9),M$(3)
190 Y=3:X=TS+16-(C=0):GOSUB 3000:B=SGN(C)+1
250 GET K$:IF K$ = "B" OR K$ = "F" THEN 340
300 GET K$:IF K$ <> "H" THEN 170
330 GET K$:GOTO 170
380 Y=7:X=0:GOSUB 3000:PRINT "CODED WORDS";
460 GET K$:IF K$ = "N" THEN 170
540 GET K$
590 HOME:Y = RND(1)*22+1:X = RND(1)*(WL-LN-1-BG*16)+1
610 PRINT SPC(1+(1-BG)*(WL-16));NA$;"!"
3000 VTAB Y:HTAB X+1:RETURN
```

Finally, if you have an ADAM, change line 20 to read

```
20 wl = 31:pi = 13:tru = 1:tx = 1:dl=200:ta$ = " "
```

If you have an Apple, change line 20 to read

```
20 WL = 40:PI = 13:TRU = 1:TX = 1:dl=100:TA$ = " "
```

Commodore 64/*By Invitation Only*

Use the base version, with the following alterations: Change `CLS` to `PRINT CL$;` in lines 170, 270, 310, 510, and 550. Add lines 30, 40, and 620:

→

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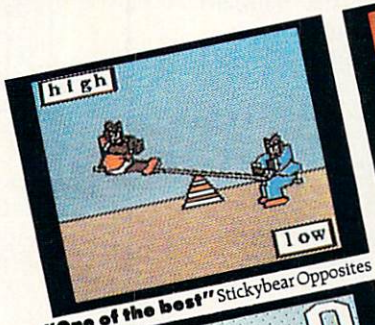

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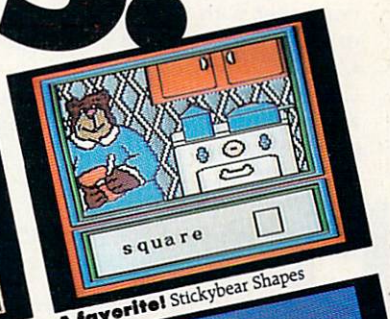

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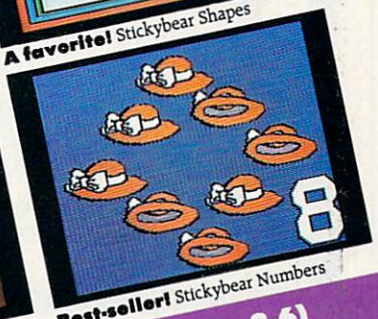

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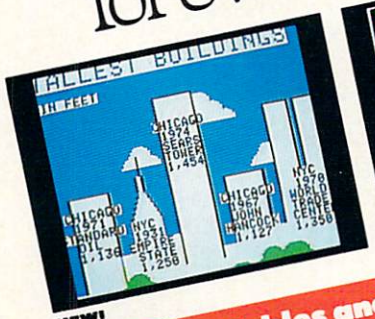

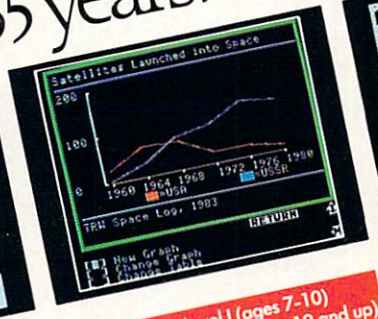

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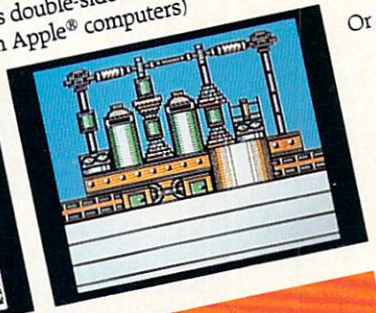

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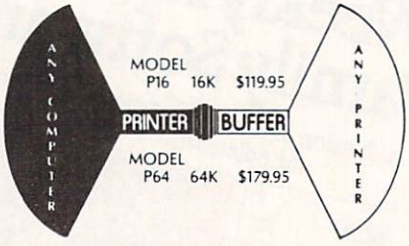

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PUZZLE

```
30 VL=54272:VH=VL+1:FOR I=VL TO VL+24:POKE I,0:NEXT I
40 VW=VL+4:POKE VL+5,100:POKE VL+6,100:POKE VL+24,15
620 FOR S=10 TO 150 STEP 5:POKE VH,S:POKE VW,17:FOR D
=1 TO 10:NEXT D,S
```

Finally, change lines 10, 20, 150, 200, 250, 300, 330, 460, 540, 590, 610, 630, and 3000 to read as follows:

```
10 DIM D1$(10),D2$(9),M$(3)
20 WL=40:PI=12:TRU=-1:TX=0:CL$=CHR$(147):POKE 649,1
150 PRINT CL$;"WHAT IS YOUR NAME";:NA$=""
200 PRINT M$(B);ABS(C);CHR$(157);M$(1+2*TRU*(B=1));" "
250 GET K$:IF K$="B" OR K$="F" THEN 340
300 GET K$:ON -(K$="") GOTO 300:IF K$<>"H" THEN 170
330 GET K$:ON -(K$="") GOTO 330:GOTO 170
460 GET K$:IF K$="N" THEN 170
540 GET K$:IF K$="" THEN 540
590 PRINT CL$;:Y=RND(0)*22+2:X=RND(0)*(39-LN-BG*16)
610 PRINT SPC(1+(1-BG)*(WL-16));NA$;"!"
630 POKE VW,0:FOR D=1 TO 100:NEXT D,I:PRINT CL$;:END
3000 POKE 214,Y-2:PRINT:PRINT TAB(X):RETURN
```

IBM PC & IBM PC*jr*/*By Invitation Only*

Use the base version, with the following alterations. Add line 620:

```
620 FOR S=1 TO 20:SOUND RND(1)*440+200,.5,,0:NEXT S
```

Change lines 10, 190, 380, 440, 590, and 3000 to read as follows:

```
10 DIM D1$(10),D2$(9),M$(3):KEY OFF:LOCATE ,,0
190 Y=3:X=TS+16+(C=0):GOSUB 3000:B=SGN(C)+1
380 Y=7:X=0:GOSUB 3000:PRINT "CODED WORDS";
440 WD$=WD$+T$:NEXT I:PRINT TAB(14);WD$
590 CLS:Y=RND*22+1:X=INT(RND*(WL-LN-BG*16))
3000 LOCATE Y,X+1:RETURN
```

Finally, if you have an IBM PC, change lines 20 and 630 to read

```
20 WL=80:PI=13:TRU=-1:TX=0:DL=200:TA$="":WIDTH WL
630 SOUND 37,0:FOR D=1 TO DL:NEXT D,I:CLS:END
```

If you have an IBM PC*jr*, change line 20 to read

```
20 WL=40:PI=13:TRU=-1:TX=0:DL=200:TA$="":WIDTH WL
```

TRS-80 Color Computer/*By Invitation Only*

Use the base version, with the following alterations. Add line 620:

```
620 FOR S=1 TO 200 STEP 30:SOUND S,1:NEXT S
```

Also, change lines 20, 50, and 380 to read as follows:

```
20 WL=32:PI=6:TRU=-1:TX=0:DL=100:TA$=""
50 TS=1:TD=9:C=0
380 Y=7:X=0:GOSUB 3000:PRINT "CODED WORDS";
```

TRS-80 Model 4/*By Invitation Only*

Use the base version, except change lines 10, 20, 190, 380, 440, 590, and 3000 to read as follows:

```
10 DIM D1$(10),D2$(9),M$(3)
20 WL=80:PI=14:TRU=-1:TX=0:DL=100:TA$="":PRINT CHR$(15
)
190 Y=2:X=TS+16+(C=0):GOSUB 3000:B=SGN(C)+1
380 Y=7:X=0:GOSUB 3000:PRINT "CODED WORDS";
440 WD$=WD$+T$:NEXT I:Y=8:X=13:GOSUB 3000:PRINT WD$
590 CLS:Y=RND(23):X=RND(79-LN-BG*16)
3000 PRINT@(Y,X),"";:RETURN
```

SOLUTION TO LAST MONTH'S PUZZLE

The object that James failed to take into consideration was the mirror. Lynette Leighton forgot to tell her protégé that Photograph No. 3 was taken in the mirror (pictured on the wall of Photograph No. 2), so the hands on the clock are reversed. The clock reads 2:49 p.m., although the time was actually 9:11 a.m.

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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 of some programs follow the chart.

Here's a rundown of the ratings 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
CALC RESULT Handic Software 520 Fellowship Road, Suite B-206 Mount Laurel, NJ 08054 (609) 866-1001 $79.95 ©1984	Powerful electronic spreadsheet best for statistical or business applications lets you use up to 32 pages, four at one time, thanks to split screens and "windows" through which you view other pages. —WOODS	C 64 (cart. and d.).	90-day warranty; user makes backup.	★★★★	★★★★	★★★★	N/A	A	★★★★
HOME PAK Batteries Included 17075 Sky Park N., Suite P Irvine, CA 92714 (714) 979-0920 $49.95 ©1984	Three-in-one package includes word processing, electronic file, and telecommunications. System lets you edit text obtained "on-line" from the telecommunications package, and many other features.† —GELMAN	Reviewed on Atari Home Computers, 48K (d.). Also for C 64 (d.). Versions planned for Apple II series, Macintosh, IBM PC*jr*. Modem for telecommunications.	90-day warranty; user makes backup.	★★★★	@	★★★	N/A	A	★★★★
SMART LETTERS & FORMS Coleco 999 Quaker Lane S. West Hartford, CT 06110 (800) 842-1225 Approx. $29 ©1984	Provides over 100 letters and forms for home use—everything from change of address notifications to thank-you notes, resumes, and letters to the editor. Store forms with *SmartFILER*, if desired. —DAVENPORT	ADAM (cart.).	90-day warranty.	★★★	★★★	★★★	N/A	E	★★★
PRACTICALC II Practicorp (formerly Computer Software Associates) 44 Oak St. Newton Upper Falls, MA 02164 (617) 965-9870 $69.95 ©1984	Electronic spreadsheet has 250 rows and 100 columns, and math functions that will handle a budget, checkbook, payroll, or most any other "number-crunching" situation you or your small business may require.† —LINCOLN	Apple II plus/IIe/IIc, 48K (d.).	90-day warranty; $15 fee thereafter or for backup.	★★★★	★★★★	★★★★	N/A	E	★★★★
YOUR PERSONAL NET WORTH Scarborough Systems 25 N. Broadway Tarrytown, NY 10591 (914) 332-4545 $79.95 (Apple, Atari, Commodore); $99.95 (IBM) ©1984	Flexible home budgeting and accounting system helps you keep track of up to 420 different spending and income categories. Assumes no computing or accounting knowledge.† —BYRNE	Reviewed on C 64 (d.). Also for Apple II series, 64K (d.); Atari Home Computers, 48K (d.); IBM PC/PC*jr*, 128K (d).	30-day warranty; $5 fee thereafter.	★★★★	★★★★	★★★★	N/A	A	★★★★

RATINGS KEY **O** Overall performance: **D** Documentation: **EH** Error-handling: **GQ** Graphics quality: **EU** Ease of use: **V** Value for money: * Poor: ** Average: *** Good: **** Excellent: N/A Not applicable: E Easy: A Average: D Difficult: @ Complete documentation not available at presstime † Longer review follows chart

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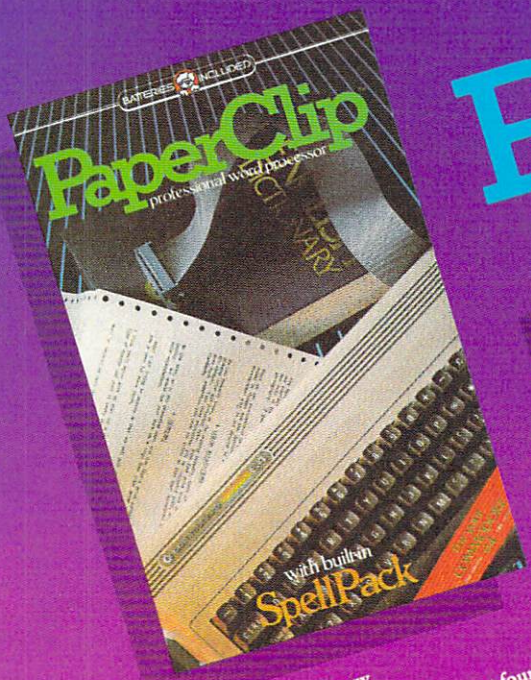

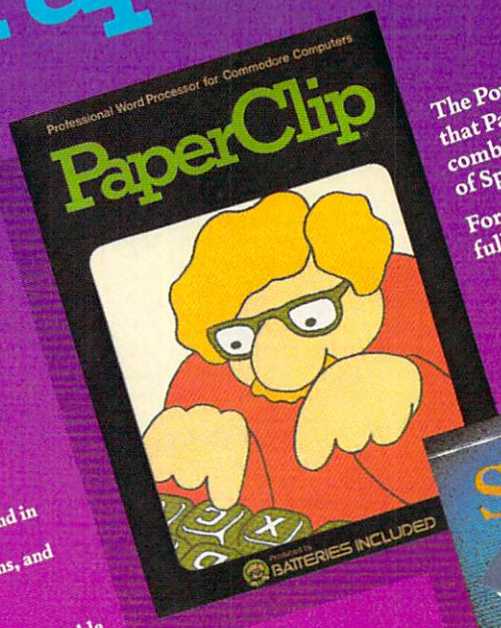

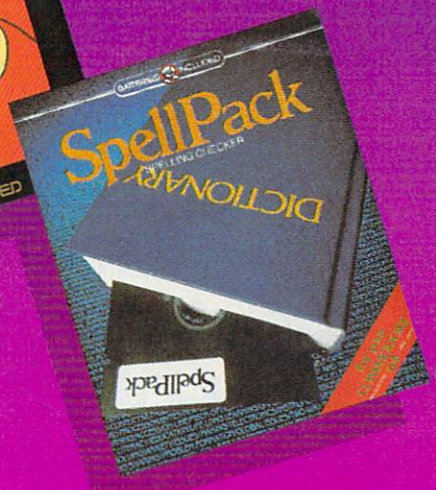

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EDUCATION/FUN LEARNING

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
AGENT USA Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3000 $29.95 (Atari, C 64); $39.95 (Apple, IBM) ©1984	Children ages 9 and up learn location of major cities, states, and capitals in the United States by traveling across the land in pursuit of a mysterious agent infecting the population.† —SUMMERS	Reviewed on C 64 (d.). Also for Apple II series, 48K (d.); Atari Home Computers, 48K (d.); IBM PC/PC*jr*, 64K (d.). Joystick optional.	60-day warranty (includes user-damaged); $10 fee for 10 months thereafter.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	E	★ ★ ★ ★
CELL DEFENSE HesWare 150 N. Hill Drive Brisbane, CA 94005 (415) 468-4111 $34.95 (Apple); $29.95 (C 64) ©1984	Use joystick to mobilize immune system's defenses and subdue a viral attack on the body. Exciting simulation with fun arcadelike feel really teaches about immunology. † —WILDMAN	Reviewed on C 64 (d.). Also for Apple II series, 48K (d.). Joystick.	180-day warranty; $5 fee thereafter for disk.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★ ★
THE GRAMMAR EXAMINER DesignWare 185 Berry St. San Francisco, CA 94107 (800) 572-7767 $44.95 ©1984	As journalist, proofread passages, check grammar, punctuation, and capitalization by moving around a game board and increasing your salary so as to be appointed editor-in-chief. For ages 10+.† —MORRIS	Reviewed on Apple II series, 48K (d.). Also for C 64, (d.); IBM PC/PC*jr*, 64K (d.). Joystick.	90-day warranty; $12 thereafter, if user-damaged, or for backup copy.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
MICROZINE Vol.1, No.5 Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3000 $39.95 ©1984	Solve puzzles in adventure story; write, illustrate, and print out short stories; draw pictures with Logo-like commands, and play "dot" game on magazine on a disk. —MORRIS	Apple II series, 48K (d.).	60-day warranty; $10 fee for 10 months thereafter.	★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★ ★
MISSION: ALGEBRA DesignWare 185 Berry St. San Francisco, CA 94107 (800) 572-7767 $44.95 ©1984	Simplify algebraic equations and draw corresponding graphs to track path of a crippled spaceship. Students practice linear algebra using preset paths or ones you enter yourself.† —MORRIS	Reviewed on Apple II series, 48K (d.). Also for C 64, (d.); IBM PC/PC*jr*, 64K (d.). Joystick.	90-day warranty; $12 fee thereafter, if user-damaged, or for backup copy.	★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
MONKEYMATH Artworx Software Co. 150 N. Main St. Fairport, NY 14450 (716) 425-2833 $19.95 ©1983	Help monkey knock numbers off conveyor belt to complete addition, subtraction, division, or multiplication problems in program with six levels and three speeds. —VAN DE CARR	Reviewed on Atari Home Computers, 16K (d. or cass.). Also for Apple II series, 48K (d.); C 64 (d. or cass.) and VIC-20, 8K (cass.). Joystick (except for Apple).	90-day warranty; $5 fee thereafter or if user-damaged.	★ ★ ★	★ ★	★ ★ ★	★ ★ ★ ★	E	★ ★ ★ ★
MOVIE MUSICAL MADNESS CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2503 $32.95 (cass. and d.); $37.95 (cart.) ©1984	Choose props and construct a movie "set" on screen, add one of several delightful scores, and a main character in this entertaining activity.† —LAMB	Reviewed on Atari Home Computers, 16K (cart.), 48K (cass.). Also for C 64 (d. and cart.). Joystick.	90-day warranty; $5 fee thereafter or if user-damaged.	★ ★ ★	★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
NUMBER STUMPER The Learning Company 545 Middlefield Road, Suite 120 Menlo Park, CA 94025 (415) 328-5410 $39.95 ©1984	Kids ages 5–7 add and subtract numbers shown on dice to use up integers from 1 to 9, practicing early math in computerized version of classic dice game. —BUMGARNER	Reviewed on Apple II series, 48K (d.). Also for IBM PC/PC*jr*, 128K (d.).	90-day warranty; $10 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	D	★ ★ ★
READER RABBIT AND THE FABULOUS WORD FACTORY The Learning Company 543 Middlefield Road, Suite 120 Menlo Park, CA 94025 (415) 328-5410 $39.95 ©1984	Four word games for early readers, ages 4–8, reinforce basic reading skills. Colorful animation appeals to younger players while older children can play more challenging versions. —BUMGARNER	Reviewed on Apple II series, 48K (d.). Also for C 64, IBM PC/PC*jr*, 128K (w/Color Adapter Card).	90-day warranty; $10 fee thereafter or if user-damaged.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	A	★ ★ ★
TYPO ATTACK Atari 1265 Borregas Ave. Sunnyvale, CA 94089 (408) 745-2000 under $29 ©1984	Typing practice program contains four games and has nine skill levels. Defend your home base from attacking aliens by typing quickly and correctly. —VAN DE CARR	Reviewed on Atari Home Computers, 16K (cart.). Also for Apple II/II plus/ IIe, 48K (d.); C 64 (cart.); IBM PC, 128K (disk); VIC-20, 5K (cart.).	90-day warranty.	★ ★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★ ★	E	★ ★ ★ ★

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

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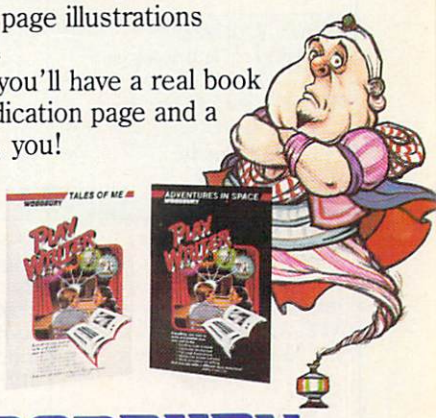

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WHAT'S IN STORE SOFTWARE GUIDE

GAMES REVIEWS BY JAMES DELSON

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	PS	GQ	EU	V
ARCHON II: ADEPT Electronic Arts 2755 Campus Drive San Mateo, CA 94403 (415) 571-7171 $40 ©1984	Exciting fantasy/strategy/arcade game for solo or 2-player use, this "sequel' to *Archon* is even better than the original. Years of challenging play for ages 10+.†	Reviewed on Atari Home Computers, 32K (d.). Also for C 64 (d.). Joysticks.	90-day warranty; $7.50 fee thereafter or if user-damaged.	★★★★	★★★	★★★★	★★★	D	★★★★
EXPEDITION AMAZON Penguin Software P.O. Box 311 Geneva, IL 60134 (312) 232-1984 $34.95 ©1984	Tough, grueling Indiana Jones-type role-playing adventure for 1–4 players requires mapmaking, puzzle-solving, and labyrinth-exploring skills. For ages 12+.†	Apple II series, 48K (d.). Version planned for C 64.	60-day warranty; $5 fee thereafter or if user-damaged.	★★★	★★	★★★	★★	D	★★★★
IN THE CHIPS Creative Software 230 E. Caribbean Drive Sunnyvale, CA 94089 (408) 745-1655 $29.95 ©1984	Dandy financial simulation with short play length and rule book still as much fun as most of the more complex games around. Solo or 2-player contests suitable for ages 12+.†	Reviewed on C 64 (d.). Also for Apple II series, 48K (d.); IBM PC/PC*jr*, 128K (d.).	90-day warranty; $9.95 fee (plus $1.50 postage and handling) thereafter or for backup.	★★★	★★★	★★	★★	E	★★★★
NIGHT MISSION PINBALL subLogic 713 Edgebrook Drive Champaign, IL 61820 (217) 359-8482 $29.95 (Atari and C 64); $34.95 (Apple); $39.95 (IBM) ©1983	Play a game or create your own pinball table in excellent simulation precursor to *Pinball Construction Set*. Good for arcade fans, ages 6+. Building sets needs an experienced hand.	Reviewed on Atari Home Computers, 48K (d. and cass.). Also for Apple II/II plus/IIe, 48K, (d.); C 64 (d. and cass.); IBM PC, 64K (d.).	180-day warranty; $5 fee thereafter.	★★★	★★★★	★★★★	★★★	A	★★★
RAID ON BUNGELING BAY Broderbund 17 Paul Drive San Rafael, CA 94903 (415) 479-1170 $29.95 ©1984	Fly supercopter over high-res scrolling map. Eliminate enemy bases, factories, ships, guns, and planes. Nonstop action game first to top *Choplifter* in popularity. For ages 8+.	C 64 (d.). Joystick.	Unlimited warranty; $5 fee if user-damaged.	★★★★	★★	★★★★	★★★	E	★★★★
RAM Expert Systems, Inc./ Avalon Hill 4517 Harford Road Baltimore, MD (301) 254-5300 $30 ©1983	Naval strategy game recreates combat between fleets of Greek ships in the 4th century B.C. Requires excellent tactical maneuvering and understanding of your ship's abilities. Good bibliography makes this an excellent teaching tool.	IBM PC/PC*jr*, 128K (d.).	Unlimited warranty; $5.50 fee if user-damaged.	★★★	★★★★	★★★★	★★	D	★★★★
STAR WARS Parker Brothers 50 Dunham Road Beverly, MA 01915 (617) 927-7000 Approx. $30 ©1984	Fight through packs of TIE fighters, across the Death Star surface and down the trench to blow up giant space station. Fun, but far from the original coin-op classic. Best for ages 8+.	Reviewed on C 64 (cart.). Also for Atari Home Computers, 16K (cart.). Joystick.	180-day warranty; $8 fee thereafter.	★★★	★★★	★★	★★★★	D	★★
VIKING RAIDER Interphase Technologies, Inc. 6391-F Westminster Hwy. Richmond, B.C. V7C 4V4 Canada (604) 270-8222 $44.95 ©1984	Joystick-controlled role-playing adventure, lacks sophisticated graphics but points the way to a new world of computer entertainment. Mix of adventure, arcade, and strategy elements, good for ages 10+.†	C 64 (d.). Joystick.	90-day warranty.	★★★	★★	★★★	★★	A	★★
XYPHUS Penguin Software P.O. Box 311 Geneva, IL 60134 (312) 232-1984 $34.95 ©1984	Choose from a variety of character types, then take up to four of them on a quest through seven miniadventures, each a complete game by itself. Face monsters, acquire wealth, spells, and weapons. Suitable for 1–4 players, ages 12+.†	Apple II series, 48K (d.). Version planned for Macintosh.	60-day warranty; $5 fee thereafter or if user-damaged.	★★★	★★★★	★★★	★★	A	★★★

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

For personal computers that have been very, very good this year...

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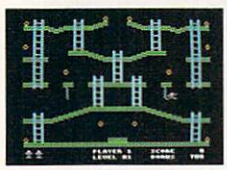
Just in time for the holidays, IBM presents a batch of entertaining software programs for every IBM personal computer (and every IBM personal computer person) on your gift list.

If it's pure fun and games you're after, or educational programs cleverly disguised as fun and games, you've come to the right ad. (If, on the other hand, your only interest is a spreadsheet or database manager, just remember what they say about all work and no play.)

Except for IBM PC*jr* ColorPaint, all the programs here cost less than $50.* And all are available through IBM Product Centers and authorized IBM Personal Computer dealers. For the location of the store nearest you, just call 1-800-447-4700. In Alaska or Hawaii, 1-800-447-0890.

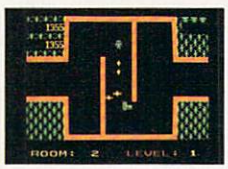
Arcade Games



Jumpman™
You have to defuse hundreds of bombs to save the Jupiter Command Center, but be careful. The bad guys are shooting live ones. Requires color display or TV, joystick optional.

Mine Shaft
You have a little problem. Floodwaters have short-circuited your robot miners, and now they're running berserk. PC*jr* only. Requires color display or TV, joystick optional.

SHAMUS™
Find and eliminate the evil Shadow. 128 rooms and all manner of ill-mannered creatures stand between you and your goal. Requires color display or TV, joystick optional.



Crossfire
The streets are crawling with giant spiders. Your city is counting on you. Good luck. PC*jr* only. Requires color display or TV, joystick optional.

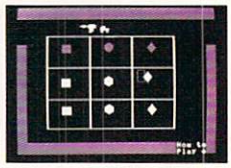
ScubaVenture
Dive for sunken treasure and live to tell about it. Maybe. PC*jr* only. Requires color display or TV, joystick optional.

Adventure Games

King's Quest
Save the Kingdom of Daventry from certain doom. An adventure game with advanced graphics, plus music and sound effects. PC*jr* only. Requires color display or TV.

Zyll
Explore the castle of a wicked sorcerer as a warrior, a wizard or a thief. A text adventure game for 1 or 2 players.

Education Programs



Gertrude's Secrets™
Progressively challenging games that stress logical thinking. Ages 4 to 10. Requires color display or TV.

Gertrude's Puzzles™
A series of exercises to sharpen a child's powers of deductive reasoning. Ages 8 to 13. Requires color display or TV.

Rocky's Boots™
39 interrelated games that teach the basics of computer logic and circuitry. Ages 9 to adult. Requires color display or TV.

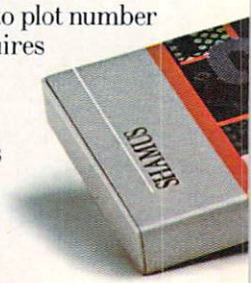
Turtle Power
A music and drawing program that introduces the fundamentals of programming with Logo turtle graphics. Preschool and up. Requires color display or TV.

Monster Math
Solve math problems and slay dragons. Or else. Requires color display or TV.

Adventures in Math
Roam through a castle and find hidden treasure. Your math skill opens the doors. Requires color display or TV.

Bumble Games™
Six colorful programs that teach children to plot number pairs, a basic math skill. Ages 4 to 10. Requires color display or TV.

Juggles' Butterfly™
Reading and math for the uninitiated. Ages 3 to 6. Requires color display or TV.



*Prices apply at IBM Product Centers.

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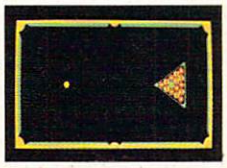
Bumble Plot™

Geometry made fun. Yes, fun. Ages 8 to 13. Requires color display or TV.

Serious Fun



PC Pool Challenges

If you don't have room for a pool table, this is the next-best thing. 1 to 4 players. Requires color display or TV.

Touchdown Football

Realistic football action. Call your own plays against an opponent or the computer as the crowd cheers you on. PC*jr* only. Requires either color display or TV, and joystick.

Trivia 101: The Introductory Course

5,000 trivial questions in more than 200 trivial categories. Up to 14 players (or teams) compete against each other and the clock. Requires color display or TV.

TV and Cinema 101: Trivia from Talkies to Trekkies

"What was the name of Pancho's horse on The Cisco Kid?" and 4,999 other infuriating questions. Requires color display or TV.

Casino Games

Try your luck at blackjack, poker or the slot machines with $500 in "computer" chips. 1 to 4 players. Requires color display or TV.

Strategy Games

Computer versions of four popular board games: Checkers, Elusion, Battleship and Reversi. 1 or 2 players. Requires color display or TV.

Graphics Programs

IBM PC*jr* ColorPaint

A program that helps you draw just about anything you can think (including the Christmas tree pictured below) in living, sparkling color. Very sophisticated, but very easy to use. PC*jr* only. Requires color display and mouse.

Animation Creation

Create colorful moving pictures on your computer. No knowledge of programming necessary. Requires color display or TV.

IBM®

Personal Computer Software

This is NOT a simulated picture. It's a real, live picture created with PC*jr* ColorPaint (see "Graphics Programs" above).

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 118 for information such as backup policies and addresses of software manufacturers.

HOME BUSINESS/ HOME MANAGEMENT

Home Pak

HARDWARE REQUIREMENTS: Atari Home Computers, 48K (disk). Also for Commodore 64. Versions planned for Apple II series, Macintosh, and IBM PC*jr*. Modem for telecommunications.
MANUFACTURER: Batteries Included
PRICE: $49.95

Hooking your computer up to others via your telephone, getting the latest news and stock reports, transmitting letters "on-line" in an instant, connecting to a huge bank of information—this is the world of telecommunications. Sometimes it can be as intimidating as it is rewarding. *Home Pak* contains a telecommunications program, also known as a terminal program, that should help enormously. The word-processor and data-management (electronic file) system also included make for one of the finest values on the market.

"Hometerm," the terminal program, lets you select most operations from a list of functions. You get an on-screen clock (to tell you how much time and money you've spent on-line) as well as the ability to record and automatically dial frequently used services. This package lets you download information and programs from other computers.

Teleconferences (conversations held between two or more computers) are usually plagued with interruptions that sometimes make coherent exchanges difficult. To help streamline this process, "Hometerm" includes a little edit window in which you can type sentences before actually entering them on-line.

After you've "retrieved" an article or message using your modem, you can transfer it easily to the word processor, "Hometext." This versatile program lets you underline or boldface. You can justify right margins and preview your work to see how it will look before you send it through the printer.

As if this isn't enough, the package has an innovative filing system, "Homefind," to help you store data—the kind of information you'd use from day to day, such as birth dates, phone numbers, and things to do.

As a breed, data bases are rigidly structured. But using "Homefind" is a little bit like talking to a friend. You teach the computer what you want it to know by entering information in English sentences. If you wanted to enter appointments in a calendar for December 8, for instance, you'd type 12/8'S 5:PM'S DENTIST, or 12/8'S 3:PM'S WEDDING. Retrieve the information by typing for example, WHAT'S 12/8'S 5:PM, or DENTIST, or 12/8.

This three-in-one package is a bargain and could take care of many of your computing needs. —JOE GELMAN

PractiCalc II

HARDWARE REQUIREMENTS: Apple II plus/IIe/IIc, 48K (disk).
MANUFACTURER: Practicorp
PRICE: $69.95

Anyone who's gone through a supply of pencils and erasers in the process of planning out the affairs of a small business will appreciate the advantages of using *PractiCalc II*. It's an "electronic spreadsheet"—fast, versatile, and cheap enough to deserve a place in many homes or small businesses.

Spreadsheet programs are like computerized ledger books—vast blank pages onto which you can enter numbers and labels, calculating and recalculating numerical data automatically according to formulae you've entered yourself. With a range of up to 250 horizontal rows and 100 vertical columns, and the ability to perform 23 different math functions, *PractiCalc II* can handle a budget, checkbook, payroll, or almost any other number-crunching task you may require.

The program lets you sort data either alphabetically or numerically, and list accounts either from highest to lowest amounts paid, or alphabetically by title. Or, you can automatically search for an entry without having to move across countless rows and columns.

With a thorough, clear set of instructions, including a tutorial, reference guide, and addendum describing its word-processing and data-base-management functions, you should be reasonably comfortable with *PractiCalc II* within a short time.

The only hitch I encountered was the program's failure to automatically SAVE work before printing it out. Remember to do so yourself, unless you want your hours of data-entry to go up in smoke when your printer hangs up.

Numerous spreadsheets cost more than *PractiCalc II*, but for ordinary small-business use, feature for feature, few can match it.

—JOHN LINCOLN

Your Personal Net Worth

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II series; Atari Home Computers; IBM PC/ PC*jr*.
MANUFACTURER: Scarborough Systems
PRICE: $79.95

Who can resist examining a program that displays a real silver dollar on the cover? As if this flashy "instant rebate" weren't enough, the publishers of *Your Personal Net Worth* (*PNW*) have included a handy book on budget-keeping and money management (96 pages, specially excerpted from Sylvia Porter's *New Money Book for the 80s*), along with the program disk, accompanying instruction manual. But what about the program itself? Not wanting to "judge a book by its cover" I vowed to give this package a very thorough testing.

My investigations showed that this comprehensive package is much more than a method of adding up one's accumulated financial worth, as its title might imply. It's an extremely flexible home-budgeting and accounting program, with a well-written manual that explains simple accounting principles for the uninitiated, in addition to providing a step-by-step tutorial for setting up and using the program. *PNW* accommodates up to 420 (the IBM version has 350) different accounts (spending and income categories). You select tasks from a list or "menu" of operations. You don't have to remember complicated command sequences (as in some programs of this type). Help comes in the form of comprehensive HELP screens—no further away than a keystroke—if you're in doubt about what to do next. No computer experience is necessary to run *PNW* other than a basic familiarity with your equipment and operating system. The program, manual, and Sylvia Porter book's include all the information and advice needed to organize and set up a budget, if you have never done it before.

→

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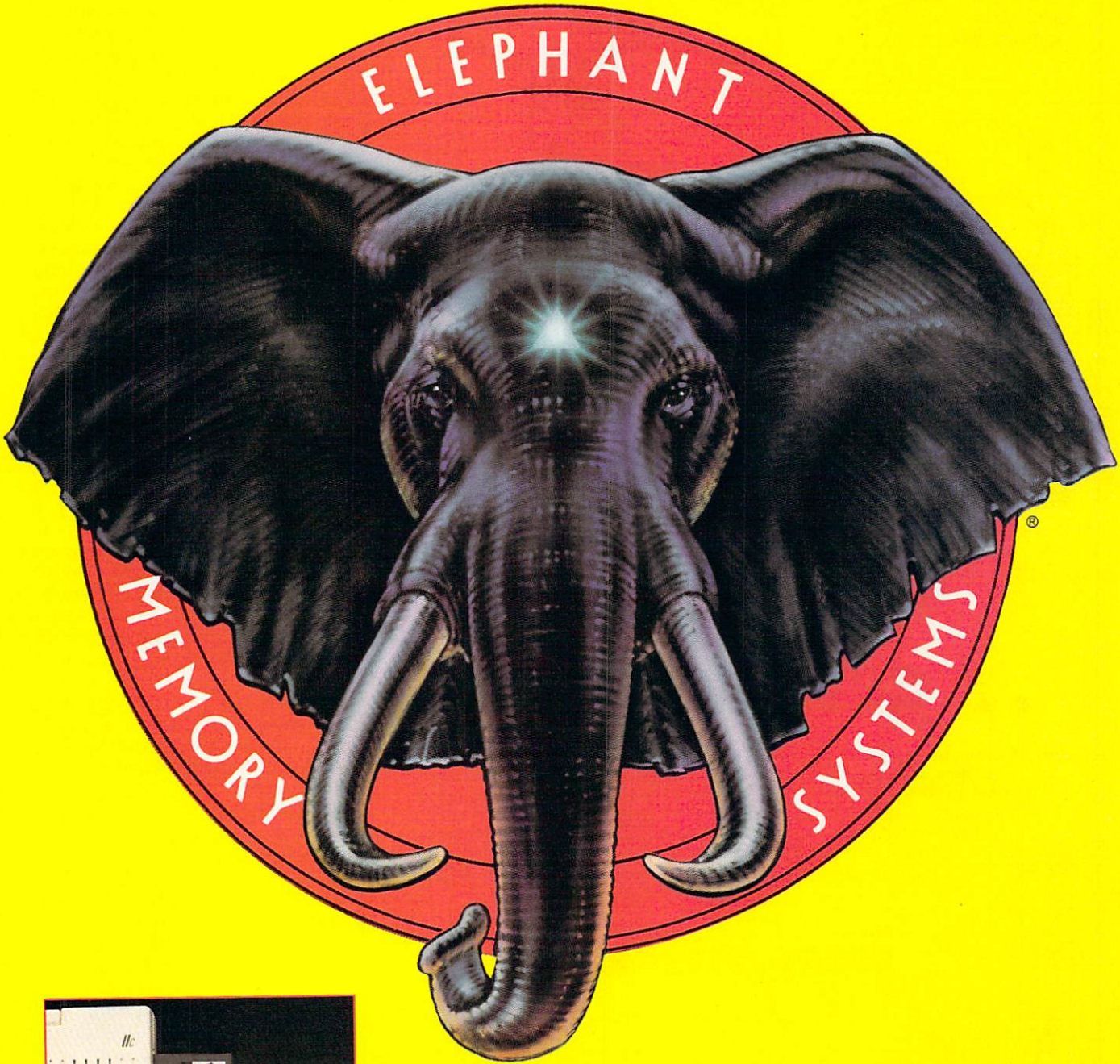

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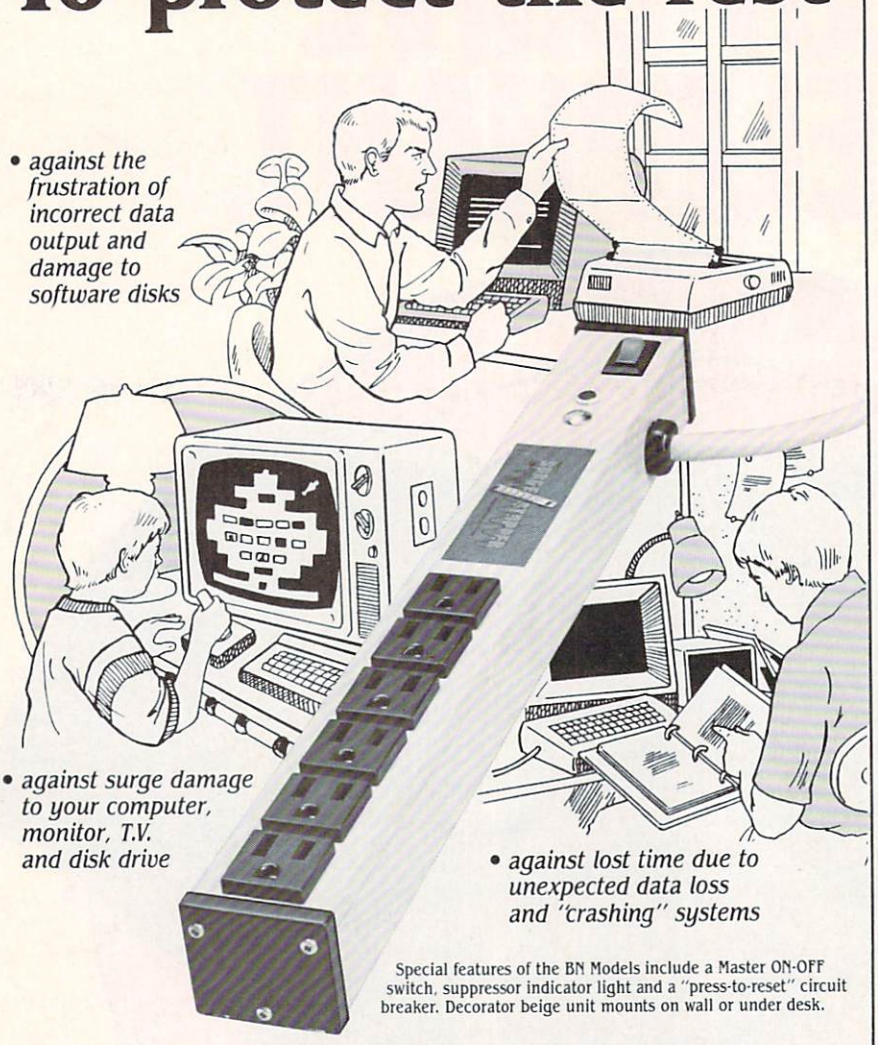

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SOFTWARE REVIEWS

It *was* a bit daunting to see where all that money was going (much too much seemed to be "personal" and "entertainment" expenses at our house), but it was encouraging to see how much my income had been contributing to our NET WORTH. With *PNW*, it was all there in blue and white to show my husband that although my income as a professional writer isn't always regular, it almost matches his! Any banker is sure to be impressed with a printout from this program if we were to apply for a loan. And naturally, it will be indispensible at tax time.

PNW provides a data disk with a sample chart of accounts. When you add your own, the program allows them to be added to or eliminated, descriptions updated, or revisions made. The routine for formatting new disks has a strange quirk in that it names your disk with the title of the last disk it accessed (often the sample disk—called "Your Data Disk"), but this doesn't seem to affect the working of the program. When you enter expenses, the program automatically remembers the date and keeps a check counter, anticipating redundant data entry. It allows you to report income from many different sources, a large plus in my case since I did not want to lump my income from different publishers under one heading: BETSY'S INCOME, as I had been forced to do with other programs of this sort. *PNW* allows me to print in a 40-column format any of the information that appears on the screen. It also has a routine for printing out checks each month (or at any time) to pay bills.

Budgeting and finance-managing are time-consuming processes, regardless of whether or not you do them on the computer. But the order this program can lend to finances otherwise in a state of disarray, and the control you'll be able to exert over a formerly chaotic situation, could make it well worth that expense of a little extra time.

—BETSY BYRNE

EDUCATION/ FUN LEARNING

Agent USA

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II series; Atari Home Computers; IBM PC/ PC*jr*. Joystick optional.

Give your children more than the advantage of a computer. Give them the Scholastic Advantage.

You probably realize the computer is only the first step. Now you need Scholastic Software to turn it into both a powerful and entertaining learning tool for your child.

Scholastic Software is the only software that comes with the Scholastic Advantage. This means software which uses your child's own natural curiosity and love of adventure to make learning valuable skills fun. Software based on what your child is actually studying in school, which makes it relevant and practical. And software which is already being used successfully by millions of kids in schools around the country.

At Scholastic, we've put everything we've discovered about how youngsters learn into our new software line. It's the result of over 60 years' experience making learning both challenging and fun. In fact, you probably grew up reading Scholastic books and magazines in school. Nobody else knows kids like we do and it shows in our new family of products. That's the Scholastic Advantage.

Our software family includes *Agent U.S.A.,* which turns geography into an exciting adventure trip around the country; *Story Maker,* a program that helps kids create their own illustrated story book, and *Math Man,* an action game that makes learning math fun. *Microzine* is America's most popular classroom software, featuring four fun learning programs on one disk. *Story Tree* is both a creative writing tool and a word processor, and *Operation: Frog* is a fascinating simulation of a biology lab.

So give the Scholastic Advantage. You'll be surprised how fast the computer becomes one of your child's favorite—and most exciting—teachers.

Agent U.S.A. available in Apple, Atari, Commodore and IBM. Story Maker and Microzine available in Apple. Math Man and Story Tree available in Apple and IBM. Operation: Frog available in Apple and Commodore. Spelldiver available in Apple, Atari and Commodore.

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Infocom	Zork I, II, III each	$25
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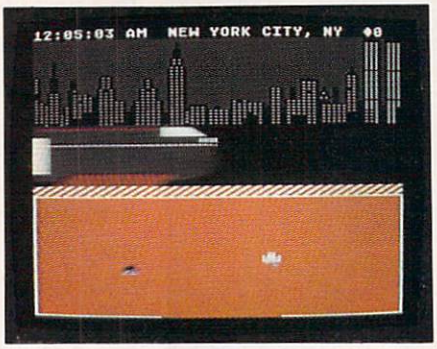
WHAT'S IN STORE
SOFTWARE REVIEWS

MANUFACTURER: Scholastic
PRICE: $29.95 (Atari, C 64); $39.95 (Apple, IBM)

You're a secret agent whose job is to destroy the evil Fuzzbomb—a creature that's turning everyone in the U.S. into fuzzbodies. At the information booth located in each state capi-



tal, you can find out the Fuzzbomb's location, which cities have been "fuzzed," and which may be next.

You're now in Las Vegas, Nevada, but where's the information booth? Wait—the map in your instruction kit says that Carson City, not Las Vegas, is Nevada's capital. You'll have to catch the next Carson City-bound train. The ticket booth schedule indicates that trains leave regularly for Carson City, Phoenix, and other cities nearby. With three minutes to spare, you'll have time to grow some antifuzz crystals, crucial to overcoming the Fuzzbomb. You need to multiply your initial stock of 10 to over a 100 to eliminate the marauder.

This is Scholastic's flawlessly crafted *Agent USA*, a terrific way to have fun while learning what's where in the U.S.A. Printed and on-screen maps show major cities and state capitals. And each city has different topographical details. San Francisco has its bay, Denver its mountains. Big cities boast fast trains to faraway cities. Smaller cities have smaller local connections.

The 9- to 13-year-olds who tried this program out for size at our house loved it, playing nonstop for three days. They liked the game's realistic details, the way time changed as it would en route between cities, even readjusting for travel across time zones. The jazzy music that accompanied their travels added to the fun (and drove me crazy after a while).

Don't expect to beat this game easily, though. Three of our children gave up after several days' worth of pursuit, frustrated by their inability to subdue the Fuzzbomb. My 9-year-old, however, plays on, determined to save the U.S.A., and is learning a lot about the nation's geography in the process. —TAN SUMMERS

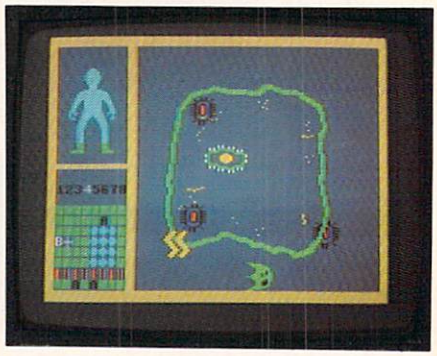
Cell Defense

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II series. Joystick.
MANUFACTURER: HesWare
PRICE: $29.95 (Commodore); $34.95 (Apple)

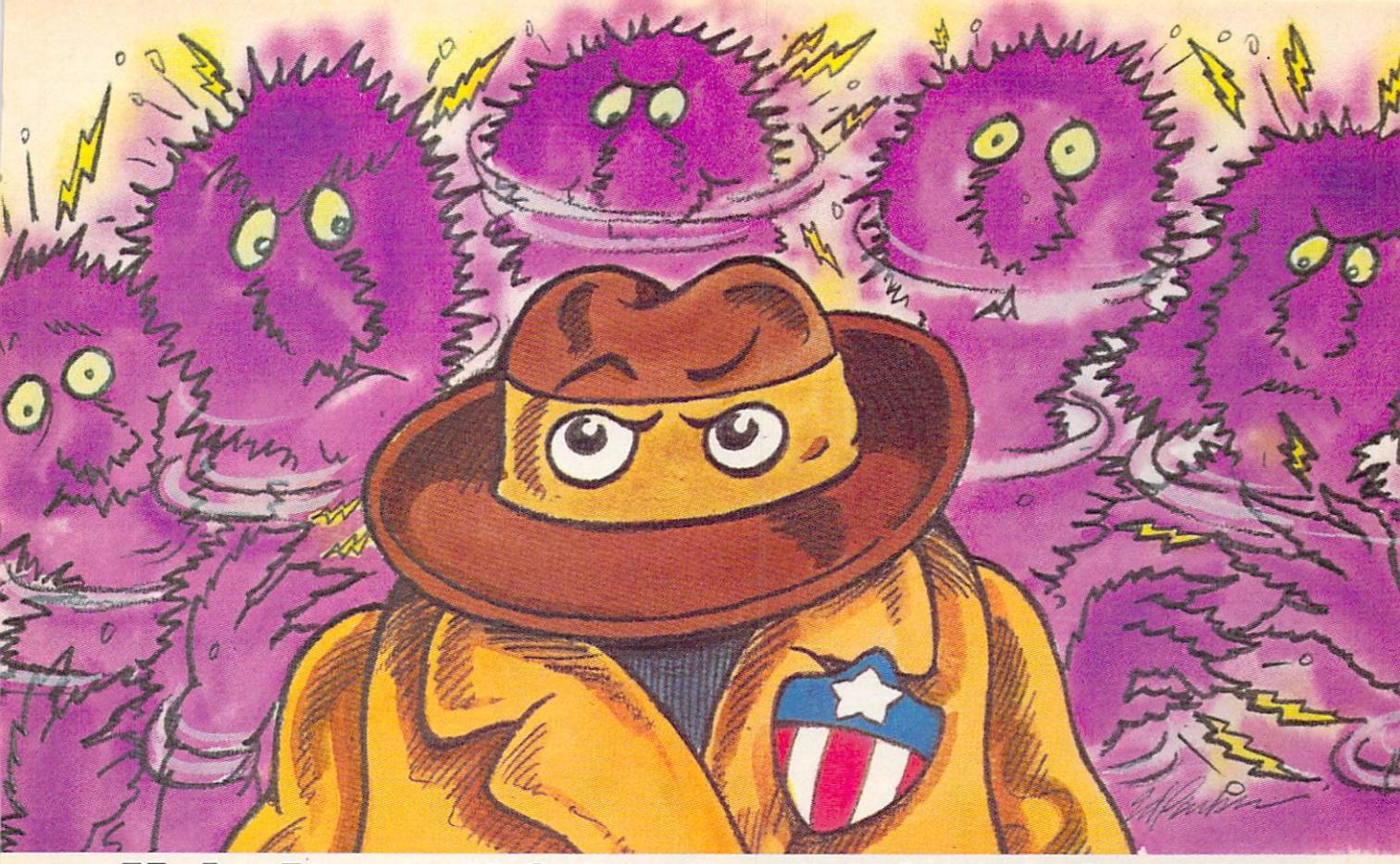
Every now and then a program comes along that gives a glimpse of the educational potential of computers at home. *Cell Defense* is such a program. A highly stimulating, visually exciting game, it attempts to teach how the immune system fights off viral infection.

A virus has attacked an organism and you must combat the foreign agent. You use the joystick and one of several different mechanisms at the body's disposal. An on-screen scanner monitors the status of your cells, the degree of infection, and how many have been damaged or destroyed. Scheme up a strategy for controlling the virus: Do you want to deploy interferon to prevent further infection? Or will you use B-Cell antibodies in the bloodstream to halt the disease's spread to the committed T-Cells and Labile Cells?

As you can imagine, you'd have trouble *not* learning a thing or two from this program. My kids were engrossed. They found it more inviting and playable than many of the other



educational programs they've tried. By allowing the player to adjust a number of beginning play variables, such as the initial health of the organism and the number of the organism's cell layers, *Cell Defense* lets players experiment with difficult strategies and learn even more. →



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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.

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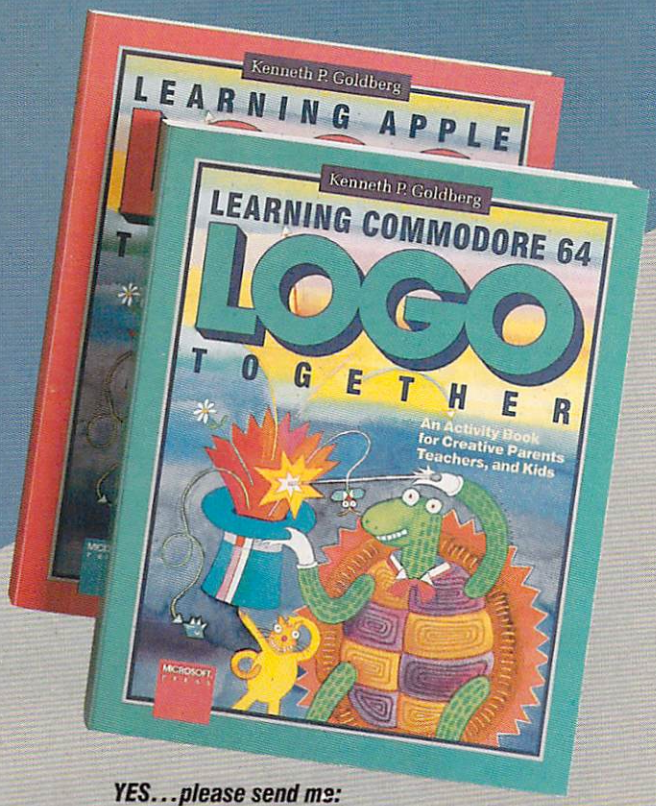

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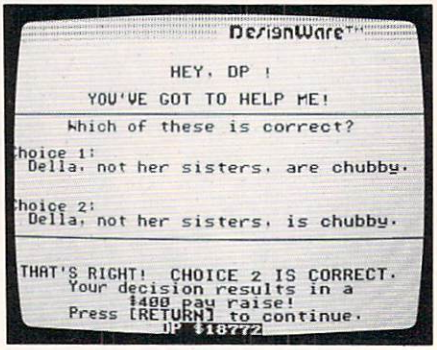
SOFTWARE REVIEWS

A small problem lies in the fact that, though integral components of the immune system, antigens are not mentioned or included in the game. Still, in spite of this omission, because of its entertaining use of play to introduce an otherwise intimidating and complex subject, I highly recommend *Cell Defense*.

—KENNETH WILDMAN

The Grammar Examiner

HARDWARE REQUIREMENTS: Apple II series, 48K (disk). Also for Commodore 64; IBM PC/PC*jr*. Joystick.
MANUFACTURER: DesignWare
PRICE: $44.95



TUESDAYS ELECTION WILL BE HOLD AGAIN BECAUSE VOTERS ALL MARK 'NONE OF THE ABOVE' ON THEIR BALLOTS. THE COUNTY CLERK IS TRYING TO FIND OUT HOW THE BALLOT'S GOT MIX UP WITH A SET OF EIGHTH GRADE HISTORY TESTS.

As an aspiring journalist, your task is to proofread this passage. If you can correct every error, your salary will be increased to $23,000, and you'll have a shot at being promoted to editor-in-chief and winning the game. If you make errors, you win fewer bucks and may have to wait longer to be eligible for promotion.

The Grammar Examiner combines skill and luck in an entertaining package that teaches writing and editing skills. You, and up to three other players, embark on a journalism career with an initial salary of $20,000. As you move around the game board, the various squares you land on affect your salary. Some squares automatically up it by a modest amount. Other squares require that you select the correct sentence from a choice of two (for instance: SOME OF THE GLUE IS MISSING. or SOME OF THE GLUE ARE MISSING). Still other squares ask you to proofread an entire package, such as the election story above.

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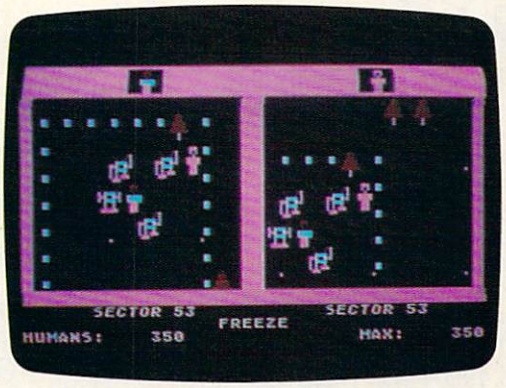

You'll battle Max and his robot marauders in a field bigger than any you've ever seen. Your team must invade robot territory and grab their flag before they take yours. But be careful; Max has devised a fiendish strategy against you. And, of course, you can't expect mercy from robots.

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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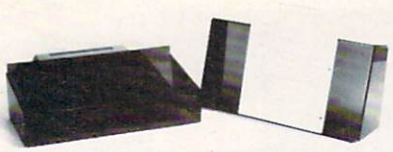

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WHAT'S IN STORE SOFTWARE REVIEWS

also have the option of playing alone against a computer with a variety of skill levels. Being able to design your own game boards and create your own stories and error-laden passages lets you tailor the game to players of any age and skill.

Our kids noticed that sentences and test passages frequently repeated themselves—a bit of a drawback. For this reason, they appreciated being able to modify the game and create their own materials. Overall, they found *Grammar Examiner* a delightful way to practice writing while having fun. —TONY MORRIS

Mission: Algebra

HARDWARE REQUIREMENTS: Apple II series, 48K (disk). Also for Commodore 64, IBM PC/PC*jr*. Joystick.
MANUFACTURER: DesignWare
PRICE: $44.95

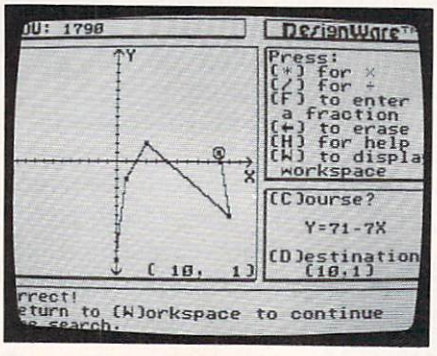
Can you simplify this equation?

$$4(Y+1)+4=8X-40$$

Would you recognize the line that corresponds to it, if it were plotted on a graph? *Mission: Algebra* is a unique and creative program that helps students tackle the tough elements of linear algebra.

Your task is to find a crippled spaceship by tracing its path using equations that must be simplified and plotted on a graph. First, you must simplify each equation step by step. The computer accepts only correct steps in the simplification process. If you run into trouble along the way, the computer will suggest an appropriate method to proceed.

You'll eventually arrive at the equation in its fully simplified, graphable form: Y=2X-12, in the above example. But the crippled ship follows this path only to the point where X=-6. Determine the value of Y at that



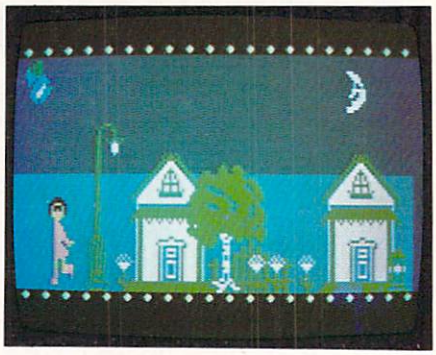
point so the on-board course plotter can draw a line to that point. The equation for the next leg of the journey appears, and you repeat the process until you find the ship.

Mission: Algebra teaches a complex subject in a simple, entertaining way. Our kids enjoyed the search once they got the hang of it. Their primary criticism lay with the time it took to complete each leg of the ship's journey. Some complex patterns took almost an hour to solve completely. Thus, while it is not likely to appeal for long to game-playing members of the family, it's excellent as a practice for high-school kids having trouble with linear algebra.

There are 40 different paths on the disk. Some are easier, some are more difficult. And, as in all DesignWare programs, you can make up your own. Simply draw the line—the computer will calculate corresponding equations. —TONY MORRIS

Movie Musical Madness

HARDWARE REQUIREMENTS: Atari Home Computers, 16K (cartridge); 48K (cassette). Also for Commodore 64. Joystick.
MANUFACTURER: CBS Software
PRICE: $32.95 (Atari cassette, C 64 disk); $37.95 (Atari and C 64 cartridge)



Computer programs don't need to teach reading or math to be worthwhile. And they don't need to shoot-'em-up or blast-'em-away to be fun. *Movie Musical Madness* encourages creativity and exploration with the computer while giving your child a genuinely good time.

After choosing between a black-and-white or color movie, you're given a wide variety of props and objects with which to decorate your "movie set." Fill your screen with houses, skyscrapers, movie marquees, flowers, and trees. Add a witch, elephant, or moving phantom man for a little animation.

Choose one of a variety of different musical themes as your score—a light jazzy tune or a spooky, ominous strain. Finally, select your ac-

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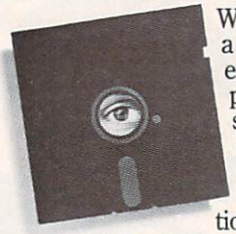

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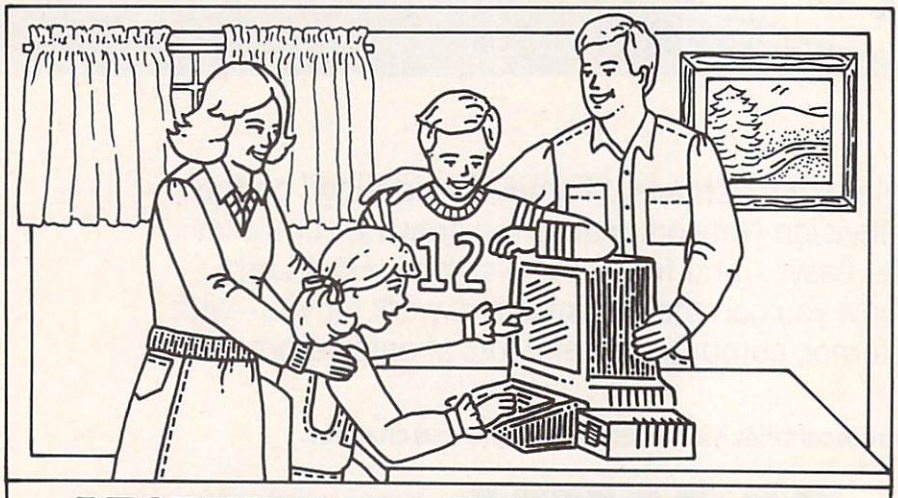

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tor or actress—and action! Manipulate your star to float, strut, and jump around the screen. Create several different scenes and string them together—into your own little animated movie short.

My kids, ages 7 and 9, and I enjoyed this activity because of its simplicity. Just a little trial-and-error with the joystick and we could whip up numerous different scenes for our so-called movie. The kids let loose with their imaginations.

The activity is a bit limited by the constraints of its cartridge format. You can use only one actor at a time. Also, more props for indoor scenarios, a greater variety of positions and movements for the actors, and the ability to save their "movies" to disk would have enhanced the program's value and longevity. —RICHARD LAMB

GAMES

Archon II: ADEPT

MANUFACTURER: Electronic Arts
HARDWARE REQUIREMENTS: Atari Home Computers, 32K (disk). Also for Commodore 64. Joysticks.
PRICE: $40

Here, just in time for Christmas and critics' "10 Best" lists, is the newest and best of the strategy/arcade game breed. *Archon II: ADEPT*, the superb "sequel" to last year's popular thinking/action game, is as exciting and innovative as its predecessor. And that's saying a lot, for at the time of *Archon*'s release, it seemed as if there was little room for product improvement.

The new game features a five-area playing field, representing earth, air, fire, water, and "the void," a space largely immune to magic and difficult to attack or defend. The object is to maneuver a variety of playing pieces, some unique to one side, others available to both teams, over the field. Using the built-in powers of your pieces, you must dominate the board, eventually controlling the power points from which both sides derive their strength.

Joystick controls allow solo or two-player action. And in an improvement on the original, a handicapping system balances play so experts can take on novices and both sides can still enjoy the game. Other improvements on *Archon* include the ability to take back mistaken moves up to a certain point; the flexibility of allowing players to build teams

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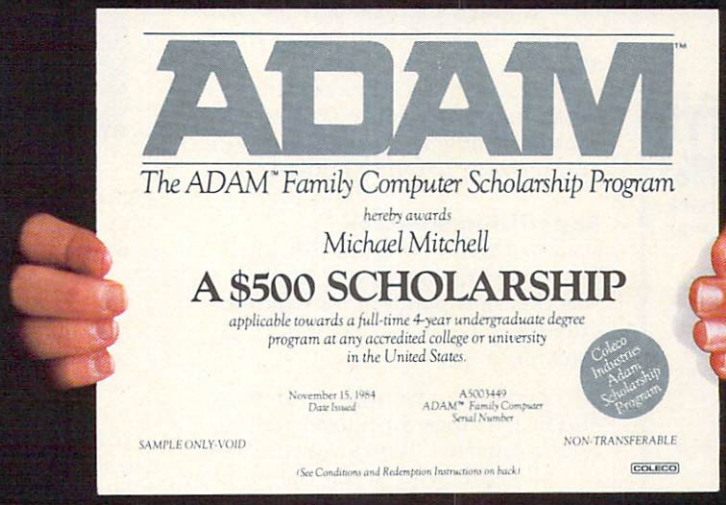

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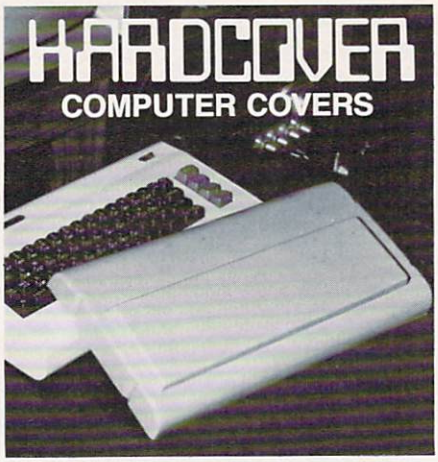

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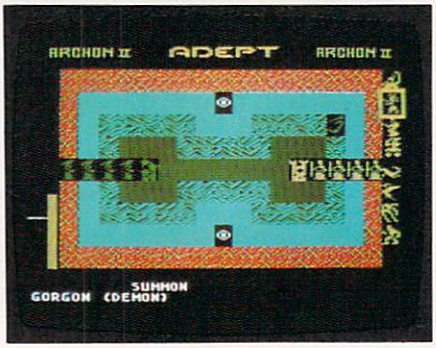


from scratch based on their own strengths and weaknesses as well as those of the playing pieces; and the addition of new spells which improve play balance.

But what any game comes down to in the end is fun, and *Archon II: ADEPT* meets all the requirements. Characters range from dull-witted giants who can only smash things to pieces, to singing sirens whose songs drain their opponents' strength; from invisible wraiths who sap your life-force and add it to their own, to juggernauts—fighting skateboards that bash into you at high speeds.

What a game! I'll be covering it in detail in an upcoming Games column. Suitable for ages 10 and up, 6 and up with parental supervision.

Expedition Amazon

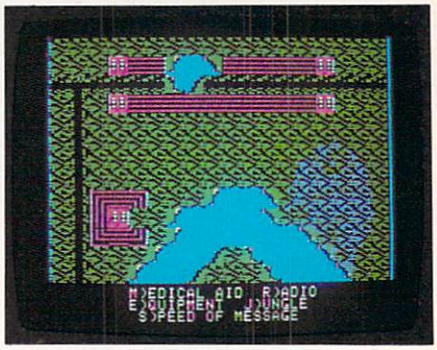
MANUFACTURER: Penguin Software
HARDWARE REQUIREMENTS: Apple II series. Version planned for Commodore 64.
PRICE: $34.95

We need four adventurous heroes and/or heroines for a lovely trip to South America. Who's volunteering? . . . All right, who needs the money? . . . Right, last chance, who's *brave enough* to risk life and limb for the sake of science?

Feel like being in a good, old-fashioned Hollywood serial, complete with hair-raising escapes, jungle intrigue, cardboard sets, and monsters shot with a wide-angle lens? Well, "B" movie fans, welcome to *Expedition Amazon*, where a third-of-a-dozen intrepid explorers can don their *Indiana Jones* costumes and set out to discover the fabled Lost City of Ka, rumored to be hidden somewhere in the jungly tendrils of the Amazon.

Not for the impatient, this game requires such adventuring skills as mapmaking, puzzle-solving, labyrinth-exploring, jungle-inhabitant-fighting, piranha-evading, grenade-hurling, and frequent praying. You name four characters who make up an expedition, buy their tools (a wide selection is available, though only experience will show you which are really needed), and go off into the Amazon. Then you have to map out vast tracts of land and try to get back to base camp with enough treasure to re-equip and continue. Sounds simple, eh? Well, good luck.

You see, there are these Amazons who don't take kindly to strangers, as well as leeches, nasty crocodiles, pits filled with crawly spiders, and . . . yech, some things too horrible to mention. And that's just above ground. Wait until you try to explore



the underground labyrinths. It makes my skin creep and I'm only writing the review.

Run, don't walk, to your nearest computer software dealer and buy this game. Don't forget the calamine lotion, Off, mosquito netting, and a copy of *Staying Alive in the Amazon on 5 Bytes a Day*. This one is really fun, and very difficult to beat. Suitable for ages 12 and up, and excellent for group play.

In the Chips

MANUFACTURER: Creative Software
HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple II series, IBM PC/PC*jr*. Joystick.
PRICE: $29.95

The most-often grumbled complaints from playtesters about financial games have centered on play length and rules complexity. I'll admit that some of the financial games I've played (like *Cartels and Cutthroats*) have been too complex for the amount of time that most audiences will put into them. Others (such as *Rails West!*) have been riveting, but also require many hours to learn and play. →

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SOFTWARE REVIEWS

I am pleased to report that *In the Chips* has a short play time (1–3 hours) and is easy to learn (you can be up and playing the game in 15 minutes). This dandy simulation is as much fun as most of the more complex financial games around, and can be played solo or in a two-player mode.

You begin as the president of a small manufacturing firm. By developing, producing, advertising, and setting prices on five different hypothetical goods, you can outwit your opponent (and the rest of the market) and win the game. Optional play-balance features allow the creation of monopolies, though the real skill lies in being able to compete in a fair simulation of an open market.

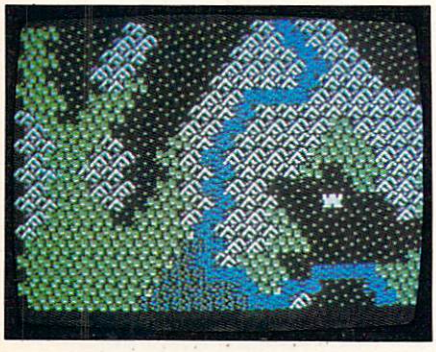
A good light game for those experienced players who have a few hours for fun at the keyboard, it is also an excellent introduction to financial simulations for those who have stayed away out of fear of rules length (only two pages, here), complexity (if you

can play Monopoly you can play this), or dislike of figures (the computer does all the bookkeeping work for you). Beginners will find they're learning from their mistakes and playing better by the second game. Suitable for ages 12 and up.

Xyphus

MANUFACTURER: Penguin Software
HARDWARE REQUIREMENTS: Apple II series, 48K (disk). Version planned for Macintosh.
PRICE: $34.95

Best known until now for text/graphic and arcade games, Penguin Software has come up with a very enjoyable variation of the *Ultima*-type role-playing adventure. Choose from a variety of character types and races, then take up to four of them on a quest through seven progressively challenging miniadventures, each a complete game in itself, and all interrelated.



Keyboard movement of your characters takes them across a scrolling map. As you travel you'll encounter and battle monsters, and discover hidden scrolls, specialized weapons, and the amulets required by your magic-users for the casting of spells. You'll also visit towns where you can heal your characters, and be raised to new experience levels to buy arms, armor, and magic spells.

Since characters achieve higher levels of strength and defenses only through combat, the game revolves around your strategy and tactics skills in fighting the many varied monsters. Most of the monsters are profiled in the game's excellent documentation. These creatures range from the meek and mild to heavy-duty life-drainers, so it's best to SAVE the program frequently throughout play. Even the most experienced players have been killed repeatedly trying to defeat these creatures.

Xyphus' most innovative feature is its realistic multiplayer movement and combat simulation. Each of up to four players can decide where to move characters, which weapon to fight with, and with whom to do battle. Thus, players have the opportunity to determine their own actions, allowing for more group interaction in deciding strategy and tactics. This is crucial in fighting some of the marauding bands which spring out at you in ambush.

Xyphus is good fun for novice adventurers as well as experienced players, ages 10 plus, and is ideal for group and family situations.

Viking Raider

MANUFACTURER: Interphase Technologies, Inc.
HARDWARE REQUIREMENTS: Commodore 64 (disk). Joystick.
PRICE: $44.95

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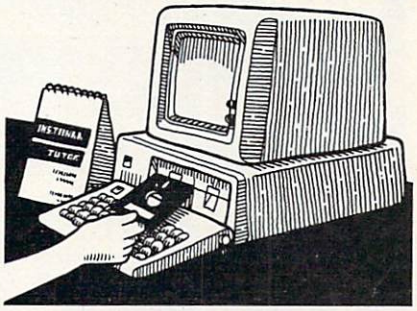

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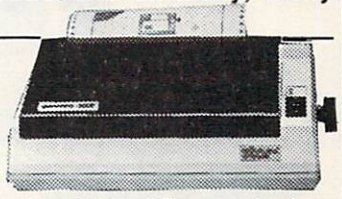

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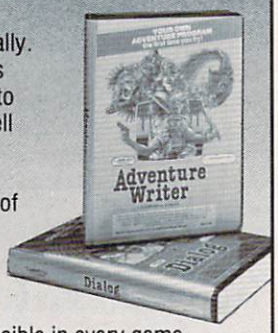

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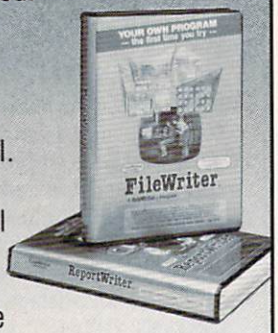

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SOFTWARE REVIEWS

keyboard input for other communication. You're a Viking warrior, capable of many feats, yet temporarily without equipment and funds to pursue your pillaging of the known world. Your environs offer much of what you need in the way of weapons, tools, and riches. All you've got to do is find them, pick them up, and use them to achieve your humble goals.

Viking Raider advances adventure gaming another step towards more active use of the joystick. But there's still a long way to go before someone combines the action of an *Archon*-type game with the sophisticated mapping, screen-scrolling, labyrinth-exploring, and town-visiting of *Ultima*-like fantasy games and the spell-casting, character-generating abilities of a *Wizardry*-type game.

In the meantime, however, *Viking Raider* is a delightful way for would-be barbarians to hone their sea-roving skills. There's sailing (which combines the romance of the high seas with bailing out and making repairs after shipwrecks), hunting (for food as well as warm clothing), fighting (against militia, trolls, frost-giants, fire-breathing dragons, and others), treasure-hunting (for jewels, a silver chalice, amulets, pearls, and a golden key), spell-casting, eating, drinking, and even that luxury for adventurers—sleeping!

The game's chief drawbacks are the lackluster graphics and an awkward play system (my character was "trapped" in a room because of a program fault involving the joystick). But repeated play will teach gamers the program's faults and how to avoid them, and for avid adventurers, that should be enough incentive to give it a try. Not a great thrill, but a definite sign of things to come, *Viking Raider* is suitable for ages 10 and up, although younger players may need some adult supervision.

—REVIEWS BY JAMES DELSON

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 manipulates *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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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 interpretation 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 × 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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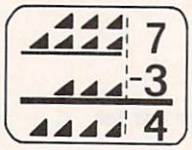

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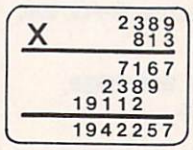

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THE PRIMER
THE WORDS

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 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 caller), 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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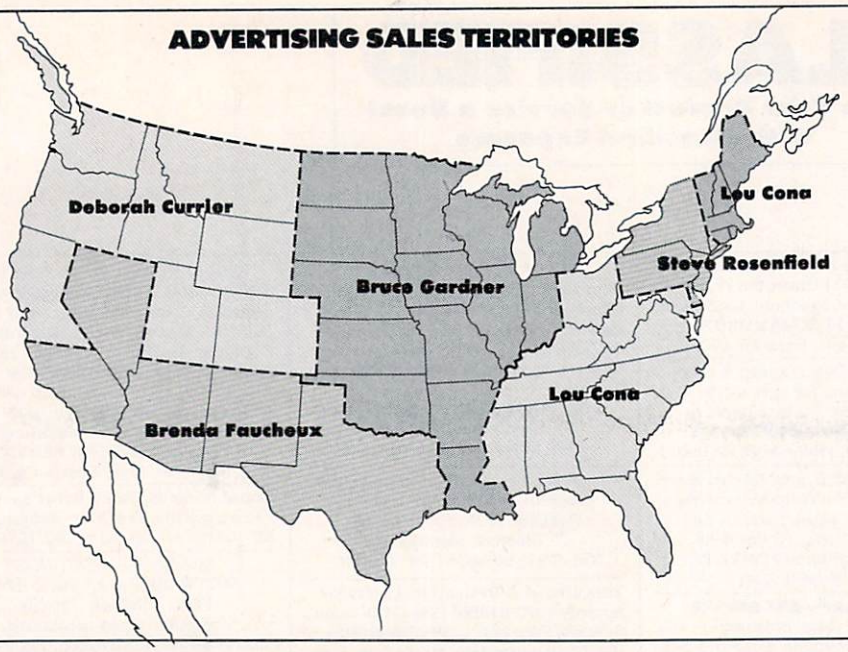

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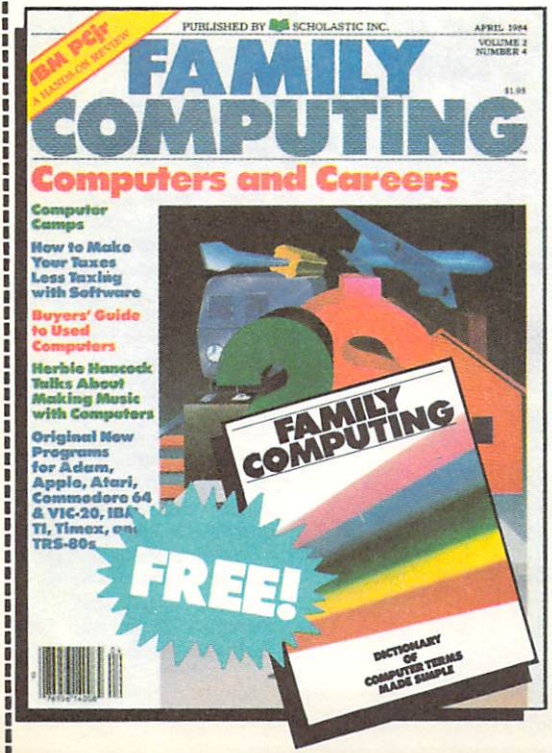

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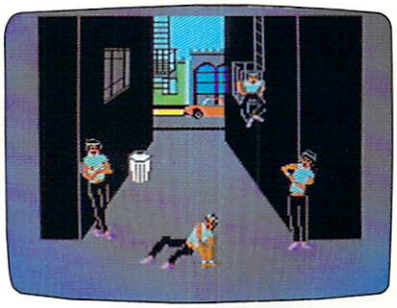

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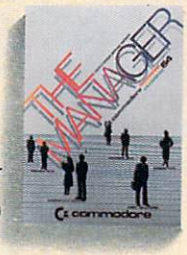

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9:00

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)

9:30

INTER-NATIONAL SOCCER

(Gold Medallion Game) Sports highlight. With passing, kicking, diving goalies, even trophies! Great color, 3-D realism. No locker room interviews. (Cartridge)

10:00

SIMONS' BASIC

Rated PG. Expands Commodore BASIC by an additional 114 commands. Convenient programming commands such as RENUMBER and TRACE plus graphics plotting command. (Cartridge)

Announcing the most exciting variety show on television.

Featuring many of the stars of arcade games, education and the business world.

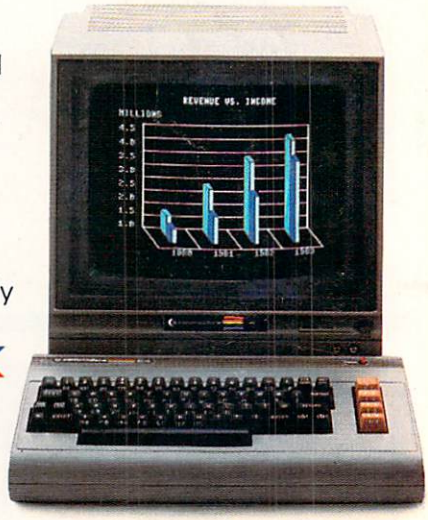
Produced by (and for) Commodore, the people who bring you the Commodore 64™ a 64K computer that would be a value at three times its price. In fact, many of its competitors are three times its price.

Produced in living high resolution graphics with 16 available colors and with eight 3-dimensional sprites.

With a real high fidelity sound that covers a 9-octave range.

And a supporting cast of low-price, high capacity disk drives, printers, monitors (a better way to watch Commodore 64) and modems.

So, if you're not pleased with what's on your tv set tonight, simply turn on your Commodore 64.

COMMODORE 64

IT'S NOT HOW LITTLE IT COSTS, IT'S HOW MUCH YOU GET.