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NUMBER 5

APPLE'S
MACINTOSH
A HANDS-ON REVIEW

FAMILY COMPUTING

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How To Protect Your Disks
Original Programs for ADAM, Apple, Atari,
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FEATURES

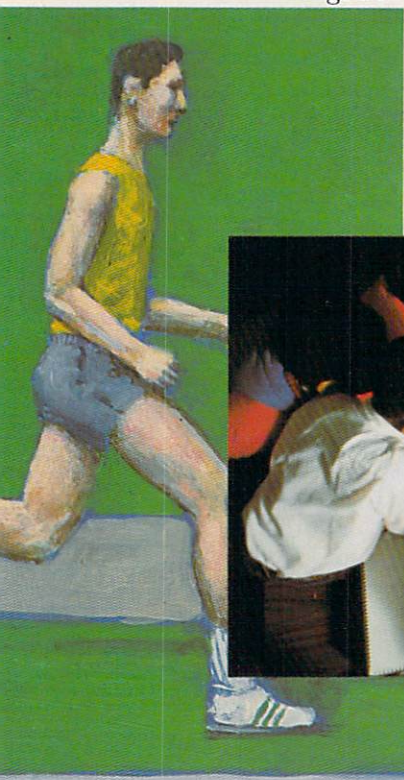
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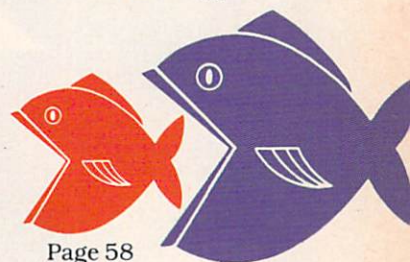
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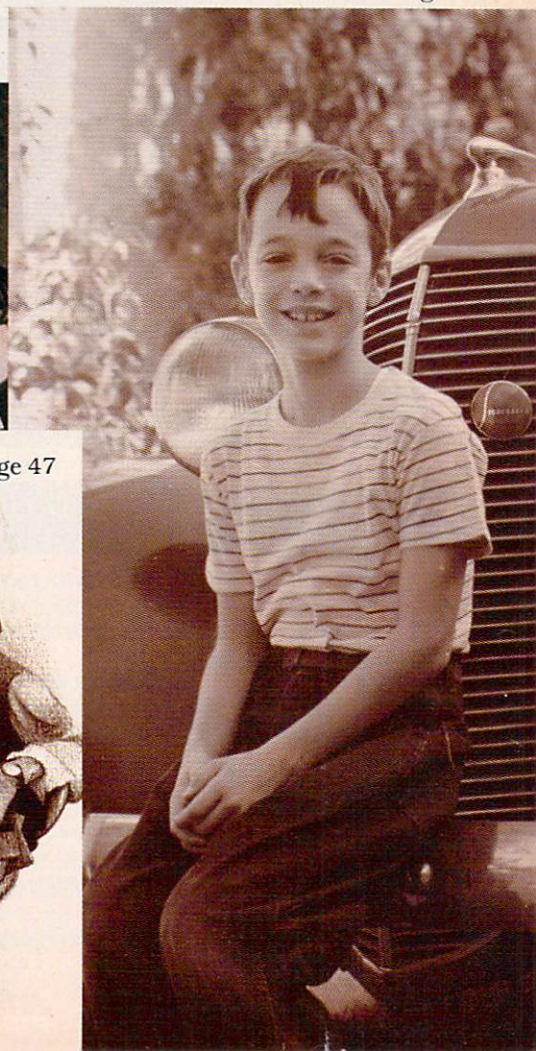
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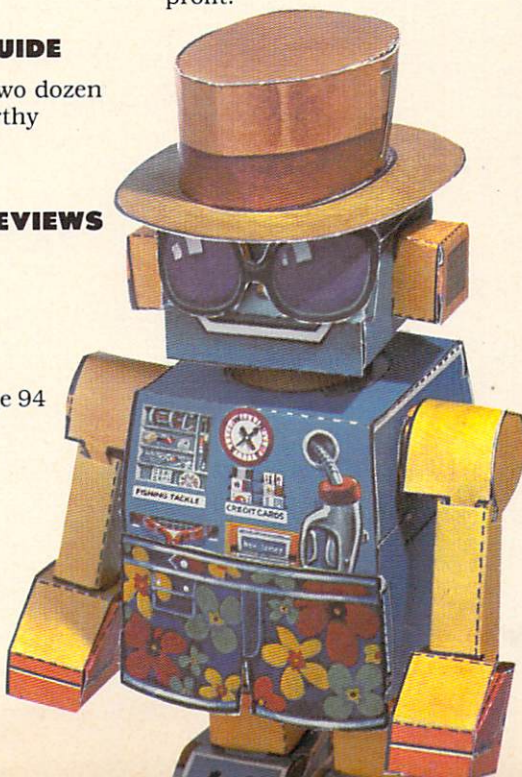
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COVER PHOTOGRAPH BY JOEL WHITE

COVER: THE PICTURE THAT APPEARS ON THE TELEVISION SCREEN IN OUR COVER PHOTOGRAPH IS TAKEN FROM THE AEROBICS PROGRAM, BY SPINNAKER SOFTWARE. SEE PAGE 36 FOR MORE INFORMATION.



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it's free of a...*

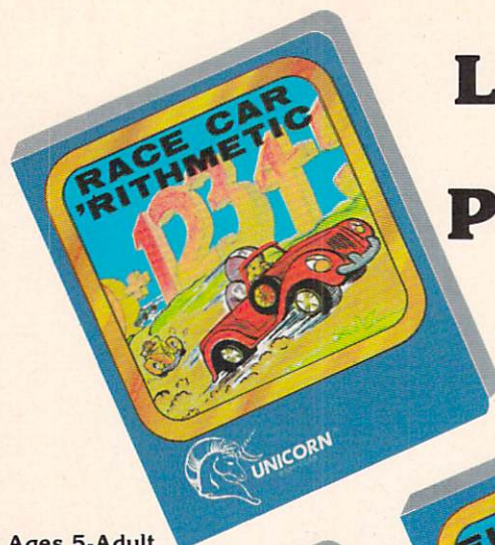
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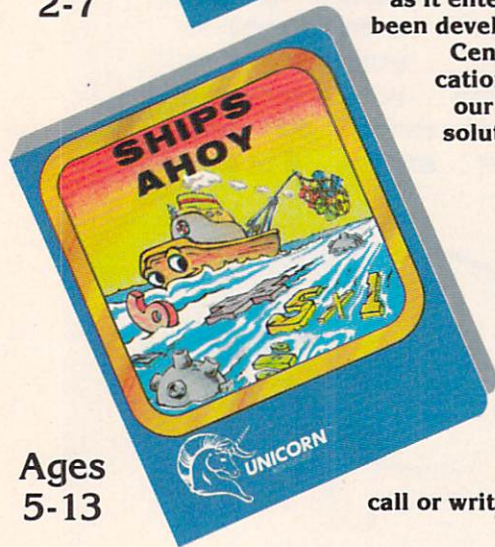
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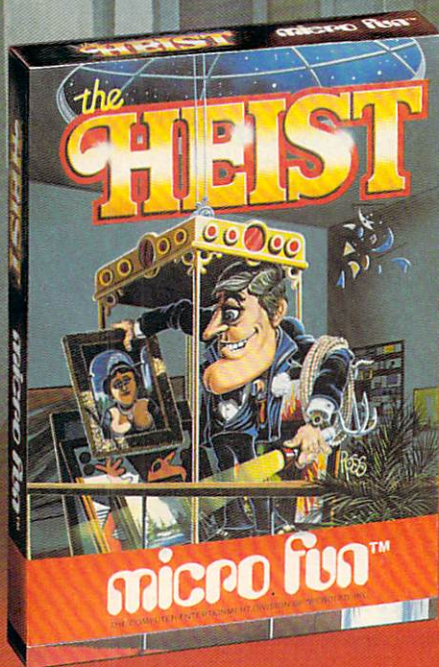
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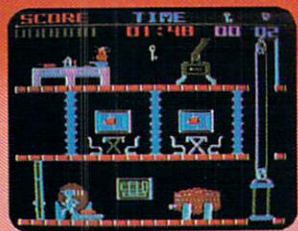
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EDITOR'S NOTE

WHADDYA DO WITH IT?— THAT IS *STILL* THE QUESTION

Before the days of FAMILY COMPUTING my life was very different from the way it is today. I'd go to bed fairly early, get up hours before dawn, work a while, and then, at five o'clock, turn on the TV for half an hour's exercise class that warmed me up for my regular run. FAMILY COMPUTING put an end to all that. Now it's work late, bed late, up too late for my TV lesson, and a battle between my desk and my run, with the desk almost always winning. And, though I might like that exercise session when I get home at night, there's no video recorder around to accommodate my desire. Exercising with books never works for me, and while millions might find listening to Jane Fonda tapes inspirational, I find thinking of her physical perfection only depressing. Just about as depressing as my own inertia and thinking about what a lack of exercise has done to me. What a dilemma!

Then, almost miraculously, *Aerobics*, from Spinnaker, appeared and I found a new, ideal use for my computer. It was love at first sight. My computer would accommodate my schedule, my preference for exercising at home, and my revulsion at looking at bodies real people never achieve. I knew I could conjure up genuine affection for the pixelated little exerciser on the monitor. (And I now know why software designers Guy Nouri and Eric Podietz have become folk heroes of sorts.)

This revelation led me to the discovery that a whole new category of software was on its way to the marketplace, and it promised to help computer owners keep fit as they never had before. Personally, I know that I'll soon be able to add exercising to word processing, banking, and budgeting on my list of reasons

why I'd never give up my computer. After reading our cover story, "The Computer as Coach," on page 36, you might find that the same is true for you.

Perhaps I'm most grateful of all for the wonderful new reply I have when I'm asked, "Whaddya do with it?" If your friends are at all like mine, you know exactly what I mean—it's hard to avoid being defensive at this point if you're the owner of a computer. But the situation seems to get better every day, as word spreads of the seemingly unending list of ways computers serve as invaluable daily conveniences.

It's amazing to me that the versatility of the computer has become one of its major disadvantages. Even some computer manufacturers seem perplexed when it comes to designing an advertising campaign. Never having sold a general-purpose product before, they struggle to identify the single motive that would drive prospective buyers to make the big move. But when you think about it, these are the companies that have the greatest difficulty selling their brand. So far, success seems to belong to those who have recognized the full breadth and power of the microcomputer. (For more views on the home computer market, be sure to turn to "Fishing for a Computer," on page 58.)

As for me, I already know what my next computer-related purchase is going to be. A speech synthesizer. I'll let it answer all those, "Whaddya do with it?"s I'm so tired of.

CLAUDIA COHL
EDITOR-IN-CHIEF

Upcoming Features in FAMILY COMPUTING

Buyer's Guide
to Popular
Computer Brands

A Review of
the New Breed
of Powerful,
Easy-To-Use
Word-Processing
Programs

How to Get
a Summer Job
With the Help
of Your
Computer

More Original
Programs

June Issue
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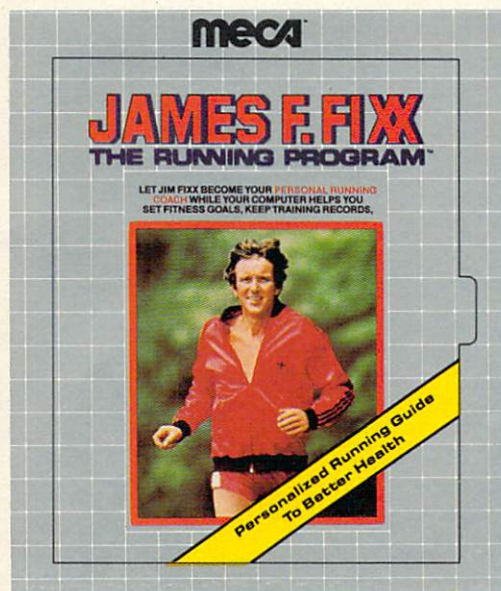
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LETTERS

IN DEFENSE OF ADAM

I would like to comment on your article about the ADAM computer (January 1984 issue). First, the digital data drive has 500K storage capacity, not 256K. Also, I read an article in a local newspaper that noted the same problem with the screen display—a wavering picture that caused all the words to blur. They solved the problem by changing the 15-foot cable connecting the television to the computer with a quality 1½ foot cable—and got an excellent picture. It seems the original cable acted like an antenna (high loss)!

In conclusion, I would like to thank you for printing programs for the ADAM. As far as I know, you are the first. Keep up the good work!

TOM TISBY
San Leandro, CA

EDITOR'S NOTE: *With two digital data drives the ADAM has 500K storage capacity. However, only one drive is currently available, limiting capacity to 256K.*

Your review of the ADAM computer was clear, concise, and to the point. However, I feel that writing "the

startling noise level . . . extremely slow . . . seems susceptible to breakdown . . . etc." is going way out on a limb.

After all, what can one expect in a low-cost printer? One cannot buy top-of-the-line for bottom price.

My point is this: When a statement is made such as "light construction" or "extremely slow," please state what you are comparing it to.

GEORGE M. KNOCHER
Lakewood, CO

99'ERS—HERE TO STAY

Thank you for your invitation to your wonderful magazine. I have received the January issue, and I am very pleased with it. I am happy about the inclusion of programs for the TI-99/4A. Not many magazines include much for the 99'er enthusiast, maybe for fear that when Texas Instruments dropped their home computer line the 99'ers would fade into oblivion. Not so! We are here to stay, thanks to the International 99/4A Users' Group. Well, back to reading your wonderful magazine.

STEVE COLTEY
Mayfield, KY

COMPUTER COVERAGE

Thanks for "Better Safe Than Sorry" (February 1984), and for focusing on the growing importance of computer insurance. We'd like to add, since other insurance companies were identified, that SAFEWARE coverage is underwritten by Fireman's Fund Insurance Company. Also, SAFEWARE, The Insurance Agency Inc., is no longer connected with Columbia National General Agency. We've separated in order to specialize in computers. Thanks also for featuring our clients, the Hemmings of Pasadena.

DAVID K. JOHNSTON,
Chief Operating Officer
SAFEWARE
Columbus, OH

A PRIZE FOR ALL SEASONS

Thank you for a very timely magazine. FAMILY COMPUTING has fit many of our needs at opportune times. My first grader, Jenny, needed a costume for the school's Homecoming Parade, and your costume (October 1983 issue) was the perfect choice. The Homecoming Parade was rained out but she wore it for the Hallow-

AN ORDINARY DISK
CAN TAKE YOUR
BUSINESS AND
ZAP NOISE BO
FOR FINE DAD.



A well-calculated costume: Jenny Gable (far right) wins two awards for her computer costume.

een parade and won prizes twice.

The articles about preschoolers and computers and the programs for preschoolers (November 1983 issue) were very helpful in aiding our own two preschoolers with the computer.

The software reviews are always helpful and now, just as we are seriously considering buying Logo and a graphics tablet, your latest issue (February 1984) arrives and offers extensive reviews on both.

I don't believe I have ever gotten so much helpful information from one

magazine in such a short time.

Thank you for a fine magazine.

MRS. NANCY GABLE
Mt. Carroll, IL

THANKS FROM AFAR

As an avid "computer person," I find your publication to be by far the best of its type—for the family and for all others interested in computers. My junior high schools (I'm a teacher/librarian) find the programs excellent. And, as a proud father of a darling four-year-old, I found the No-

vember issue on "Preschool Computing" most appropriate.

STANLEY G. LAITE
Newfoundland, Canada

CORRECTIONS

In a chart accompanying "A Database Reunion" (February issue), we incorrectly stated that Easy Filer, VisiDex, and VisiFile are available for the TI-99/4A. Versions of Easy Filer and VisiFile are instead manufactured for the TI Professional; VisiDex is not available for either.

In a chart accompanying the "Buyer's Guide to Modems" (March issue, page 64), Anchor Automation's Mark XXII modem appeared incorrectly as the Mark XII. Its features should have been listed as AA/AD/M/R, and the retail price as \$399.

The photo credit for "B-17 Reunion," in the January issue, was mistakenly omitted. Pat McKenrick took the photo.

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

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S.A.T. Math—consists of 2 discs for algebra and 1 for geometry.

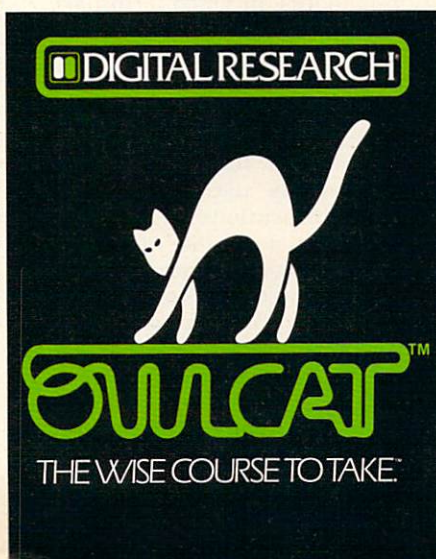
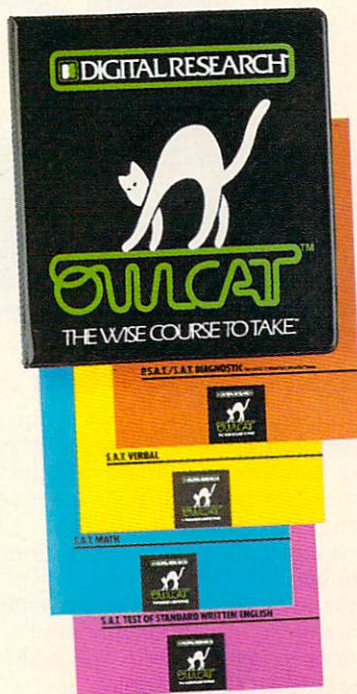
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BEHIND THE SCREENS

PEOPLE, NEWS, AND TRENDS

EDITED BY BILL CAMARDA

Silicon Valley Life

Silicon Valley, the 30-mile-long strip of Northern California at the heart of the computer revolution, is often heralded as a prototype for the America of tomorrow. But some Silicon Valley residents are having a tough time adjusting to the fast-changing world they live in today.

"Perhaps the most profound impact is in the deterioration of interpersonal relationships—marriage and family." So says Dr. Judith K. Larsen, coauthor of the new book *Silicon Valley Fever*.

Larsen found residents excited about working in a state-of-the-art industry. "People feel their contributions are really appreciated. There's a real sense of working together. And they seem to really believe in the technology." But this exhilaration has, for many, come at the expense of life outside the workplace. In 1980, there were more divorces than marriages in Santa Clara County. Many parents spend "incredibly low" amounts of time with their children, Larsen says. Some of the kids have responded by turning inward, and by living the same kind of fast-paced, success-oriented lives as their parents.

When they fail—and inevitably, some do—the traditional supports of family, church, or community are often absent.

Larsen found almost no community involvement among her interviewees. Some said they had no spare time; others simply didn't care. The affluent Silicon Valley trailed depressed areas like Akron, Ohio, and Newark, New Jersey, in United Way donations. Yet there is need, especially among the poor who work in over 200 illegal sweatshops that serve the electronics industry.

If Larsen is right, high-tech areas across the country would do well to invent not only new products, but new ways to humanize themselves.

Silicon Valley Fever, written by Larsen and Stanford University Professor Everett M. Rogers, is available for \$19.95 from Basic Books.



Today's farmer may start the day at a computer, using teletext to check wheat prices, weather reports, and seed catalogs.

Home on the Farm

The modem is a newcomer to the family room. But for the past three years, farmers in Canada and parts of the West and Midwest have been relying on a sophisticated telecommunications network to help them work the land. One particularly advanced system, called "Grassroots," provides a host of services to farmers with specially equipped IBM PCs, Apples, Commodores, or video terminals.

In regions as remote as the province of Manitoba, farmers can get the latest scoop on everything from wheat prices on the national exchanges to the next day's or week's weather forecast.

"Grassroots" uses a novel telecommunications system called Telidon, which, unlike many of the current network services available, allows for the transmission of elaborate graphics as well as text. Farmers can refer to weather reports with actual line maps of a given region. They can breeze through an electronic mail-order catalogue featuring illustrations of the various

seeds and supplies available.

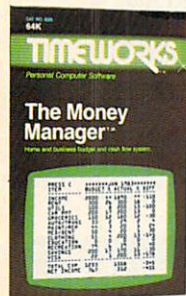
As Telidon's agricultural network finds its way into more and more remote regions, it promises to cut down on the isolation and cost that have been part and parcel of life and work on the farm. —KEN COACH

Give 'Em Health

Do you smoke? Drink? Wear your seatbelt? The traveling computer asking these questions isn't being nosy; it's part of the Rhode Island Department of Health's campaign to get individuals to improve their health habits.

A microcomputer, a computer operator, and a health educator team up in a customized van dubbed The Wellness Wagon. They travel around Rhode Island administering a 48-question computerized health-risk assessment to people in any organization that requests them. Questionnaire answers are typed or optically scanned into the computer. The machine then congratulates participants when they've demonstrated good health habits,

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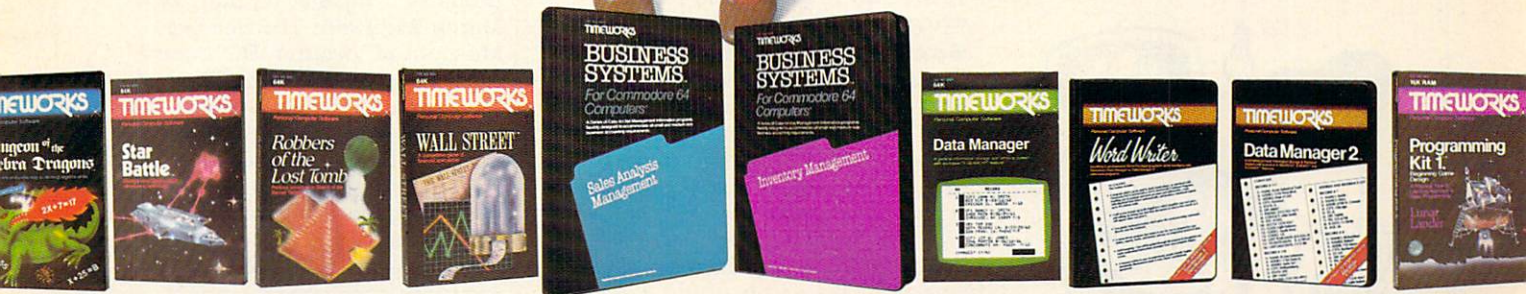
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BEHIND THE SCREENS

and offers gentle chiding and tips when they haven't. Clients take home individualized printouts that supplement a state booklet on personal health.

Rhode Island's Office of Health Promotion has provided the *Wellness Check* software package to about 80 health agencies, hospitals, and doctors. The basic package sells for \$250 and runs on the Apple II, II plus, IIe; TRS-80 Models II, 12, 16; and IBM PC and XT. A Spanish translation is also available. *Wellness Check* comes with a manual replete with tips on making the program work in your community. To find out more, write to Louis Marciano, Rhode Island Department of Health, 75 Davis St., Providence, RI 02908, or call him at (401) 277-2853. —ROBIN RASKIN

For All the Chips

An Apple IIe is competing in this year's World Series of Poker, now underway at Binion's Horseshoe Club in Las Vegas.

Programmer and "Mad Genius of Poker" Mike Caro claims his poker program can beat anybody. "It doesn't get emotionally involved," he's said. Caro, a world-class player, has programmed all he knows about Texas hold'em poker into his Apple IIe—including the fine art of bluffing. Soon, he says, you'll be able to buy an equally sophisticated home version.

If a computer can play poker, some expert players have wondered, why couldn't it cheat? To answer that complaint, Caro may use a human dealer and a special deck that can be read into the computer with a supermarket-style optical scanner.



Several recent world champions have taken him up on his challenge. Another top player, Bob Stupak, has offered to gamble his Rolls-Royce in a separate match against Caro's computer. Caro, who doesn't own a Rolls, says he'll let Stupak sledgehammer his Apple to smithereens if it loses.

Nibbles

Computer Authority Syndrome:

As businesses computerize, some are finding that people are more willing to believe financial estimates done by computer than those done traditionally. Stephen Caswell, an associate of International Resource Development, Inc., a Norwalk, Connecticut, research firm says as computers become more common, the syndrome will fade. And, in fact, some computer-generated information is better than the hand-prepared data that preceded it. Still, don't believe everything you read on a printout. Remember the old computer adage: Garbage in, garbage out. . .

Post Office Goes Electronic:

The Source now offers the U.S. Postal Service's E-COM (Electronic Computer-Originated First Class Mail). You write your letter on your computer, send it via modem, and within 30 minutes, the post office prints it out, puts it in an envelope, and mails it first class. The Source charges \$1.35 for the first page, 25 cents for the second, including postage. . .

Computer Booklist Skyrockets:

If you thought there were a lot of computer books already, just wait. According to a survey by Computer Publishing & Advertising Report, the 15 leading computer book publishers produced 466 books in 1982, 890 in 1983, and plan a whopping 1,542 for 1984. . .

Boxtoppers: Remember collecting box tops for prizes as a child? Now Post Cereals and Atari are reviving this lost art as part of their "Catch on to Computers" program, in which any school-related group can munch its way to computers, peripherals, or software for the classroom. To get an Atari 800XL, you'll need proof-of-purchase seals from about 1,500 giant economy-size boxes of cereal, but there's software and blank floppy disks available for much less. The program runs through June 30. Write: Catch on to Computers, P.O. Box 3445, Kankakee, IL 60902. . .

(Exhi) Bits and Bytes

From the family room to the factory floor, computer chips are changing the way we live and work with each other. "Chips & Changes," a major new museum exhibition, aims to show how, by using computerized exhibits, robots, film, and live people.

Visitors will see how chips are created, "brought to life" through software, and then put to work in almost every conceivable setting. But the exhibit's real goal is to make us think about how this technology affects us.



How does your voice look? "The Speech Dissector," a museum exhibit at Chips & Changes, can show you.

Housed at San Francisco's famed Exploratorium through May 10, "Chips & Changes" will visit eight more science museums from Dallas to Boston in the next two years. The exhibit, which was developed by the Association of Science and Technology Centers, moves to the Oregon Museum of Science and Industry in Portland, June 9 through August 5.

From there, it will travel to The Science Place, Dallas, TX, Aug. 25–Oct. 21; The Science Museum of Minnesota, St. Paul, Nov. 10–Jan. 6, 1985; The Museum of Science and Industry, Chicago, IL, Jan. 26–March 24, 1985; The Science Museum of Virginia, Richmond, April 13–June 9, 1985; The Museum of Science, Boston, MA, June 29–Aug. 25, 1985; Franklin Institute Science Museum, Philadelphia, PA, Sept. 14–Nov. 10, 1985; and North Carolina Museum of Life and Science, Durham, Nov. 30, 1985–Jan. 26, 1986. ☐

If you've got a good bite-sized piece of computer-related news involving people, trends, or innovations, let's hear it. We will pay \$25 for each item we publish. Write to Behind the Screens, c/o FAMILY COMPUTING, 730 Broadway, New York, NY 10003.

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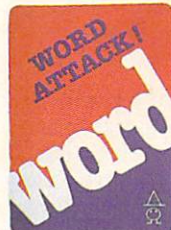
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HOME-SCHOOL CONNECTION

PARENTS AND TAXPAYERS!

FIVE TOUGH QUESTIONS TO ASK YOUR SCHOOL BOARD

BY JEFF BALL

While there are all kinds of promises about how much microcomputers are going to help the education system in America, there doesn't seem to be much information around about how this will happen. The rapid development of the microcomputer and all of its marvelous software is causing considerable tension among parents, teachers, and school boards. How does the board make decisions about how its school system should use microcomputers? How do parents know what to expect from their school system?

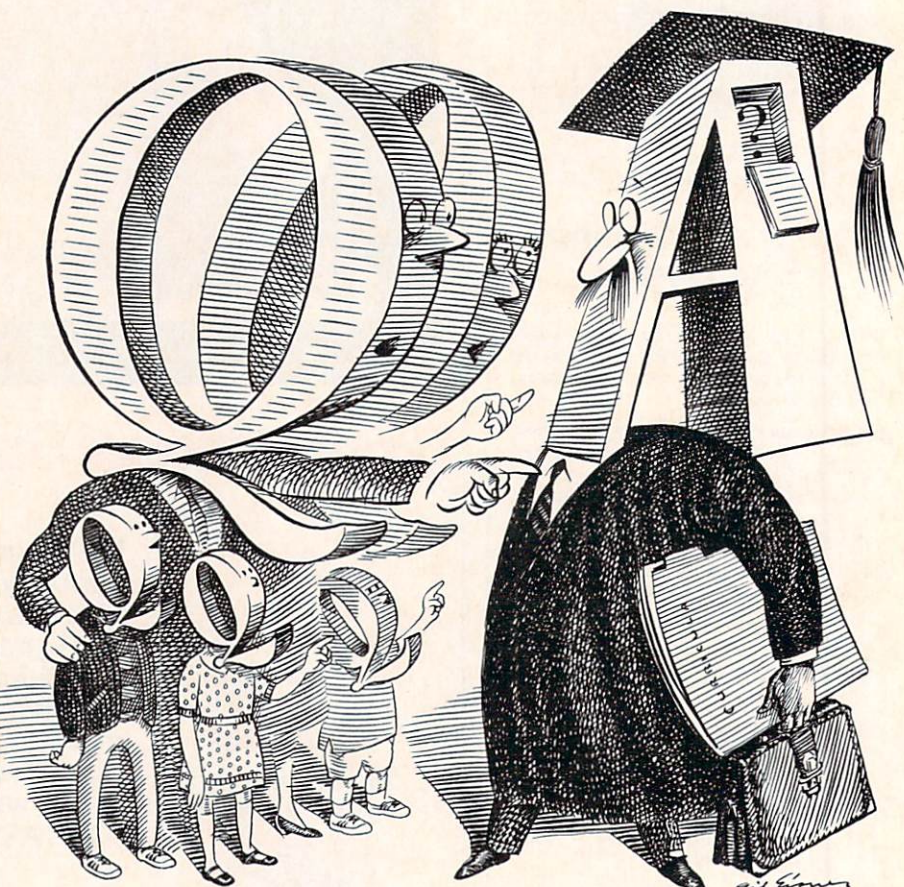
Parents want the best for their children, and taxpayers don't want to spend any more money than they have to. Further complicating this difficult situation are all the "experts" giving advice. The advice, of course, varies from expert to expert. The school boards in this country definitely are in a dilemma.

CHASING A RED HERRING?

In the past few years, businesspeople have learned that before establishing a microcomputer system in their organization, they must answer these three questions in order: What do we want to use the computer for? What software is available for the task? What hardware is best suited to run that software?

Many school systems across the country, unfortunately, are trying to answer these questions in reverse order. Consequently, some schools are making costly mistakes by buying hardware first, and then discovering that the computers aren't ideal for the software they wish to use.

JEFF BALL, who lives in Springfield, Pennsylvania, is a frequent contributor to FAMILY COMPUTING. His last article was "The Computer: A New Tool For the Garden," in the March issue.



It's often easier to choose hardware than software. Marketing blurbs are rarely informative enough about a software package's capabilities. Understanding how to use the software in the classroom is even harder. Moreover, hardware is often more alluring, much like foreign policy excites some politicians more than tough domestic issues.

Not knowing how to effectively use computers in the classroom puts the school boards and school administrators in a very difficult position. They know they had better move into the computer age, but no one is readily available to tell them how to integrate computers into their curriculum. Only with that information will they be able to select software.

By initially focusing on the "best" hardware, they're probably chasing a red herring.

ASKING THE RIGHT QUESTIONS

Parents' struggles match those of the school board, trying to figure out what's best for their children. In a situation like this, it sometimes helps to ask some more general, long-range questions. Even if the answers don't come quickly, these questions will at least give parents, teachers, and school directors a common focus. Based on my own experience with my community's school board, I'd like to propose a series of questions that I think parents should ask their school boards:

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How to Choose Software for Your Home

"As an educator with over a decade of experience using computers with children, I've found there are key features in a well-designed learning game. One is *extendability*.

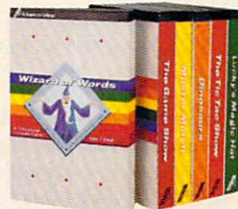
Look for enough variety to hold your child's attention over time. Some games are appealing in the short run, but are quickly mastered. Supplementary materials such as disks of added lessons can continue your child's interest and enjoyment.

The ability to modify a program is another form of extendability. Authoring systems can let you create lessons on your own topic areas for any age level and allow children to create and save original work, giving a sense of completion and pride vital to learning."

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HOME-SCHOOL CONNECTION

1. Have you thought about how microcomputers will be used in course work from the first grade through the 12th grade—or is the curriculum random?

Most high schools today offer some kind of computer course. Unfortunately, the majority of these courses spend some time teaching students how to program a computer. Current studies show that less than 10 percent of the people who will be using computers in jobs need to know anything about programming. Because we don't know yet what else to do with the microcomputers, we are teaching programming. But there are an increasing number of ways that the microcomputer can help teachers in all kinds of classes—from English to social studies to science. The computer curriculum must include more than programming, and it should progress naturally from grade to grade, and from school to school within the same system.

2. Has the school board thought about encouraging teachers to learn about computers and how they might be used in teaching?

Like many school computer courses, teacher-orientation programs often introduce the rudiments of programming, but don't give teachers enough practical information about how the computer can be used for teaching. I believe that every school system with sufficient finances should have one or two computers available for lending to teachers. That way, the teacher can take the computer home and spend time alone learning the basics. This approach has worked very well with professors at Stanford University. After all, no teacher of computer courses can try out all the new educational software during school hours. Furthermore, if the teachers are afraid of computers and know nothing about how they work, then students aren't going to get the best support in developing their attitudes and skills.

3. Has the school board made appropriate computer-related magazines available to teachers and students?

While books are helpful for background information and in-depth studies, magazines are the primary source of computer information. Magazines are more timely than books in their coverage of this fast-

paced industry. I believe that every school system should be receiving several magazines. There are some written for young children, some for adolescents, others for teachers and administrators, and still others for anyone interested in computers. Some are general in their coverage, while others deal exclusively with the equipment and software of a specific brand of machine. Teachers should have access to these magazines for use in their classrooms, and to browse through in the faculty lounge. Students should be able to read these magazines in the library and use them in classes dealing with computers.

4. Has the school board pursued new sources of revenue to fund its computer program?

A computer program is expensive. It requires new money at a time when taxpayers resist all new expenditures. Many school boards, however, are struggling to implement computer programs using funds from existing revenue sources, such as various local taxes and state government subsidies.

A school board might consider instead new channels of funding within its community. Organizations such as the Lions Club, Rotary Club, garden clubs, volunteer firemen, Boy Scouts and Girl Scouts, and local business associations have extraordinary resources they could mobilize to raise funds for a school's computer program.

5. Does the school board have a subcommittee assigned the important task of looking into the future to prepare for difficult policy decisions?

School board members can't expect to keep up with the rapid developments in the computer field. At the same time, these developments will constantly present the school boards with difficult policy decisions that require careful consideration and review. I believe each school board needs a subcommittee, made up of one or two of its members and outside expert volunteers. It can grapple with potential problems before they become hot issues needing immediate attention. Following is a list of the kinds of issues I believe are within a year or two of becoming problems for many school boards:

RESEARCH BY MODEM. On-line information services, such as CompuServe and The Source, are growing

rapidly. For someone with a modem and a personal computer, these services can often offer more information than any single library. And that information is available in their home. Will the school's libraries receive modems so that students can access information services for their school-related research? Along the same line, will students be taught the "search" techniques needed to effectively use these on-line information systems? Such skills will keep down the costs of using an on-line system. The faster you find your piece of information, the lower the cost.

HOME SCHOOLING. The number of educational software packages will increase tremendously in the next five years. Some analysts forecast that more than 70 percent of that software will be purchased for home use! Are school boards thinking about how they will respond to parents who ask if their children can take a course on their computers at home—and receive full credit from the school system? Requests for release time and credit for outside work can be anticipated.

PREPARATION FOR COLLEGE. More and more colleges are adopting policies that require incoming freshmen to own personal computers. Are school boards adjusting their curricula to adequately prepare students who will be attending those colleges? Have they included courses on Pascal, a programming language, in their curricula? Pascal is the language used in the Advanced Placement computer science exam, which high school students take to receive college credit.

NO EASY ANSWERS

These questions are all very difficult to answer. Probably the most important question a parent should ask is: Has the local school board asked any of these questions yet? If parents and administrators don't ask them, we'll never deal effectively with the problem of introducing microcomputers into our school system.

You'll notice that none of these questions deals with choosing hardware or software. Those are important decisions, but I believe long-range, big-picture planning should be considered first. Then the software and hardware decisions will be more appropriate to the needs of the specific community—and probably less expensive for the taxpayer. **FC**



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HOME BUSINESS

BUY LOW, SELL HIGH

An Inexperienced Young Entrepreneur Turns Planning and Persistence into a Healthy Profit

BY JEREMY SCHLOSBERG

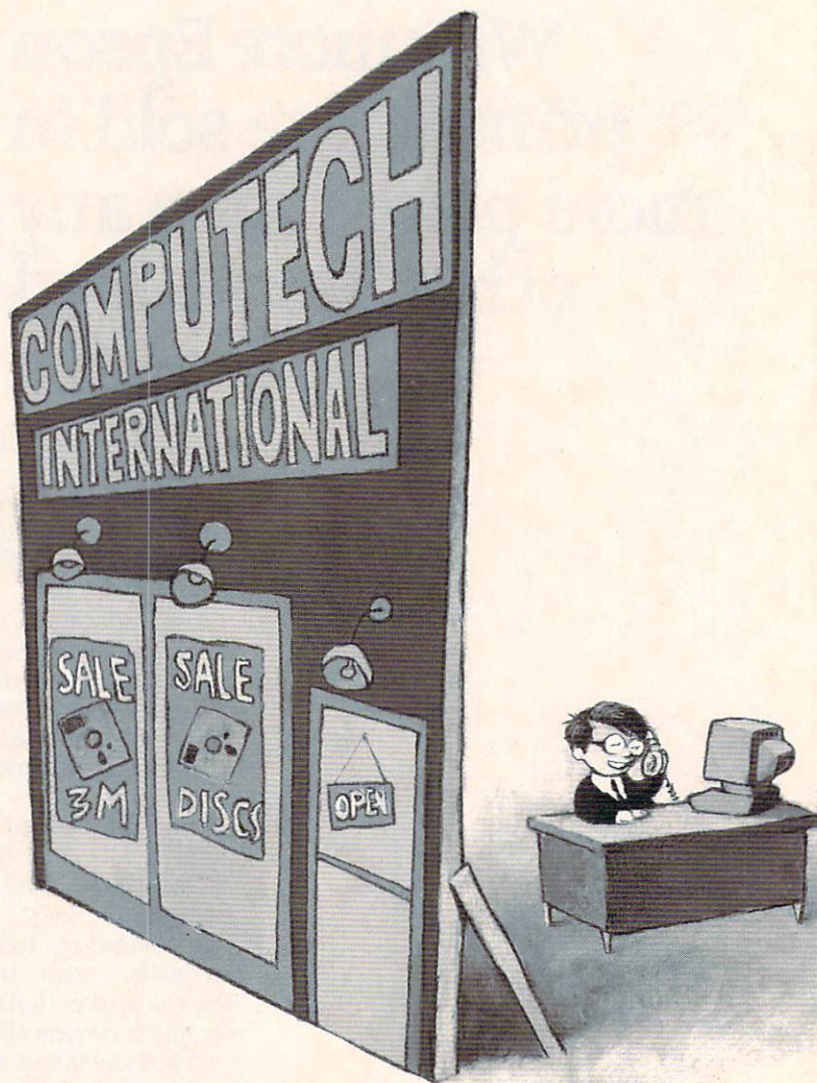
Many people doubt that fairy tales exist in the modern world. But even in today's complex hodgepodge of new technology, such tales do emerge. Here's one now, called "The Entrepreneur":

Once upon a time, an independent businessperson started a company with minimum capital and minimum risk. Under his watchful eye, the business flourished—so much so that the entrepreneur was able to sell the venture to a larger company for a great profit, a prestigious title, and an ongoing percentage of the company's earnings. The entrepreneur, satisfied for the time being, proceeded on to bigger and better things.

This modern-day self-starter, Larry Glazer, of Chestnut Hill, Massachusetts, sold his one-man computer disk and accessory company, Computech International, to a group of businessmen last fall for a sum far beyond his initial investment. Larry is now vice president and computer-savvy adviser for the company, with customers at Harvard, Brandeis, and Massachusetts Institute of Technology. Now Larry earns a percentage of the profits and is free to devote more time to the other things in his life. Like going to school. Larry Glazer is 16 years old.

A sophomore at the River School in Weston, Massachusetts, Larry is a bright, handsome kid with few pretensions. Like many kids his age, he is interested in, and knowledgeable about, computers. Unlike most of his peers, Larry is taking that interest to the bank. "I think I'm luckier than most people," is the only explanation he offers for his unusual drive and early successes. "I can incorporate my hobby into a way of earning money." His mother asserts, "Larry is out to make money. This was his latest vehicle."

JEREMY SCHLOSBERG's last article for FAMILY COMPUTING was "Giving Up the 9-to-5 Shift" in the December issue. He lives in Ithaca, New York, and writes a weekly column for *Upstate* magazine.



"Latest?" Well, at the age of 10, Larry ran a successful baseball card selling business which, he said, brought in five-figure profits. He's also been a professional model for about five years—with ad credits including Huffy bicycles and a major computer manufacturer. The first venture he "outgrew," the second, he's run out of time for. "When I discovered computers," he affirms, "they interested me more. There was a lot more growth potential there."

BUSINESS BEGINS IN THE HOME

In December 1981, Larry's family bought an Apple II plus, mainly for

his dad to track the stock market and for his mother to use for word processing. Larry became interested in reading computer magazines, and noticed ads for disks, with prices way below those of any local stores. He asked around, found out where people bought their disks and how much they paid, and figured—correctly—that he could buy boxes of disks from mail-order suppliers and sell them locally for prices well under retail. Larry then launched Computech International.

Selling hardware such as disk drives, monitors, and printers can provide high profits, but these peripherals are far more likely to arrive

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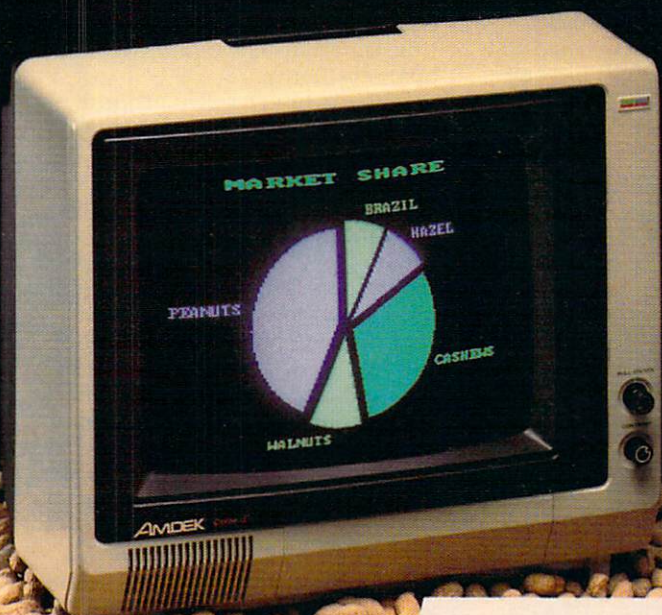
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HOME BUSINESS

with problems. This is one reason Larry chose to sell disks. The other was sheer demand. "There's such a big market for disks alone," he says. Why bother with other items that might only mean more headaches?

In his mind, there was little risk involved. "You already have your telephone and warehousing space (in Larry's case, the basement of his home)," he says, stressing an advantage of operating a home business. "You just need to devote a certain amount of time."

STARTING SMALL

Combining his resources with a \$2,000 loan from his parents, Larry bought his first 300 disks and started selling them, one box at a time, to neighbors and to people in his father's office. (Larry's father, Lloyd, is a stockbroker at Bear Stearns, in Boston.) "I found a distributor who would sell in very low quantities," reports Larry—as few as two or three boxes. "Once I was up to 10 boxes, I found a distributor who'd give me a better price."

To interest a larger portion of the disk-using public, Larry set out to sell three distinct kinds: High-quality for the discriminating user, medium-quality for the average user, and a low-priced brand for bulk users.

"I tried to find popular kinds of disks that were most readily available," he says. For his middle line, for instance, he chose 3M disks. "I knew it was a household name—people recognize it." This simple assumption worked: He sold far more 3M disks than any other kind.

Computech International grew steadily in its first few months. Larry had learned a bit about business during his baseball card selling days; he was now learning much more and never hesitating to ask questions. He drew on his parents' business experience (his mother runs a real-estate company) for hints about inventory control, shipping costs, and record keeping. "I would also discuss things with my [first] customers," Larry said.

Larry's eagerness to learn and to listen to his customers turned into one of two major keys to Computech International's success. "Most other mail-order houses would rather sacrifice support," Larry says. Such companies figure that people will buy anyway because of the low prices. Larry established his business as "the best of both worlds," as he says—with prices nearly as low as mail order prices, along with the

personal support of a local store.

The other key to his operation was simple inventory control. "I tried to keep my inventory at a minimum," he says. Larry never kept more than \$1,000 worth of disks in stock at any time; every time he put in an order from a supplier, Larry had already sold at least half of the merchandise he was to receive.

Still, profits were not instantaneous for Larry in his new venture. "Originally, I sacrificed my own labor," he says. For example, he did all his own shipping. "It was a slow process," he admits. "I used the standard tape-and-paper bag approach." (He did require his parents' help here; 15-year-old Larry needed someone to drive his packages to the post office.)

Now then, a question: How can a teenage businessperson with no track record in the field get credit so he can buy larger quantities of products? Answer: He can't. But Larry's inability to get credit may have been a blessing in disguise: Operating mostly on C.O.D. ensured that he couldn't get far behind financially.

IN SEARCH OF SOFTWARE

Larry learned how to run his business on the family Apple II plus system that has two disk drives and an Epson dot-matrix printer. He helped his father master *VisiCalc*, the popular spreadsheet program, then used it for his own inventory and product pricing. "Of all the things I used," he says of *VisiCalc*, "that saved me the most time."

Although he experimented with several data bases to help prepare invoices and store customer names, Larry never found one he was completely happy with. Larry prefers simple programs, and keeps in mind that computers can't do everything. He found, for example, that putting his relatively small mailing list on the computer actually wasted time. "I've learned the computer isn't really made for certain tasks," he says. "I don't think everyone in business realizes that."

To run a business, Larry says, it's important to know "how to get someone on the phone, and how to talk to them." A polished phone manner got 10-year-old Larry and his baseball card business onto Boston's "Evening Magazine" in July of 1978. It also got his modeling career underway at around the same time. With the time-consuming disk business, though, Larry found less and less time to pursue his modeling.

SPREADING THE WORD

By the end of February 1983, Larry considered Computech International well-established enough to proceed to the next step: advertising. Little could he have anticipated the response.

His first ad, which was professionally typeset, appeared in the March 1983 issue of *Computer Update*, the publication of the 13,000-member Boston Computer Society. Larry never doubted that taking out the ad was the right move. "Of anything I could have advertised in," he says, "that was the best place. Anyone who read the ad was a potential buyer." Larry's business increased by 500 percent from that \$300 ad.

"Everyone came pouring in," says Larry, in amazement. "Every day I got about 10 new phone calls. I lost a lot of potential customers just because there was no one here to answer the phone." Larry's mother says that when she took Larry's calls, she often told the callers that her son was "on the road." She says it didn't sound right to tell people he was in school. Larry's regular dealings with West Coast distributors lessened the problem somewhat—the time difference gave him three extra business hours.

When summer rolled around, Larry figured he would have more time for his growing business. He placed another ad in *Computer Update* in June, and the telephone began ringing at all hours. "We had phone calls at 11 o'clock at night," remembers Larry's father. "And people wanted to come over at that hour." Some people didn't bother calling—they simply sent their orders to Larry, complete with checks.

The ads also hooked Larry up to his most lucrative set of regular customers—many of the major academic institutions in the college-laden Boston area. Starting with a few professors who had seen the ads, the academic sales took off because, says Larry, professors "began to realize that they'd been paying so much for all these years." By the fall of 1983, most of his business was at the local private schools and colleges. By then, he had sold to over 100 different customers, most of whom were repeat buyers.

To keep his prices competitive, Larry kept reading computer magazines and checking the ads of the many different disk distributors. When necessary, he changed distributors, in pursuit of the lowest prices for his customers.

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HOME BUSINESS

SELLING OUT

But signs of the end were in the air. Computech International had grown beyond the control of even Larry Glazer's capable hands. He confesses to being occasionally overwhelmed by the sheer magnitude—"especially during exam period. Some nights I had so many phone calls . . . and three hours of homework to do."

Also, the business environment itself was changing. According to Larry, disk suppliers were beginning to frown upon home-based operations. "I was faced with putting a lot more capital into it, taking in a lot more inventory." As a sophomore in high school, this just didn't seem possible.

For Larry it became a question of whether to shut down operations entirely or to hand over the reins to someone else. The immediate interest he received made his path clear; by mid-fall, Larry had sold the operating interests of Computech International to a group of businessmen who would continue the business in Rhode Island as Data Storage Systems Inc.

In the end, Larry's age turned out to be more of a curiosity than a roadblock; some of his early problems could simply be credited to inexperience—situations involving overlooked orders, late shipments, or advertising foul-ups.

And, as Larry points out, the industry as a whole is very young, filled with people not as bothered by Larry's age as others might be. For example, Larry was at one time approached by 3M in Needham, Massachusetts—they had heard he was the area distributor of their disks. They were surprised to find Larry working out of a stylish suburban house—even more surprised to find out that he was a teenager. But they still wanted him to keep charge of his own company.

Larry's experiences have not just initiated him into the business world, but have taught him some valuable lessons about balancing a variety of interests. "I know the general things about computers—the mechanics, and how things run," Larry says. "I felt in the long run I'd be better off learning business and business management, and combining the two."

A teenager with the initiative to start a business, the good sense to nurture it, and the foresight to know when to sell it: That's a character in a modern-day fairy tale. **FC**

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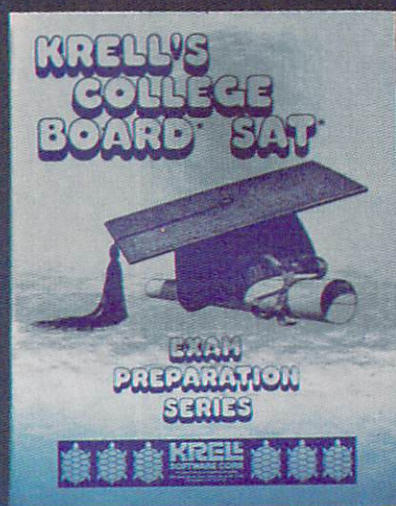
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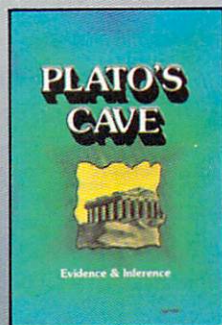
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GAMES

WIZPLUS OR WIZ-MINUS?

Yeas and Nays for a Cheat Program

BY JAMES DELSON

You've been playing *Wizardry*, Sir-tech's role-playing adventure game, for months, nurturing your characters as they progress through the game's numerous levels, fighting dragons, vanquishing ogre lords, and silencing high priests. Each step of your route through the multileveled dungeons that lead you towards the awaiting challenge at the maze's innermost depths has been carefully mapped. You've got little to fear, for your priest can cast spells to cure practically anything; he can even raise the dead from ashes.

Perhaps you've gotten a little cocky or careless, however. One day, you get so involved in the fantasy game that you forget about your real-life dinner appointment. There's no time to walk your characters out of the maze on foot. So you throw a teleportation spell, figuring it should do the trick. But instead of beaming to the nearest elevator, you land in solid rock, and your 18th-level fighter, 16th-level priest, 4th-level samurai, 13th-level mage, 19th-level thief, and 5th-level lord are all killed instantly! All those characters you've taken weeks to develop into hardy voyagers—not only killed, but deleted from your scenario disk! Ordinarily, without a properly updated backup disk (which you should always make, but which many players never bother with) you'd have to start all over again, with fledgling versions of your heroes. But not with *Wizplus*.

Wizplus, by Datamost, is a utility program, a kind of game tool, which fulfills an avid *Wizardry* player's dreams. It allows you to alter your scenario disks and change every aspect of any or all of your existing characters—from name, password, and occupation to race, age, wealth, weaponry, and experience. With it, you can raise the dead (whether they're deleted from your disk or not) and bring "lost" characters out of the maze and back into the castle.

Although it is regarded as a "cheat program" by the makers of *Wizardry*, I've found *Wizplus* invaluable as



a tool for teaching and initiating new players into the wonderful world of *Wizardry*, and as an "insurance policy" against accidents, carelessness, and forgotten appointments. With *Wizplus*, you can endow new characters with levels of experience, prowess, and wealth that would otherwise have taken hours, weeks, maybe months of play to garner.

I've been one of the strong supporters of *Wizardry*, spreading the word about the game's great contribution to the market. When *Wizplus* was released I realized that it, too, represented an important contribution, because of its ability to en-

hance and increase the amount of enjoyment to be had.

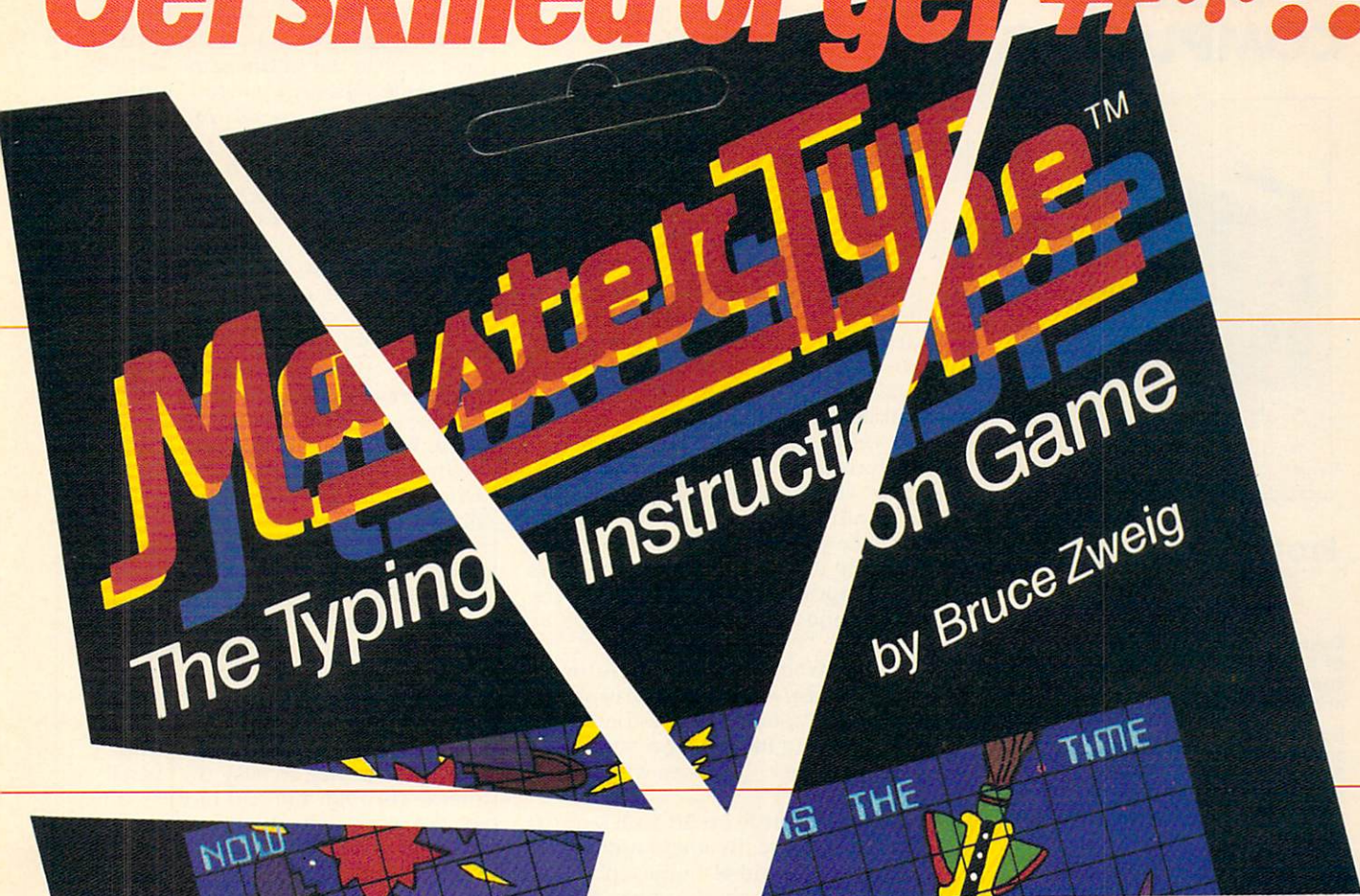
The folks at Sir-tech, however, have taken a dim view of someone else treading on their private gamers' preserve. They now include a warning against the use of *Wizplus* in the first two of their *Wizardry* series.

THERE NEEDS TO BE SOME MYSTERY IN LIFE

"It just stuck in my craw at first because the only thing that makes *Wizardry* different from the competition is that it's uniquely well-balanced," says Andrew Greenberg, one

JAMES DELSON is FAMILY COMPUTING's games critic. Together with his team of gametesters, he often role-plays and orcs-plays 'til dawn.

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GAMES

of *Wizardry*'s authors. "Using a program [*Wizplus*] that magically transforms every character into a superhero destroys the play balance. On the other hand, I'm not going to say that this utility program, or any of the others like it, is bad and evil.

"I believe there needs to be some mystery in life," Greenberg says. He points out that with *Wizardry*, merely winning's not the point. "The play's the thing, and this game was designed to keep you playing despite the fact that you can't win in one, 10, or even 20, play sessions. Victory is always within reach, but always just around the next corner, beyond the next battle. Balance is critical. You create your character, watch it grow, and, if it's hurt or dies, you feel pain. But if you can use *Wizplus* to make your character invulnerable, allowing it to move around the maze with impunity, killing the monsters and taking their treasure, there's no challenge."

Robert Woodhead, who coauthored the *Wizardry* series with Greenberg, agrees. "*Wizplus* destroys the fun of the game. It's like using a shotgun to kill a mouse. It makes winning too easy."


That gives little credit to *Wizardry* players who are dreamers and love the fantasy world of honor and chivalry. For them a program like *Wizplus* can be used to teach, restore

order to a game ruined by a defective disk, or bring wrongly killed characters back to life in the same way as the game's built-in backup utility. For players who are faithful to the game's spirit, to misuse the program would be like fighting a duel with a loaded gun, knowing your opponent's weapon isn't charged.

A POTENTIAL COMPROMISE?

Greenberg backed down a little after we discussed the potential for good that *Wizplus* offers. While remaining opposed to a utility program created by an "outsider" (someone not connected with Greenberg, Woodhead, or Sir-tech), he was willing to suggest some ways in which the utility could be used legitimately.

"If players are considering using *Wizplus* they should wait until they've learned how to play the game without it first," Greenberg advises. "Build up your lower levels, learn fighting technique and how to use the different spells until you've gotten to a sufficient level of character development so that a leap ahead won't make play so easy that you'll breeze through the rest of the game. My real fear about *Wizplus*, you see, is that it will ruin the fun of adventuring. And without the fun, who will bother playing the game?"

There will be controversial utility programs as long as there are computer games, especially those with the magic and popularity of *Wizardry*. *Wizplus* is the first I've encountered, however, so I can only say what I think about its potential uses and abuses. For me, it's a useful tool, when used within reason. I can appreciate the fears of the authors concerning the use of this program. But remember, *Wizardry*'s a game, not a religion (despite the feelings of some enthusiasts). *Wizplus* is meant simply to enhance your pleasure, not to get in your way. Use it wisely, and it will enrich your game. 

NEXT MONTH . . .

In next month's Games column, you'll have the opportunity to become part of a major survey concerning your computer gaming habits. It will be a way for me to get an idea of your likes and dislikes and which games and genres you want to hear more (or less) about. We'll publish the results in conjunction with the year-end wrap-up of the games market next December. —J.D.

GROUND RULES AND TIPS:

1. Don't beef up your characters to the point where they're superhuman fighting machines. As an experiment I tried it, and the game was one big, dull slaughterhouse.

2. Only use *Wizplus* on duplicate scenario disks. Sir-tech has had numerous original disks sent back to them that were ruined by *Wizplus* abuse, and they won't replace software damaged in this way.

3. *Wizplus* won't work on every version of *Wizardry*, so test out your duplicate disks in the store before you buy.

4. Even if you are fascinated by the potential of this utility, don't change all your characters with it. You'll find, after a while, that you may prefer those characters who are "pure" to those helped along by the magical disk.



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COMPUTING CLINIC

CHOOSING A VIDEO DISPLAY/ THREE QUESTIONS ABOUT ADAM/ SETTING UP A BULLETIN BOARD

BY WALTER KOETKE

How do I attach a color monitor to my Coleco ADAM computer? And, is it safe to use fanfold paper with the printer, which doesn't have a tractor-feed mechanism? Finally, what book or magazine do you recommend as a source of programs for the ADAM?

RICHARD PITERA
Fall River, MA

You can attach a color monitor to your ADAM by simply connecting the video cable to the video jack on the monitor. However, you won't get any sound from the monitor, as you do from a TV. To get sound, you can modify a 5-pin video cable, according to Coleco. Or, you might want to have a cable specially made by an electronics shop, and use the auxiliary video jack.

You should have no problem using fanfold paper with the printer; it works fine for other users I've heard from. And, Coleco has announced it will be selling (the date is uncertain) a tractor-feed mechanism to hold fanfold paper.

FAMILY COMPUTING, the first magazine to publish programs for the ADAM, will continue to do so. And, as an ADAM owner, you are entitled to a one-year free subscription to ADAM FAMILY COMPUTING, which premieres in June. Just make sure you've filled out and returned your warranty card to Coleco.

Do you think I should buy a monitor or a TV to use with my computer?

R. LLOYD
Gary, IN

If you don't have a TV available at home, and need to buy a video display, by all means purchase a moni-

WALTER KOETKE was the first to introduce computers to U.S. public schools, linking the Lexington, Massachusetts, system to a mainframe in 1964. He has written for Creative Computing and Microcomputing magazines, and frequently lectures about computers to parents and educators.

tor. The cost of a monitor is comparable to that of a TV, and the resolution is generally much better.

If your applications require color, then you can consider either an RGB (Red-Green-Blue) monitor or a standard composite-color monitor. Although the RGB monitor produces a superior color image, I doubt whether that image justifies its cost for most home uses. Generally, RGB monitors are twice as expensive as composite-color monitors.

If your applications include a significant amount of text-oriented tasks, such as word processing or spreadsheet work, then you will be better off with a monochrome (one-color) monitor. Unlike color monitors, which are usually limited to 40-column text displays, monochrome monitors can display 80 columns of text. I suggest a green- or amber-on-black monochrome monitor. Both seem easier on the eyes than a white-on-black monitor.

Two notes of caution as you shop for monitors. If at all possible, try the monitor you're considering with your computer, or one just like it, before you buy. Many monitors work well with some brands but not with others; and many work well with a 40-column display but become illegible with an 80-column display. Second, in my opinion, price is not a very reliable indicator of monitor quality. Some of the lower-priced units seem to perform better than the higher-priced brands.

If you were to start a bulletin-board system, would that mean you couldn't turn off your computer or play any games?

JEFF SPEIDEL,
 Fargo, ND

For a bulletin-board system you need a computer with a disk drive (two drives is almost a necessity), 48K or more RAM, an auto-answer modem to connect your computer to the telephone line, and a program that will operate the system for you. You should definitely assume that while the bulletin board is available to oth-

ers, you can't use your computer for anything else. Depending on the program you use, you may not even be able to use your own bulletin board without calling your computer from another computer. There are, of course, computers that let you do several tasks at the same time, but these are not inexpensive microcomputers intended for home use.

You can certainly stop the bulletin-board program whenever you choose, and then use your computer to play games or whatever else suits your fancy.

Before investing the time and money required to start a bulletin-board system, I suggest you use some of those that are already available. First, become familiar with one of the major information services, such as CompuServe or The Source. Second, try as many local bulletin boards as you can. This experience will give you a good feeling for which features are most important to you when you select your software.

A third source of information is a local computer users' group. Within a local users' group there is likely to be a great deal of bulletin-board experience that will be willingly shared.

How come a game that requires only 16K memory for a cassette version can sometimes require 32K for a disk version? What's the difference?

ROBERT BILGER,
Kenosha, WI

When you turn on a 16K cassette-based microcomputer, you usually have almost the full 16K of RAM available to you. However, when you turn on a 32K disk-based microcomputer, a large portion of RAM is used for the DOS (Disk Operating System).

For example, on a 48K TRS-80 Model III you would have 48,000 memory locations available if you only used cassette. However, only 38,000 memory locations would be available if you were using a TRS-80 disk program on the same computer. **FC**



If getting the whole family together is a real challenge, maybe you need games that really challenge the whole family.

Ever notice how a little fun with the family can be a little hard to arrange?

Well, now there's a solution—Spinnaker's Family Learning Games. A whole family of great games that make getting the family together seem like child's play. And make "family fun" really seem like fun again. What's more, they'll even help your kids develop some very important skills.

What makes our Family Learning Games so special? Well, for one thing they're

designed to challenge and excite everyone in the family, from grade schoolers to grownups. Their unique combination of chance and strategy makes them perfect for young players, yet challenging enough that everyone will want to play them again and again.

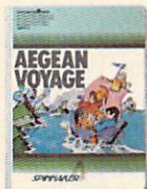
But what makes our Family Learning Games even more unique is how they help kids learn—about problem solving, strategizing, spelling, even Greek mythology. That's

quite a bit more than they'd learn from a typical board game (if you could even get them to play a typical board game).

So next time you want to get everybody together, don't get discouraged—get Spinnaker's Family Learning Games.

You'll find the biggest challenge in family fun won't be on the refrigerator. It'll be on the computer.

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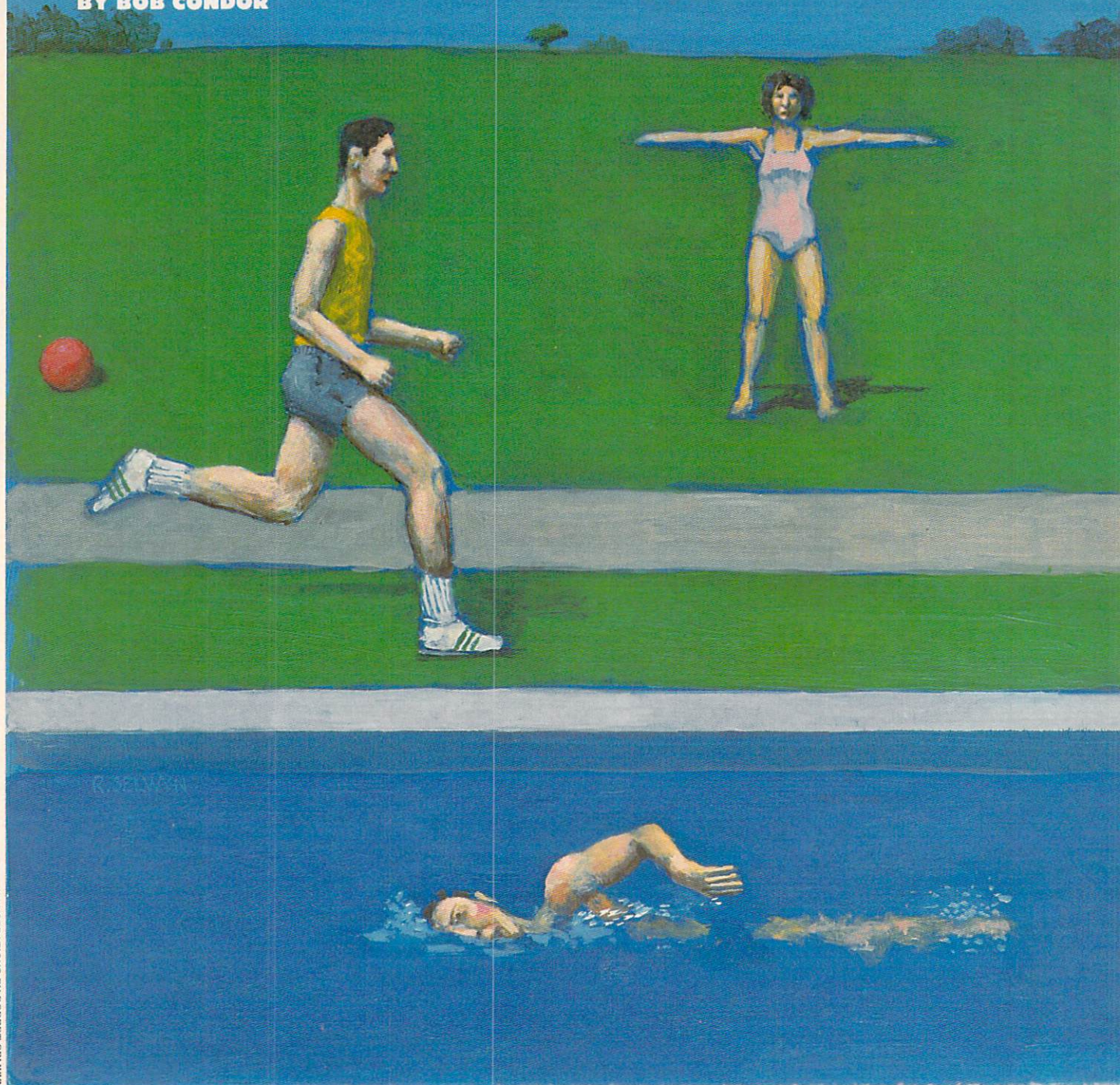
It's a wildly exciting crossword game where everyone has to think fast. More words will help you win—but don't get caught with leftover letters! **Ages 8 - Adult.**

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The Computer as Coach

BY BOB CONDOR

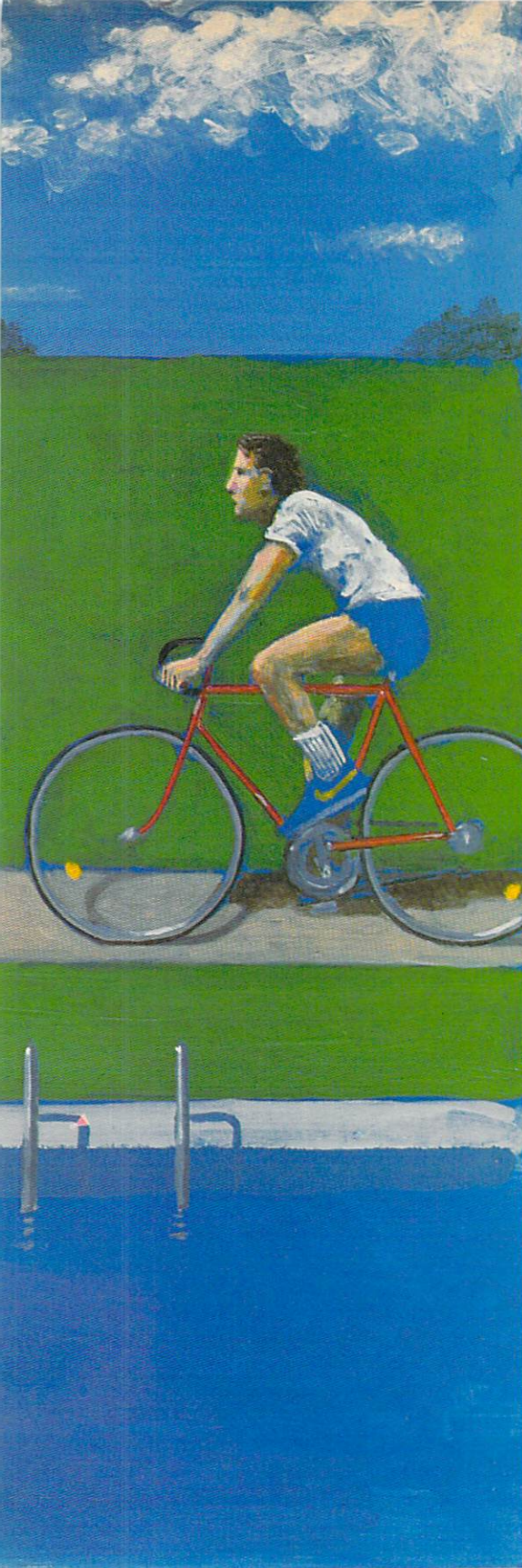


ILLUSTRATIONS BY ROBERT SELWYN

THE NEW BREED OF FITNESS SOFTWARE OFFERS A DOUBLE PAYOFF: THE IMPETUS TO EXERCISE—AND THE DISCIPLINE, FEEDBACK, AND ENCOURAGEMENT OF A PERSONAL COACH

As runners go, Ken Lipnickey might seem pretty typical. He runs as often as his schedule allows, enters several races a year, and like most runners, he swears by the physical and mental joys of the activity.

But there the similarity ends—for Ken also swears by the use of a personal computer to keep track of his running experience and to help him get ready for the next competition.



For the past eight months, he's been experimenting with, and liking, a brand-new software package designed for runners. Yet Ken wasn't always so convinced about the potential of applying a home computer to his exercise routine.

Lipnickey works as a programmer for Micro Education Corp. of America (MECA), a personal software firm based in Connecticut.

About two years ago, MECA undertook a project to create a software package suited to runners, hiring best-selling author Jim Fixx (*The Complete Book of Running*) to head the effort. A year later, Lipnickey, who was not assigned to the project, was asked to test out early versions of the program—strictly as a runner. He had his doubts.

"I was real skeptical at first," Lipnickey recalls. "I couldn't think of anything that could be easier than opening a training log, recording my mileage, and making notes about my run. But once I got into the program, I saw it had many other things that could help a runner."

Some of the "other things" that helped Ken included a personalized running regimen and tips about working out in hot weather. He had been running hard at lunchtime (MECA has on-site fitness facilities) during the dog days of July and early August, and had begun feeling sick. After using the Fixx software for about two weeks, he realized he'd been running much too hard during the hottest part of the day—and that it was actually wearing him out. The computer program advised him to decrease his training mileage, which Ken says was the antidote to his fatigue. Soon, he was running better and feeling fresher.

Besides providing sound advice, fitness-oriented software packages—becoming available for an increasingly wide range of recreational athletes—offer another distinct feature. "These types of programs can provide the impetus to exercise," Lipnickey explains. "It's like the discipline of a coach."

Indeed, the toughest thing about exercising is sticking with it. Many people will react to the urgings of a coach (or trainer) who encourages them to work out more. But, then again, most people don't have the luxury of a personal coach. It's often all too easy to make excuses for missing your regular exercise, although the real reason is probably that you're bored with your conditioning program, uninspired by its results, or both.

POSITIVE REINFORCEMENT

A vital part of any successful fitness program is steady feedback. We all need encouragement about our progress and our potential. Without some form of positive reinforcement, we easily lose the drive and discipline to exercise regularly.

But apathy can turn into renewed enthusiasm with a valuable assist from your home computer and the appropriate software. The computer gives you immediate feedback about your sports and exercise activities. Think about it. You may have to wait months for a project you've been working on to show tangible signs of success, or you may spend a year romancing that certain someone. Yet, after a few workouts, your home computer can be showing you that you're on the way to developing a leaner body, running at a faster pace, or

BOB CONDOR is managing editor of *Sportswise*, a participant sports magazine based in New York. He writes frequently about sports and fitness, and is an avid runner.

**THE COMPUTER
GIVES YOU
IMMEDIATE
FEEDBACK
ABOUT YOUR
SPORTS AND
FITNESS
ACTIVITIES.**

gaining strength and building endurance.

This is all possible because there's an ever-increasing amount of software coming onto the market to record, update, and analyze exercise. (See accompanying article for reviews of some of these programs.) For example, if you are a runner you can quickly determine if you're training too much or too little to reach your racing goals. Or you can simply find out how many calories you burn off when you walk home from work or school. Some of the more sophisticated (and newest) software packages will also predict performance or prescribe a conditioning program based on your individual abilities and needs. There are even a few programs becoming available that will lead you through your daily exercises. This overall collection of software can convert your computer into a "personal coach" for the entire family, accommodating everyone from the avid athlete to the more casual fitness participant in the household.

One promising development is the involvement of sports and fitness experts in the design of some programs, which is like having that person be your very own instructor or coach.

Other software packages on the market stop short of prescribing exercise regimens or predicting performance, but they do offer use-

ful, convenient methods of tracking and understanding fitness patterns.

Tom Walker, a satisfied home user of the fitness program *InShape*, explains: "I was looking for this type of software package for quite a while. I've been fighting a minor concern with my weight for years. The computer is helping me discipline my diet and exercise habits."

Walker, a 39-year-old public relations executive who lives in Alexandria, Virginia, with his wife, Marlene, and two daughters (ages five and 10), also uses his IBM PC for word processing, tracking his family tree, home finances, and educational programs for his daughters. He says fitness software makes sense and it helps. "*InShape* gives me instant reinforcement," Walker says. "I see right away what I've done. And I find a hard copy of my progress to be very useful."

"You could call the computer a crutch in some ways," he continues, "but I would say it's more a way of providing an assist to achieve your objectives."

Regardless of how sophisticated fitness software becomes, or how detailed and helpful it is in analyzing your progress and potential, remember this: It can't do the work for you. Home computers can provide a big boost, a necessary nudge, or that personal coaching touch, but they can't run the miles for you.

THE SHAPE OF THINGS TO COME

A variety of fitness software is due to be released in the coming months. Here's a look at those programs that were available to us for review. Remember that, as with any exercise program, it's wise to check with your doctor before beginning a program of strenuous activity—especially if you're over 35.

Aerobics, by Spinnaker Software, available for Atari 400/800/1200XL, 48K (disk); Commodore 64 (disk); \$44.95. (Versions planned for the Apple and IBM PC.)

Aerobics is a pioneering program with surprisingly few bugs. It's the newest offering from a ground-breaking company, Interactive Picture Systems, which also designed *Paint* and *Movie Maker*, two highly innovative software packages.

The program is the first to actually lead you through an exercise plan—in this case, aerobics. An animated instructor, centered on the screen, leads your workout. The process is modeled after exercise videotapes, with the significant addition of a joystick, which allows you to scan, slow down, repeat, or freeze the program. You can work at your own pace, and not be embarrassed about taking a little extra

time to learn a routine. The graphics are superb; it's quite easy to follow the instructor and see the details of each movement. The documentation also helps here—it explains each exercise and does a good job of describing what constitutes a worthwhile aerobics program.

The program's exercise content is physiologically sound, working you at levels that provide cardiovascular benefit. There's a wide variety of exercise routines, including many that focus on trouble spots like the stomach, hips, and thighs. The beginner can choose from 15 different workouts; the intermediate user has seven options; and those at the advanced level have six. Helpful hints about breathing and stretching flash on the screen at key points, establishing the feel of the computer coaching you along. The warm-up section of the program can be used by all family members before exercising, even if some don't continue on with the rest of the aerobics routines.

Perhaps most important, *Aerobics* is fun to use. It's a refreshing change moving to its jazzy, up-tempo music. And the cool-down has to be heard to be believed—after your workout, you're treated to the peaceful sounds of ocean waves and sea gulls, all electronically produced.

Overall, this program should be a smash with the aerobics crowd.

The Aerobics Master, by Free Lance Ink, available for Apple II/II plus/IIe, 48K (disk), \$24.95.

This package is billed as "a day-by-day log for exercisers." It helps you track several variables of aerobic exercise, including the date, intensity, course or place, distance, time expended, speed, start/end pulse rates, weather, and subjective comments. It also will assign aerobic point values to your daily exercise, based on the formulas of fitness pioneer and author Dr. Kenneth Cooper, who set the modern standard for measuring cardiovascular fitness.

The program is primarily geared for runners, with categories for light training, racing, hard training, and cross country. Other categories are for walking, bicycling, swimming, racquet sports, and jumping rope. If you do something else to attain cardiovascular fitness, you'll have to refer to Cooper's books (or some equivalent) and calculate values for your favorite sport, which can be difficult.

Since it's designed as a log, *The Aerobics Master* has no significant analysis capabilities. Another drawback is that you can only enter one aerobic activity per date, unless you start another day file on a second data disk.

The package is easy to set up, although it seems to run a bit slow when it comes time to enter data. One friendly feature is its ability to print out "scratch pads" so you can keep a record of your fitness activities if you're away from your computer for a couple of days. This program, which its publisher says will be expanded soon, has limited value, over the long run, for the serious athlete. But its relatively low price tag (\$25) makes it an inexpensive way to examine the potential of mixing fitness and floppies.

InShape, by DEG Software, available for IBM PC, 64K (disk) and 96K (with DOS 2.0; double-sided disk), \$95.

The main attraction of *InShape* is its multipurpose design. Individual family members can tailor the program's nutrition and exercise components to their own fitness goals. For example, one person may want to lose weight, while another is interested in identifying which food groups positively affect athletic performance. *InShape* can accommodate both users, along with a large variety of others. It provides for graphic analysis and allows you to enter up to eight different aerobic activities a day.

The nutrition segment, shorter than conventional nutrition programs, analyzes your daily diet for fats, carbohydrates, proteins, and calories. You simply type in what you eat for breakfast, lunch, and dinner, and any snacks throughout the day, with the help of a 1,000-item food dictionary (which includes a section

on popular fast-food menus). A highly useful feature allows you to edit or add to this list, which saves time because you can enter a certain entree, such as lasagna, as one item rather than having to list all its ingredients. Also, you can adjust the unit size of any entry in the food dictionary. (Does anybody drink coffee in five-ounce cups?) If you spend a bit of time customizing the food dictionary, nutrition data entry is a breeze.

The slimmed-down nutrition analysis affords memory space for the exercise section, which assigns aerobic point values, again based on formulas of Dr. Cooper's. You select from 23 aerobic exercises here, including all of the standards (running, bicycling, swimming) and a few unusual activities like fencing and mini-trampolining. An extra is the one additional "option" category left open for your customization.

The versatile application of *InShape* allows you to learn a great deal about how your eating habits interact with exercise. Moreover, you can experiment with different food entries ("Let's see how much fat drops out of my diet if I eat low-cal salad dressing and drink skim milk") and exercise values ("I wonder what walking to work would do for my daily aerobic points?"). Such speculation is hard to duplicate with paper and pencil.

The broad scope of *InShape* does have its drawbacks, primarily due to limited memory space. One such disadvantage is the scaled-down dietary summary left on file for each day; instead of allowing you to look back and see exactly which foods you ate the day of a big race, you'll only get a review of the number of carbohydrates, fats, proteins, and calories consumed.

The documentation is easy to follow and screen excerpts help at times. All in all, *InShape*'s versatility makes it worth considering as a family fitness tool.

The Running Log, by Marathon Software, available for IBM PC and expected soon for the PCjr, 64K (disk), \$39.95.

Any type of runner can benefit from this package, but it's fair to say that the more you run, the more you'll like *The Running Log*. One of the program's features allows you to keep a fairly comprehensive log/journal of your running. Up to 14 different factors (two categories are optional) can be entered for any given run. And it's easy to get a hard copy of this information.

The nifty part of this program is its analytical abilities. You have nine different choices for data viewing, including some categories that will give any dedicated runner happy feet. For example, you can compare your monthly mileage from one year to the next, determine the effect of running on your morning pulse rate, or call up a number of personal records—ranging from the most consecutive days run, to weeks with the highest mileage counts, to



In the Aerobics program, an animated instructor leads you through an exercise workout.

**SOME SOFTWARE
WILL PRESCRIBE
A CONDITIONING
PROGRAM
BASED ON YOUR
INDIVIDUAL
ABILITIES AND
NEEDS.**

months with the highest percentage of days you ran.

Of course, there is one prerequisite for obtaining all this handy data analysis: You must run those miles. In the early months of using the program, you won't find the analysis too exciting. But if you give it some time, you'll enjoy the fruits of your labor.

There are a few problems with *The Running Log*, the most frustrating being that no hard copies can be printed of data analysis besides the detailed log. All the good stuff stays on the computer screen. Another weakness is the lack of documentation in regard to data entry; greater detail would help the first-time user to better understand the program's capabilities and limitations.

At \$40, this program is a bargain for the knowledgeable runner who wants the hard facts, no-frills package.

The Running Program, by Micro Educational Corporation of America (MECA), available for IBM PC and PCjr (enhanced), \$79.95. (Versions for the Apple, Atari, and Commodore computers are scheduled for release later this year.)

This program is an extravaganza for the runner-turned-computer-user. And, for all it offers, *The Running Program* is easy to use. Running author Jim Fixx is the expert behind this software, and his hard work on the project shows.

We examined a "working copy" of the soft-

ware several times, but a final copy was not made available to us by press time. Nonetheless, we saw enough to contend that it will be a big hit with running families. In fact, parts of the program are applicable to general fitness for the family, whether everyone runs or not.

This program begins with a formidable set of tests to determine your current fitness level, something everyone in the family can use. You can determine your pulse rate, heart attack risk, and ideal body weight. Two standard evaluations, the Harvard Step Test and the Walk/Run Test, are administered, along with a highly informative "lifestyle quiz" asking you 50 questions about your daily habits, both good and bad.

Your current fitness level is determined so that Fixx, through the software, can suggest a personalized running program. There's a 30-step running schedule for beginners; more advanced runners will be interested in daily workout regimens for 10 kilometer and marathon training. All of the running programs prescribed are a bit on the cautious side, which is good. Too many people try to rush in their pursuit of peak fitness.

The Fixx software will also predict which distances produce your strongest running times. And of course, it's capable of logging your daily runs and analyzing the data in various ways.

One small but welcome feature of this software is the ability to print anything that appears on the screen, including an extensive section called "The Runner's Consultant." This part of the program provides snappy support material about sports injuries, proper warm-up procedures, suggestions for selecting the right running shoes and clothing, diet tips, and running philosophy.

If you've got runners in the household, and particularly if they've reached various levels of achievement, the money you invest in *The Running Program* will be well-spent.

SOFTWARE TO WATCH FOR

Here's a brief sampling of other fitness software that is scheduled for release later this year. Unfortunately, they were not available for our review at press time.

Healthpath, by Healthpath Associates, available for the IBM PC, 64K (disk), under \$100.

A version of this program, available to health clubs for \$2,500, is already on the market, and the much less expensive home edition is modeled after it.

The basic purpose of *Healthpath* is to prescribe personalized exercise programs to improve your fitness level. The home version can be adapted to any family member. First, you'll go through some simple fitness tests (body fat percentage, flexibility, abdominal strength). The computer then interprets the results and points out your weaknesses.

The exercise prescription will provide sets

SOFTWARE MANUFACTURERS

Anjon Systems, P.O. Box 4278, South Bend, IN 46634; (219) 233-6695

BioTechnology, Inc., 6924 N.W. 46th St., Miami, FL 33166; (800) 327-1033

Computer Software Associates, 65 Teed Dr., Randolph, MA 02368; (617) 961-5700

DEG Software, Inc., 11999 Katy Freeway, Suite 150, Houston, TX 77079; (800) 231-0627

Free Lance Ink, 1806 Wickham, Royal Oak, MI 48073; (313) 280-2634

Healthware, 1504 Leander Rd., Georgetown, TX 78626; (512) 863-6910

Healthpath Associates, 68 Olive St., Chagrin Fall, OH 44022; (216) 247-5298

Knossos Inc., 422 Redwood Ave., Corte Madera, CA 94925; (415) 924-8528

Marathon Software, Box 26 Pinecrest, Clancy, MT 59634; (406) 933-5783

Micro Education Corp. of America (MECA), 285 Riverside Ave., Westport, CT 06880; (203) 222-1000

N-Squared Computing, 5318 Forest Ridge Rd., Silverton, OR 97381; (503) 873-5906

PCD Systems, Inc., P.O. Box 277, 163 Main St., Penn Yan, NY 14527; (315) 536-7428

Spinnaker Software, 215 First St., Cambridge, MA 02142; (617) 868-4700

and repetitions of calisthenics, along with suggested times and distances for aerobic activity. This fitness plan will help you reach predetermined goals, such as an ideal body weight or a lower resting pulse.

The Fitness Game, by BioTechnology, available for Apple II/II plus/IIe/III, 64K (disk); Commodore 64 (disk); IBM PC (disk); TI-99/4A (disk); \$99.95 (extra module is \$49.95).

The *Fitness Game* is designed to help you monitor heart rate, caloric expenditure, and a "Fitness Quotient." It will also record the distance, speed, and time of your workouts.

This all seems like pretty standard fare, but the package offers a unique twist: A heart/exercise module attachment that measures and collects information about your heart rate during exercise, as well as data about your athletic performance. For example, it will monitor your pulse while also counting every step of a run, the cumulative revolutions of a bike ride, or the number of strokes you pull when rowing across a lake. You simply transfer the data from the module to the computer when you return from a workout and the software

takes over, providing a summary of your activity and physical condition.

Master Control Diet and Exercise Program, by Healthware, available for IBM PC, 128K (disk), \$69.95.

This program is primarily aimed at those looking to lose weight. It provides an "exercise scoreboard" that helps track the effect of exercise on your body weight. Once you reach a target weight, the software then helps you maintain your slim look by monitoring your "net caloric intake," which is the total number of calories you eat minus the number of calories burned up by physical activity.

Graphics are available to conveniently scan such data.

There are a few things that will make this program worth considering when it is released. A health quiz is supplied to help you learn more about nutrition, exercise programs, and the dangers of being overweight. A diet guidebook accompanies the documentation and is a useful reference. A curious note is that the company promises behavior modification techniques as part of the software package.

WATCHING WHAT YOU EAT

No fitness regimen is complete without proper nutrition. In fact, there's a nutrition revolution going on in all sports, as more and more teams and players come to understand that athletic performance can be significantly enhanced with good eating habits. In the spirit of fair play, we offer these capsule views of software that helps you set your nutritional game plan.

The programs mentioned here are those with some relevant exercise or physical activity component. There are many more on the market dealing with other aspects of nutrition (see the March issue of FAMILY COMPUTING).

Anjon Nutritional Analysis System, by Anjon Systems, available for IBM PC, 64K (disk), about \$250 to \$300.

Although this program is not yet available for the home market, and will be more expensive than most nutritional software, it displays great promise for the serious recreational athlete. An institutional version is already being utilized—and praised. (Users include four pro football teams and the athletes at the Olympic Training Center in Colorado.)

Anjon takes your body composition (ratio of muscle to fat) and cardiovascular endurance into account when developing a highly detailed analysis of how your eating habits are affecting your sports performance. The program provides tips about which foods help (pasta, rice, whole grains) and which hinder (red meats,

dairy products) your efforts. The overall nutrition plan is aimed at improving body composition, muscle strength, power, endurance, speed, and agility. We haven't seen anything but literature for the home product, but we expect it to be a valuable package if it looks and runs like its institutional predecessor.

Health-Aide, by Knossos Inc., available for Apple II/II plus/IIe/III, 48K (disk); IBM PC, 128K (disk, DOS 2.0); \$79.95.



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DISCIPLINE MY
DIET AND
EXERCISE
HABITS."**

This data base of 800-plus food items has expansion capabilities so you can add your own entries. You can analyze for 33 nutrients, including essential amino acids. A "Personal Data Tracker" section allows you to monitor items of interest, such as your morning pulse or caloric intake levels. Energy expenditures may be calculated for more than 150 physical activity categories. Another feature lets you figure out how much exercise is necessary to offset eating specific foods. (You may find that piece of strawberry shortcake is less damaging than you thought.)

Nutri-Calc, by PCD Systems, Inc., available for Apple II/II plus/IIe/III, 48K (disk); IBM PC (PCjr version expected soon), 64K (disk); TRS-80 Models II/III/4/12/16, 48K (disk); \$129.


This program has a data base of 900 foods, which can be expanded to 1,000 on the Apple. Foods can be coded, and nutrients, as well as foods, can be analyzed when looking at your dietary patterns. Another feature enables you to determine the caloric intake necessary to maintain or lose weight during a specific period of physical activity (the five activity categories are: Walking, sitting, sleeping, standing,

vigorous work). In addition, you can generate customized menus for up to seven days.

The Nutritionist/The Nutritionist II, by N-Squared Computing, available for Apple II/II plus/IIe/III, 48K (disk); IBM PC and PCjr, 64K (disk); \$145 (\$295 for The Nutritionist II).

An expandable data base of 730 items, *The Nutritionist* analyzes your diet for 19 nutrients and makes it easy to examine and develop special diets. One feature allows you to see which food items you need to balance your diet. The program has great potential to be customized, with a little work. *The Nutritionist II* has a larger data base, analyzes more nutrients, and introduces exercise factors into the nutrition analysis.

Total Health, by Computer Software Associates, available for Commodore 64 (disk \$29.95, cassette \$24.95).

This program provides a simplified nutrition analysis with a data base of 150 food items. It looks at calories, as well as sodium, fat, protein, and carbohydrates. You indicate your current weight, weight goal, and activity level to get a quick glance at whether you're staying in shape. 

HOW TO PICK WHAT FITS

If you're considering the purchase of fitness software for the family, here are five basic questions to discuss before deciding on any particular program.

1. What are your needs? Sounds easy enough, right? Well, maybe not. First, you need to figure out who in the family would use the program and why. Then match those needs to the software. Fitness programs represent a new breed; it'll take some research to make sure you're getting what you want. Along with major factors, such as whether the program prescribes exercise, analyzes it, or merely provides for record keeping, you'll want to keep a number of other capabilities in mind. Can the program's data disks be customized for multiple family member use? (Most can.) Does the software have limited print capabilities, leaving you no way to get a hard copy of interesting data analysis? How much data can you file? Do you want, for example, to be able to compare records from year to year?

Do you want nutritional analysis to be applicable to special cases in the family, such as tracking iron needs for teenage girls? Can you fiddle with different food amounts or exercise scenarios to determine what fitness could be doing for your body? The list goes on. Your best bet is to brainstorm with those family members planning to use the software and determine your buying criteria.

2. How easily does the software fit in with your fitness habits? You'll want to pick a program that caters to you, rather than vice versa. If your family participates in a wide range of exercise and sports activities, choose a program that accommodates this variety. In addition, if you do a lot of walking, gardening, or household chores, you'd be wise to select software that enables you to figure in such activity when calculating caloric expenditure.

If you're shopping for programs that actually lead you through an exercise workout, look for routines you'll truly follow.

3. Is the software credible? This answer can be elusive unless you work at it. Read software reviews, talk with friends, look at advertisements and product literature. Learn whatever you can about the program's author(s) and designer(s). If a well-known writer or fitness expert is involved, skim through his or her books.

Finally, if you know something about fitness, by all means use your own expertise when examining documentation and support material.

4. How easy is the program to use? This is crucial for fitness software. Many people may find themselves discouraged by a program that takes too much time to learn and operate. As with any software package, inspect the documentation to get a feeling for what it's like to set up and use. In any case, be prepared to spend a few hours with the program early in the process, especially if it has both nutrition and exercise components. Remember, too, that you'll want to be able to easily get in and out of a program whenever you just want to enter fitness data.

5. How versatile is the software? You should check whether you can edit or add to available data bases to meet your personal fitness needs. Also, some programs offer a wide range of plotting capabilities, while some are quite limited. This may be important when trying to buy one software program to satisfy the entire household. Finally, if you're buying a program that prescribes or actually leads you through an exercise plan, you'll want to make sure the suggested routines are varied enough to stave off boredom.

Computers: For the Suburbs Only?

DOROTHY HARRIS USED TO WONDER ABOUT THAT. THEN SHE FOUND A COMPUTER CENTER IN NEW YORK'S EAST HARLEM.

BY M.S. KAPLAN



Dorothy Harris (foreground) and her son, Kristian

The flyers the kids keep tearing down announce, "East Harlem Has A New Community Computing Center," called Playing To Win. But word gets around, anyway.

Sitting in front of two of the Center's 20 Atari 800 computers—as they often do—are a black woman and her 10-year-old son. They have been coming to Playing To Win for several months now, and are reviewing some earlier lessons before moving ahead. Kristian, the boy, is bored with drawing squares and circles with his Logo turtle. Eager to start something new, he leans over his mom's console as she studies

the screen, and punches in a few commands.

"Quit that, Kristian," says Dorothy Harris, shooing him away from her keyboard. "Go back to your game."

The boy drops back into his chair and fidgets with the space bar on his computer, waiting for his mother to finish. "This ain't no game," he says under his breath.

SERIOUS STUFF

As its name suggests, Playing To Win is no parlor entertainment for computer dilettantes. Located in a windowless basement of the Wash-

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Playing To Win, in the basement of the Washington/Lexington housing project, attracts the neighborhood's computer-curious.



DOROTHY KNEW THAT COMPUTERS WERE "THE FUTURE," BUT SHE DIDN'T THINK THEY WERE HER FUTURE.

ington/Lexington housing project in New York City's East Harlem (sometimes called Spanish Harlem), the mood is strictly no-nonsense. Except for the computer stations lined up against the cinder-block wall, there are few distractions or pleasantries: An odd assortment of computer books and magazines in one corner, a handful of clippings about the Center tacked on a bulletin board, a flyer with Jesse Jackson's photo urging residents to register to vote.

Antonia Stone, executive director of Playing To Win, began the center four years ago as a computer-outreach program for area residents. For as little as \$25 a year, people can become members and come to learn and practice computing almost any time between 9:30 a.m. and 8:30 p.m.

Playing To Win's reputation quickly spread through the Washington/Lexington project and its environs, and it's now frequented by a wide range of the neighborhood's computer-curious—including preschoolers, teenagers, and senior citizens. Special arrangements with area schools let students learn at the center for credit, and computer classes are run in conjunction with nearby halfway houses.

One key aspect of Playing To Win is its emphasis on encouraging family members, such as Dorothy Harris and her son, to learn computing together.

Parents, often alienated by new technology, are fearful of approaching computers, says director Stone. As they watch their children become more involved with computers, a barrier can emerge between parent and child. Stone hopes that by encouraging families to compute together, interfamily relationships will strengthen and grow.

THE PRICE IS RIGHT

Like most computer initiates at Playing To Win, Dorothy Harris knew that computers were "the future" long before she became a member. She saw how banks, hospitals, supermarkets, and government agencies were becoming increasingly dependent on computers. Yet she hadn't seriously pictured herself learning how to program one; she didn't think computers were her future.

But, when Antonia Stone introduced Playing to Win at Union Settlement House's Washington Community Center, where Dorothy works as a Family Health Worker, she decided to give it a try.

Dorothy was encouraged by her husband, Sam Harris, who works with and around computers at Home Box Office (Time Inc.'s pay-TV network) generating cost-analysis reports. Since Kris, a fifth grader, wouldn't be introduced to computers at school until the sixth grade, both parents were eager to have him exposed to the technology sooner. "Besides," Dorothy says shyly, "the price was right."

GETTING READY FOR GEOMETRY

Like most children his age, Kris is comfortable and enthusiastic at the computer keyboard. When he gets the right answer in a drill-and-practice program, he claps his hands with excitement. But, as naturally as Kris has taken to computers, his parents are careful to let him advance according to his interest and ability. Their oldest child, Patricia, a senior in high school, is too busy with her schoolwork and social life to be involved with computers right now, so her parents are careful not to push her, either.

That's because Sam and Dorothy Harris feel that an understanding of computers is helpful—but by no means essential—to their children's future success. Computers provide an edge for a better job, they say, but there will still be plenty of well-paying jobs in the future that won't require computer skills.

"Kris may or may not end up working at a job involving computers," Sam says. "But at least he will understand what computers are and how to use them to expand his mind. By the time he goes to college, he should have learned things from computers that he will be able to apply to other things."

Just as computers don't necessarily guarantee earning power, they aren't a substitute for old-fashioned learning power. "Computers cannot take the place of kids learning to think," says Sam, who forbids his son to use a calculator when he does homework. "I want Kris to know what it really means to add, subtract, multiply, and divide. I want him to grasp the concepts behind the arithmetic."

Dorothy claims that it is the "average" student who benefits most from computers. By accelerating learning, she says, computers help children become *better* students, not *smarter* students. Kris, for example, may not be formal-

ly introduced to the principles of euclidean geometry until high school. But, with his experience drawing triangles, circles, and squares in Logo (an educational programming language), he's already familiar with the concepts of arc, degree, and angle.

"LEARN THE BASICS AND PRACTICE"

Back at Playing To Win, where the Harrises go about twice a week after school and work, Kris and his mother press the keys in unison as they progress through a lesson in BASIC. A gentle, disembodied female voice floats up from a cassette recorder connected to the Atari they're using. "We are now ready to begin programming," she intones.

Kris types in program lines at random—such as PRINT "DOG", PRINT "CAT"—and then runs the program. He likes to see the words appear on the screen, though they're not in any particular, meaningful order. In his eagerness to move to the next lesson, Kris is more concerned with getting the "right answer," as if the computer were an electronic flash card. He also likes the power the computer gives him, as if he were a trainer and the computer a pet doing tricks.

Dorothy, on the other hand, takes time to practice the various statements and commands thoroughly, exploring their full potential. She enters a series of BASIC statements with their numerical prefixes (10, 20, etc.). When she runs the program, the computer displays: "TODAY WAS VERY, VERY HARD. TOMORROW WILL BE HARDER. SATURDAY WILL BE FUN. I'LL GET TO SLEEP LATE."

"I admit I did get tired of making those boxes and circles," Dorothy says, referring to the seven weeks she and Kris spent learning Logo, before advancing to lessons in BASIC. "I'd go over and over a set of instructions until I realized how to do it, until I understood how to get it right. For me, the most frightening thing about computers is forgetting things."

In order to remember her previous lessons, she has devised a credo: "Learn the basics and practice," she emphasizes. "That's how I finally got comfortable making those boxes with Logo and realized I could 'do' computers."

A "BLACK BOX"

For Dorothy, who knew nothing about computers prior to her biweekly sessions at Playing To Win, learning the basics meant first spending a few hours acquainting herself with the nuts and bolts of a computer system. "Hardware, software," she exclaims, gently hitting the computer with her fist. "When I first got here, it was all hardware to me!"

The next step in debugging Dorothy's mystical "black box" notions about computers was learning exactly what computers could and could not do. For many newcomers to Playing To Win, and to computers in general, expectations of computers have been conditioned by TV and the movies. Children and adults are

likely to become frustrated and disappointed that real computers act very differently from those they see on "Whiz Kids," "Knight Rider," and "Automan." You just can't ask the computer any question and get an answer.

But soon enough, users begin to differentiate between hardware and software, and understand that someone has to program the computer to do what they expect it to do. From there, they begin to derive satisfaction when they see the computer perform the functions that they programmed themselves.

Running a program you've designed or mastering a computer language establishes some sense of control and accomplishment otherwise missing from the lives of the economically and socially disadvantaged, says An-

Kristian (center) acts like an animal trainer who makes the computer do "tricks."



tonia Stone. With Logo, most anyone can master a few simple operations within an hour. That's why, Stone says, Logo is the most popular programming language with both adults and children at Playing To Win.

LEARNING POWER, EARNING POWER

The success of his wife's and son's experience with computers has convinced Sam Harris that 1984 is the year to buy a computer for the home. While Sam and Dorothy both enjoy the "fun" of working with computers, they also think that daily access to a computer might increase their earning power.

Sam has always been captivated by the computer's ability to store and retrieve large amounts of data. He plans to use a computer at home to build data bases for custom-tailored financial reports, and he's now teaching himself several business programming languages. Eventually, Sam would like to specialize in designing information systems for both large and small businesses.

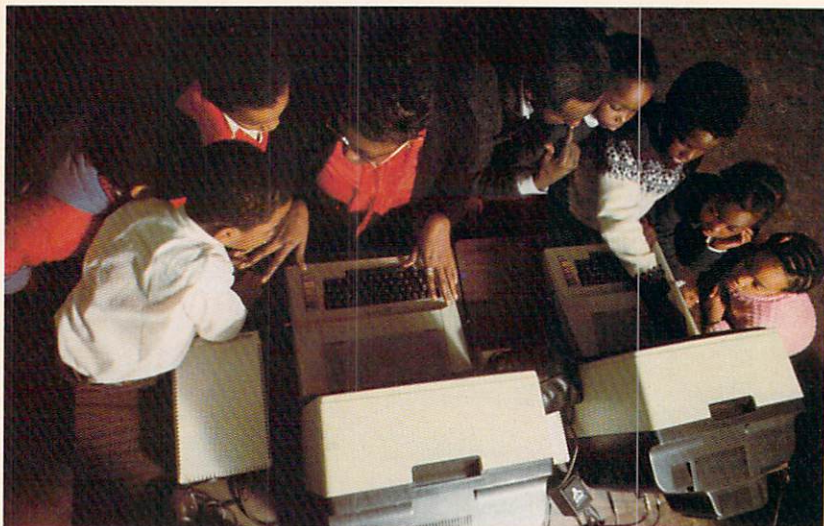
With a B.A. degree from Long Island University, Dorothy plans to return to school to obtain her master's degree in hospital administration. Coupled with her training at Playing To Win, and the practice she'll get from working on a computer at home, Dorothy thinks she'll

have the skills to work in the computing center of a hospital.

Both Sam and Dorothy envision mathematics software as playing a big role in their son's home computer use. But Kris has other plans. He says he wants to program the computer to display the constellations in the night sky so he can watch the stars move in the heavens—if not through his window at home, then on the screen of his computer.

THE COLOR LINE

From the tidy "young professional" couples in computer advertisements, to the electronic voice of Playing To Win's Ataris, the computer industry has directed its marketing to the white middle class. That, at least, is the feeling



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one gets from the Harrises and others who work at or frequent Playing To Win.

Sam, whose employer (Time Inc.) has worked hard to extend computer job opportunities to minorities, is careful to avoid blaming computer companies or employers for any kind of discriminatory marketing or hiring practices. He does say, however, that the people who have worked with computers in the past have been white, well-educated, and affluent. He compares computer marketers to white playwrights, who don't include blacks in the cast of characters unless the play is specifically about or for blacks.

"But that is all changing as more and more minorities become accomplished in the field," Sam says. The explosive growth and demand in the computer industry will, he says, enable minorities to establish positions in society that have been traditionally denied them. Technology will enable individuals to be judged on their abilities, and "employers will begin to see minorities as professionals. And that's all they'll see."

Though this may be true, society will have to change drastically to motivate minorities to acquire the skills that will get them hired. "At first, I thought computers were not for us, but for people in the suburbs," Dorothy says. "My education didn't teach me to branch out, to

PLAYING TO WIN

Antonia Stone, formerly a high school math teacher, came up with the idea of Playing To Win four years ago. On her own, she raised the money to buy three Commodore PET computers; a grant from the New York Community Trust was used to develop original programs and to adapt public domain programs for educational use. The Fortune Society, an organization that works with ex-offenders, agreed to implement Playing To Win as an experiment. It turned out to be a great success.

Then, with a contract from New York City's Department of Juvenile Justice, and with employees trained at The Fortune Society, Playing To Win put in an educational computing center in a juvenile correctional facility. That, too, was successful, and Stone moved ahead with plans to open a computer center in a "financially depressed urban area."

With its track record, Playing To Win was given space by the Union Settlement House, in the Washington/Lexington housing project in East Harlem. Warner Communications gave a cash grant to help in the planning phase, and later donated 20 Atari computer systems and some software. Other grants came from the New York Community Trust, the New York Foundation, the Heckscher Foundation for Children, and the Rockefeller Brothers Fund.


In all, over \$175,000 in funding and "gifts-in-kind" was donated for the first year (1983). This, combined with the \$25 to \$100 membership fees (depending on ability to pay), didn't cover all the operating costs.

To generate income, Playing To Win also operates as a consulting agency helping other correctional facilities and community groups around the country to set up similar centers and programs.

Any group or individual wishing technical assistance in starting such a community-access center should call or write: Playing To Win, Inc., 106 E. 85th St., New York, NY 10028; (212) 650-0229.

desire success. But now we're getting exposure to computers in school and on the job."

Aware that computers may hold the key to better jobs and higher incomes, minorities who can't afford computers are turning to community-access centers like Playing To Win—it's their way to enlist in the computer revolution.

Without such a chance, Dorothy Harris might still think computers are for "the suburbs only." She might not be able to say: "Computers are something we now know we need to know." 



Disk Care: 12 Don'ts and a Do



BY FOLLOWING THESE RULES, YOU AND YOUR FLOPPY DISKS CAN KEEP RUNNING SMOOTHLY TOGETHER

BY MARTHA GORE

Not long after the David Brown family brought home their new computer system, disaster struck.

In the first week, they'd learned to create data files. They'd filled half a dozen disks with their Christmas card mailing lists, telephone directories, medical and automotive expenses, mortgage payment records, and other essential information. With great satisfaction, they watched the information appear on the monitor when it was called up by its file name.

Then came the shock. When the computer was asked for a laboriously created telephone number file . . . the screen remained blank.

With trembling hands, they began to put other disks in the drive. Each one responded properly. What, the Browns wanted to know, had happened to the disk with the phone numbers? And how could they keep it from happening to their other files?

SOME BACKGROUND INFORMATION

A floppy disk looks a bit like a 45 rpm record, and acts a little like a cassette tape. But it's very different from both.

The disk itself is a round platter with a very sensitive, very thin metallic coating on which information can be stored magnetically, one bit at a time. A cassette tape does this also. But, unlike a cassette, a disk can cough up information from anywhere on its surface almost immediately, without passing through everything in between. Disks also pack in data much tighter than do cassettes. For these two reasons, disks are a faster and more efficient way of storing information. But densely packed

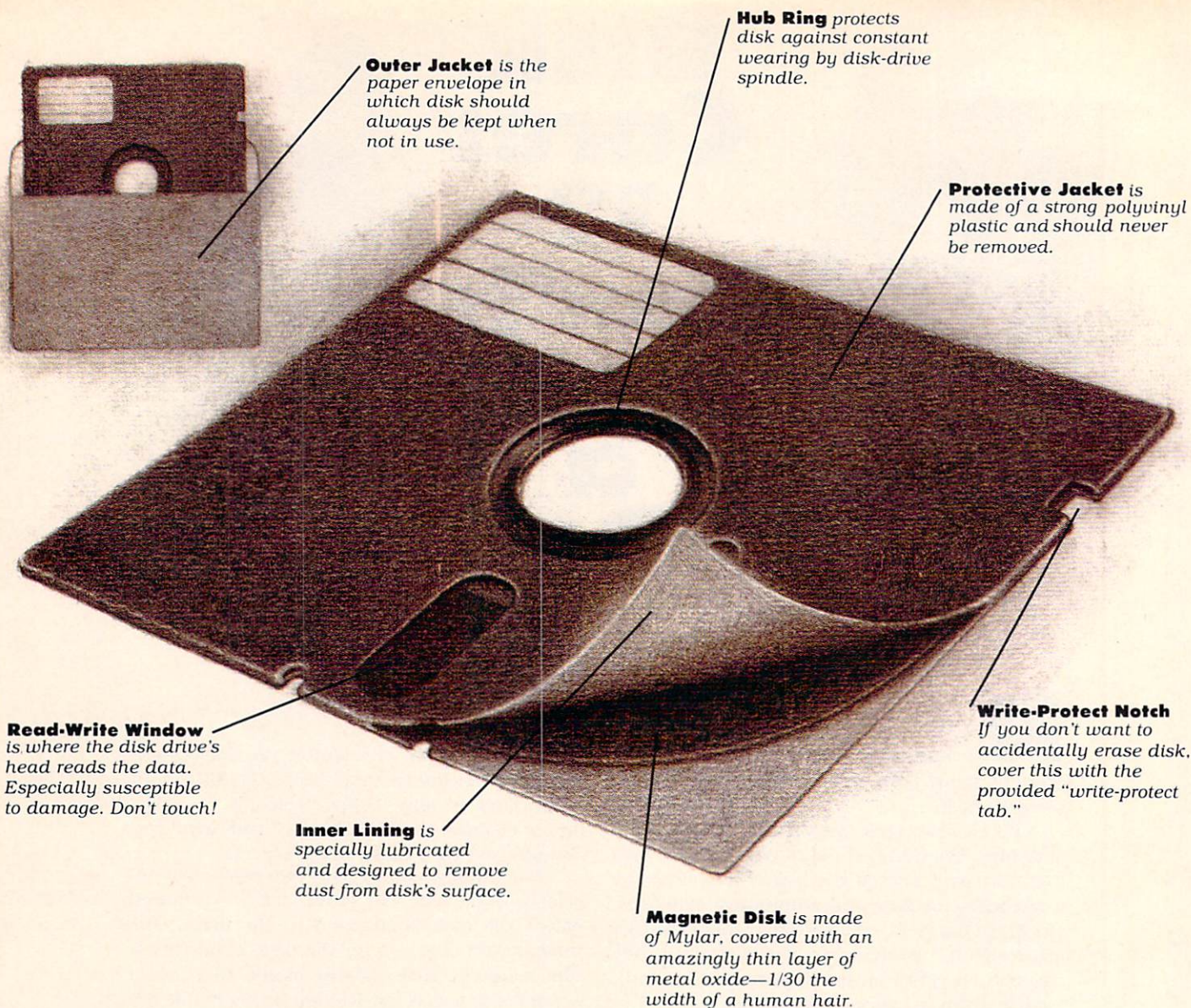
data is especially susceptible to disruption, even by particles as small as 1/50,000th of an inch. This is why floppy factories are kept much cleaner than hospitals, and why you should treat your disks with respect.

Each floppy comes with two protective envelopes or jackets. The outer jacket is removed before the disk is inserted in the drive. The inner jacket remains on the disk at all times. The magnetic disk rotates inside this jacket when it's in use. A low-friction lining inside the jacket helps keep the disk clean by trapping most contaminants.

A damaged disk usually has had crucial information changed, erased, or covered by some foreign substance. If you're listening to a tape, and there's a note missing, you'll be able to make out the rest of the music anyway. A computer cannot do this. One bit missing from the wrong place in your word-processing program can render it unusable. Damage to a disk's directory—the map that tells the computer where each block of information on the disk is located—can keep the computer from finding anything at all.

Sometimes a disk will be warped, making it run unevenly in the disk drive. In such a case, even though data is physically present, it won't be read properly.

Even many inexpensive disks are certified to operate properly for at least 3,500,000 "passes," or revolutions. That's about nine days of constant head contact, which is more than you're likely to use many disks. Some disk companies advertise that they meet higher standards set by ANSI, the American National



PARTICLES AS SMALL AS 1/50,000 OF AN INCH CAN DISRUPT DATA.

Standards Institute. You can even buy a so-called "intelligent" disk that will tell you if it's been exposed to high temperature or excess humidity. You may consider buying more expensive disks for daily use, and cheaper ones as backups. But whatever disk you buy, it won't be guaranteed to keep its memory unless you are willing to protect it.

Here's how. These rules, 12 DON'Ts and one DO, are almost guaranteed to keep you and your disks spinning along beautifully.

1 DON'T fold, spindle, mutilate, or touch the magnetic surface of a disk.

When taking a disk out of its storage box, handle it carefully. Remember, bending can cause permanent damage. Take the disk from its box by an upper corner; don't touch even the outer surface of the disk any more than necessary. Keep your fingers off the shiny parts of the disk that show through the inner lining. Fingerprints are a definite no-no, no matter how clean you keep your hands. The natural

body oil on your hands can cause contamination. After you are through using the disk, *immediately* put it back into the outer protective jacket and then into the storage container.

2 DON'T expose your disks to extreme temperatures.

Extreme heat or cold can cause a disk to lose its memory. Avoid direct sunlight and never leave disks in a closed car. Disk manufacturers recommend a temperature range of 50 to 120 degrees Fahrenheit. A common way to damage a disk is to leave it in a closed car. Ten- to 80-percent humidity is considered safe. If a disk seems to have been damaged by heat, wait 24 hours before trying to use it. Sometimes, it will work again.

3 DON'T allow dust or other fine particles to contaminate disks.

House dust can be much larger than the particles that make up a disk's coating. Dust is probably the greatest culprit of all when it comes to destroying disk files. Not only can

Freelance writer MARTHA GORE of Tucson, Arizona, has contributed to several national publications, including computer magazines.

IF THE WORST HAPPENS

Sometimes, no matter what you do, the worst happens. Your disk won't boot. Then what?

Don't give up.

If it's a program disk, it may still be covered under warranty; if you've mishandled the disk,

the manufacturer may replace it for a fee. Software companies vary widely in how they handle disk replacement—a very important part of after-sale support. Here are the policies of some leading manufacturers:

**FINGERPRINTS
ARE A DEFINITE
NO-NO, NO
MATTER HOW
CLEAN YOU
KEEP YOUR
HANDS.**

1. SOFTWARE COMPANY BACKUP POLICIES

Company	Policy
Broderbund	Defective disks replaced free; \$5 fee if user-damaged.
CBS	Defective disks replaced free within 90 days; \$5 fee thereafter.
CTW	Package contains backup disk.
Electronic Arts	Defective disks replaced free within 90 days; \$7.50 fee thereafter.
Epyx	Defective disks replaced free within 30 days; \$10 fee thereafter.
Infocom	Defective or damaged disks replaced free within 90 days; \$5 fee thereafter.
The Learning Company	Defective disks replaced free within 90 days; \$10 fee if user-damaged.
Microsoft	Defective disks replaced free within 90 days; \$25 fee thereafter; user makes backup copies.
Muse	Defective disks replaced free; \$10 fee if user-damaged.
Scholastic/Wizware	Defective disks replaced free within 60 days; \$5 fee thereafter.
Sierra On-Line	Defective disks replaced free within 90 days; \$5 fee thereafter; user makes backup copies.
Spinnaker	Defective disks replaced free within 30 days; \$5 fee thereafter. Backup copy available for \$12.
Visicorp	Defective disks replaced free within 90 days.
Xerox	Defective disks replaced free within 90 days; backup copy available for \$10.

What if, like the Browns at the beginning of this article, you've damaged a data disk? There may still be hope. There is software for many computers that will restore parts of some damaged disks. The prices of such software vary widely. Before you buy, consider how often you might need it and how valuable your data is.

Using disk recovery software requires care and substantial expertise. Essentially, you are telling the computer where to look for its files. Therefore, you must know how your computer and disk drive stored them in the first place. Here are representative products for a number of home and personal computers:

2. DISK RECOVERY SOFTWARE

Computer	Program/Company/Address/Price
Apple II/II plus/IIe	<i>Bag of Tricks</i> /Quality Software; 21601 Marilla St., Chatsworth, CA 91311 \$39.95
Atari 400/800/1200XL	<i>Disk Fixer/Load 'n' Go</i> /Atari Program Exchange; P.O. Box 3705, Santa Clara, CA 95055 \$29.95
Commodore 64	<i>DI-Sector</i> /Starpoint Software; Star Rte. 10, Gazelle, CA 96034 \$39.95
IBM PC	<i>Disk Magic</i> /Norell Data Systems; 3400 Wilshire Blvd., Los Angeles, CA 90010 \$49.95
TRS-80 Models I/III/4	<i>Super Utility Plus/Power Soft</i> ; 11500 Stemmons Expy., Suite 125, Dallas, TX 75229 \$81.50
Texas Instruments 99/4A	<i>Disk Fixer</i> /Navarone Industries; 510 Lawrence Expy. #800, San Jose, CA 94086 \$39.95

dust damage a disk, it can accumulate and damage a disk drive. Keep your disks in a closed container. Some head-cleaning disks claim to control dust and grime in your disk drive, but be wary of overusing them. Head cleaners themselves can be abrasive. You should have your disk-drive heads cleaned and maintained annually by a dealer.

4 DON'T smoke, eat, or drink around disks.

Smoke is a villain. If you must smoke near your computer, try to use a special ashtray that draws smoke into it. Yet even that won't eliminate loose cigarette ash.

Spilled drinks kill disks (though there have been some miraculous exceptions). Beverages are no good for keyboards, either. Put up a "no drinking" sign and ban all snacking from the area that holds your computer setup.

Chemical fumes can also affect the magnetic coating on a disk. Nail polish, cleaning agents, and glues are just a few products that can create vapors and should be kept away.

5 DON'T write on your disks with pencil or ballpoint pen.

To label your disk, write on the self-stick label *before* placing it on the disk. If you must write on the label after it has been placed on the disk, always use a soft-tipped pen. *Never* use a pencil or ballpoint pen; they can cause indentations far larger than the data you need to keep intact.

When you write, make sure the palm of your hand is not pressing on the disk jacket; the compression can damage the disk's magnetic surface. And don't use an eraser on a label; those minute rubber particles can also destroy your data.

6 DON'T leave your disks near a phone, TV, or any other source of magnetism.

Since the disk's memory is created by an arrangement of tiny magnetic particles, your disks must be protected from anything in the environment that may contain a magnetic field. Electromagnetic dangers come in all

**IF A
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WORTH A
THOUSAND
WORDS, YOUR
DISK MAY BE
WORTH TENS OF
THOUSANDS OF
WORDS.**

shapes and sizes. Avoid allowing the disk to come in contact with telephones or television sets. Anything driven by an electric motor, including fans, typewriters, and air conditioners, can be a potential problem. Even paper clips, screwdrivers, car keys, and other metallic objects can become magnetized enough to alter a disk.

A good rule: If it's made of metal, keep it a safe distance from your disks. Plastic disk storage boxes, which cannot become magnetized, will eliminate some danger, especially if you must store your disks in a metal file cabinet.

7 DON'T expose disks to static electricity.

On an especially dry day, merely pointing a finger at your computer may create a spark. If sparks sometimes occur when you walk across the rug, there's a good chance they can also wipe out data and upset the functioning of your computer itself. Consider buying an anti-static spray, or an antistatic mat to place under your computer.

8 DON'T crowd your disks.

Don't ever stack piles of disks horizontally. And don't crowd disks, either vertically or horizontally. They can't take the pressure. Stacking can cause specks of dust to scratch their surfaces. It also can cause them to spin unevenly in the drive, making for unreliable data retrieval. In the words of one floppy disk promotional booklet, never trust data that wobbles.

Never put a heavy object on top of a disk. For the same reason, never paper clip a disk to anything. No rubber bands. And, for heaven's sake, no thumbtacks.

9 DON'T insert or remove disks from your drive while they're spinning unless the manual says so.

On most computers, this is a good way to scramble your data unmercifully. (One exception is the Kaypro, whose disk drives always spin.) Pay attention to that disk-drive warning light.

On many computers—Apple and IBM are two major exceptions—power should never be turned on or off with disks in the drive.

10 DON'T mail or transport your disks without protecting them.

If a photograph is worth a thousand words, your disk may be worth tens of thousands of words. Before mailing it, package it as you would the finest photograph—so it can't be bent or folded by the United States Postal Service or any other carrier. Protect the disk on both sides with rigid, corrugated cardboard.

When planning to carry or ship disks by plane, mark them so they are kept away from X-ray machines, which generate a variety of stray magnetic fields.

11 DON'T allow unqualified individuals to handle your disks.

The people most likely to treat your disks right are the people who paid for them and depend on them—you, and those people in your family trained to use them. Make sure your children know and follow the rules of disk care. If you lend disks out, make sure the borrower is both trustworthy and competent.

12 DON'T get careless.

Follow instructions, and if you think you already know what you're doing, slow down a little. Many people follow rules carefully for a month or two, and then get sloppy.

If you're sure you won't want to "write over" a disk's contents, cover the small notch in the upper right-hand corner of your disk with the black or silver "write-protect tab" that comes with your box of disks. (Hint: Don't substitute clear scotch tape—most recently made disk drives will ignore it.)

Now that you know all the things not to do, here's something you should do without fail.

1 DO back up your disks.

Copying disks is nobody's idea of fun, but it will save you an enormous amount of hand-wringing should your original become damaged.


It's easier to copy disks if you own two drives, but if you only have one, there is software which reduces the number of times you have to reinsert each disk. *QUICK-COPYer* for the Texas Instruments 99/4A (\$41.95) claims to reduce the time spent copying disks by 90 percent. Similar disk-copy programs are available for some other computers.

When should you copy disks?

Ideally, you should own one backup copy of every software disk you own. Some software companies include a backup in their price; others will sell you backups for a charge that varies widely, but is ordinarily only a fraction of the original purchase price. Others allow you to make your own copy. (See sidebar, "If the Worst Happens," for the policies of some major software companies.)

If you work extensively with data disks for programs such as word processors or data bases, you should make a daily backup. (More people pay lip service to this than actually do it. But they should.) Be sure to mark disk backup copies with the date they were made, so you can keep track of which is most current.

It's a good idea to inspect disks occasionally. Look over the surface that can be seen through the head access hole. (Don't move the disk around to see more.) Very shiny wide rings and scratches are indications of potential problems.

Check the round hole at the center of the disk; if it shows deterioration, make or buy a backup immediately. 

B A S I C B O O T H



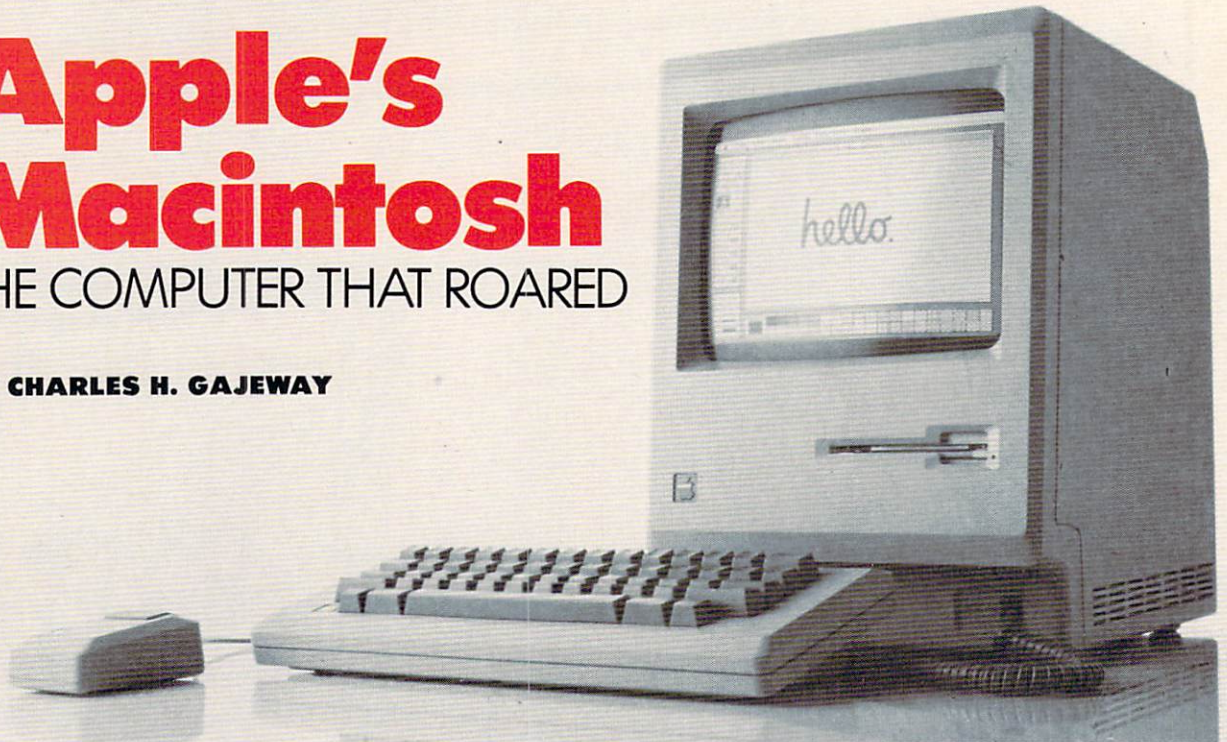
"The salesman said a child can readily understand this computer, Elsie; he never uttered a word about Bert and me understanding anything."

SCREEN SHOT BY WILLIAM P. GALLAGHER

Apple's Macintosh

THE COMPUTER THAT ROARED

BY CHARLES H. GAJEWAY



With the Macintosh, Apple seems at last to have designed a new product that has a chance of rivaling the Apple II in its profound and lasting impact on the industry. While the Macintosh's primary market—given its price tag (\$2,495) and initial program offerings—is business users, its extreme ease of use, portability, and Apple's long-standing commitment to the educational market give the Macintosh enormous potential as a family computer.

MACDESIGN

Instead of viewing the personal computer as an increasingly sophisticated but highly technical tool, Apple designed the Macintosh as an information appliance, as easy to use as a telephone or an automobile.

The cornerstone of the Macintosh's system is the mouse, a little mechanical device—what Apple calls a “small, rolling box”—connected by cable to the system unit. The mouse is a great equalizer—whatever program you use, you control it by moving the mouse to choose items from a series of on-screen menus. The actual choice is made by either holding down a button on the mouse, or releasing it. Thus, users don't have to

learn a new set of commands for every program.

With the same Motorola 68000 microprocessor used in Apple's avant-garde Lisa, the Macintosh is a fast, powerful personal computer. Some applications run up to twice as fast as they do on the IBM PC. It has 128K of RAM, a built-in disk drive with 400K storage space, and an extremely high-resolution, black-and-white built-in monitor. The Macintosh has sophisticated sound capabilities, and is able to replicate the human voice. Furthermore, the whole package, which weighs only 20 pounds, is designed to be transportable.

The 58-key keyboard is compact, (with the mouse, function and cursor keys aren't required), and attaches to the system unit with a coiled cord. The keys are full-size, and nicely angled. At first glance, the nine-inch display screen seems dubiously small, though in character with the rest of the system. The mouse is rectangular, with rounded edges that make it comfortable.

All interface connections are external: Two high-speed serial ports (one for a printer, the other for a modem), a mouse port, and a port to connect an external disk drive.

DESKTOP ICONS

The Macintosh is started by inserting a disk and turning on the power. The disk whirs, a chime sounds, and

after a few seconds, a banner reading WELCOME TO MACINTOSH flashes on the screen. At this point, all fears about the small screen disappear. The display is extremely clear and sharp, made up of over 175,000 individual dots, or pixels—more than three times the number on an Apple IIe.

The Macintosh operating environment, called the Finder, offers a rich pictorial representation of a real desktop. Working tools are represented by small pictures, called icons. Each icon—a paper with writing on it for data files, a manila folder for a collection of files, a computer for system files, etc.—is labeled. In addition, there is a small pointer. It's screen position is controlled by sliding the mouse across the desktop.

To “open” the disk files, for instance, you point the arrow at the disk icon and click the button on the mouse. Then you slide the pointer to the FILE menu, chosen from a list of options atop the screen. The selections available in the FILE menu slide down across the screen like a window shade (see photograph). Holding down the mouse button, you slide the rectangular white highlight down to OPEN and release the button.

That's all there is to it. No commands to memorize, no typing mistakes—just point at what you want and click the button on the mouse. George Eastman would have loved it.

As an introductory offer, two pro-

grams come bundled with the Macintosh—*MacPaint* and *MacWrite*. Both are on one 3½-inch disk. This disk format, much smaller than the 5¼-inch standard, allowed Apple to save considerable space in its system unit.

MACPAINT & MACWRITE

MacPaint is a powerful magnifier of artistic abilities; even the least artistic people I know were completely absorbed by it. As for kids—my two-year-old cried when he was dragged away from the computer to eat lunch, and my six-year-old didn't want to go to bed. They both liked *MacPaint* a lot.

Basically, *MacPaint* gives you a blank canvas, 32 "paintbrushes" to choose from, a pencil, and an eraser (all identified with icons). Then it adds an automatic line-drawer, a rectangle-maker, an ellipse-maker, and a polygon-drawer.

You can mix text with drawings in any or all of nine fonts, six styles, and eight sizes, for a total of 432 possible types of text. Then there's a spray can for shading, a paint bucket in which you can mix patterns, a lasso to select irregularly shaped objects, and a mirror for symmetrical designs.

Is that all? No, there's a magnifying editor (Apple calls it *FATBITS*) that lets you refine your picture one dot at a time. *FATBITS* is one selection from a menu headed *GOODIES*. To top it all off, you can "cut" a drawing from *MacPaint* and "paste" it into *MacWrite*. Logos, letterheads, and illustrated text are all at your fingertips.

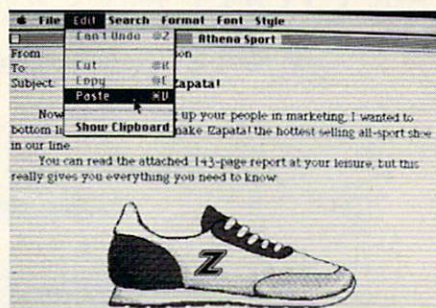
MacPaint is fascinating and easy to use, but it isn't perfect. It's difficult to draw a circle larger than one-third the size of a regular 8½- by 11-inch page. You can't rotate an image for three-dimensional effects, nor can you truly overlay images. But these are minor carps against a very original program.

MacWrite has nearly as many fonts, styles, and sizes of text available as *MacPaint*. In combination with extensive header and footer capabilities, reasonably flexible formatting, and the ability to paste in pictures from *MacPaint*, *MacWrite* becomes a personal typesetting tool.

MacWrite is not the most powerful word processor around; several features of varying importance are missing or a bit clumsy. File size, for instance, is limited to about 10 pages of single-spaced text. But, for those who need more power or room, other word processors are on the way (*Microsoft Word*, for one).

SOFTWARE AVALANCHE

Apple expects that 100 Macintosh programs will be available by the end of the year. Apple is readying a com-



A *MacPaint* illustration drawn with the mouse (above). A *MacPaint* drawing "pasted" into *MacWrite*; notice the *Paste* function on the pull-down menu.

munications program (for use with a modem), several business packages, and a version of Logo, the educational programming language. Third-party developers, including a host of entertainment and educational software marketers, are readying a dizzying variety of software. None of the Macintosh software will run on the Apple II line; nor will Apple II software run on the Macintosh. However, most Macintosh software will run on the Lisa line.

Microsoft's *Multiplan*, a spreadsheet program, is available now and is an excellent choice. Macintosh's ability to link spreadsheets maximizes the relatively limited workspace (for a business computer). Its formatting flexibility and extended features, combined with an interface to *MacPaint* and *Microsoft Chart* (a graphing program), give Macintosh an impressive array of spreadsheet

functions. Like all programs on the Macintosh, the *Multiplan* is extremely simple to use. Lotus is also developing a Macintosh version of 1-2-3, the big selling graphics-and-spreadsheet program. Other business programs are coming from Software Publishing Corp., marketer of the popular *PFS* software line.

BASIC is not built into the Macintosh, as it is on most computers. The Microsoft BASIC interpreter (\$199), the only BASIC now available, is an excellent implementation of the language. But it allows the user a maximum of 24K of free memory, and this is a severe limitation for all but modest programs. Macintosh BASIC (\$99), due for summer release, is expected to run faster and may provide more user memory than the Microsoft version. Macintosh Pascal (\$99), coming in late spring, has special educational importance since Pascal is the basis of the computer science Advanced Placement exams.

As of now, the only printer the Macintosh will support is the Apple Imagewriter (\$495 when purchased with the Macintosh). This dot-matrix printer has been especially modified to produce high-density graphics output. It can also mix text and graphics. While the print is not letter-quality, the output is clear and strikingly attractive.

Other Macintosh accessories from Apple include a padded carrying case (\$99), a numeric keypad (\$129), an external disk drive (\$495), 300-baud and 1200/300-baud modems (\$225 and \$495), and an antitheft kit.

FUTURISTIC MACHINE

The Macintosh is a superb computer that implements a sound design strategy brilliantly. Its advantages easily outweigh its minor drawbacks. The 128K memory may limit business users, but should be more than adequate for home use. And Apple says upgrades to 256K or 512K may be possible in the future. The main drawback for home users right now is the lack of entertainment/education software, which Apple has promised. Another drawback is the lack of color, which may severely limit the impact of some entertainment software. However, the extreme clarity of the black-and-white display is very pleasing to the eye. An upgrade to color is expected in the future.

At about \$1,000 more than an Apple IIe system, the Macintosh is not cheap, but for those families that find other computers too complicated or businesslike, I can't imagine a better choice. The Macintosh is truly a machine for the future, both in the home and the office. **FC**

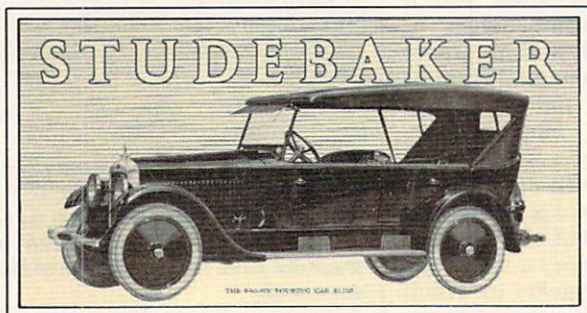
MACINTOSH FACTS

MEMORY: 128K RAM
USER-AVAILABLE MEMORY IN BASIC MODE: 24K
KEYBOARD: 58 typewriter-style keys; numeric keypad optional
VIDEO OUTPUT: Black-and-white monitor (built-in)
GRAPHICS: 512 × 342 resolution; no colors
SOUND: 4 voices, 12 octaves
SUGGESTED RETAIL PRICE: \$2,495; \$2,990 with Imagewriter printer

Auto-Mation

IT'S NOT EASY KEEPING TRACK OF EIGHT
STUDEBAKERS, 14,000 PARTS,
AND 6,000 MEMBERS OF TWO NATIONAL
CAR CLUBS. A COMPUTER HELPS.

BY DANIEL AND KAREN KLASSEN



The American tradition of taking a Sunday drive has been an institution for several generations, but nowadays, you don't notice that many families heading out for a spin on a weekend afternoon. Gas prices and a disappearing countryside have changed all that.

When Linda and Arthur Seebach take their car out on the roads near their home in Northfield, Minnesota, memories of another time return. A time of big, sleek, American-made cars, a time when gas was cheap, a time when a family could afford to meander on a Sunday afternoon with no particular destination in mind. When the Seebachs go out for a ride, it reminds their neighbors of bygone days because they drive a beautiful, black, 1937 Studebaker, one of eight vintage cars they've collected.

The Seebachs never really intended to collect Studebakers. It just happened. It all began in 1958 when Arthur's father gave him the aging family Studebaker, a 1937 Dictator, to travel the 100 miles between his home and the college he was attending. Little did Arthur realize then that years later he and his wife, Linda, would have a collection of Studebakers, more than 14,000 parts for a variety of makes and models of the car, plus several computers to help them keep track of their accidental hobby.

THE COLLECTION GROWS

Traveling through Pennsylvania later in 1958, the Seebachs found their second Studebaker, another 1937 model, the President. They paid \$35 for the car, which they had spotted in a field near Gettysburg, and had it towed to a local garage. (It cost them \$800,

however, to get the car moving again since it needed a new engine.) The two Studebakers provided reliable transportation for the couple, but as the cars grew older they needed more and more repairs. So the Seebachs began to collect Studebaker parts, because, as Linda said, "You can't expect to stop in at the local auto parts store and expect that it will have everything you want for a 1937 Studebaker." The Seebachs would often visit an auto parts dealer looking for a single headlight and walk out of the shop with a boxful of old Studebaker parts.

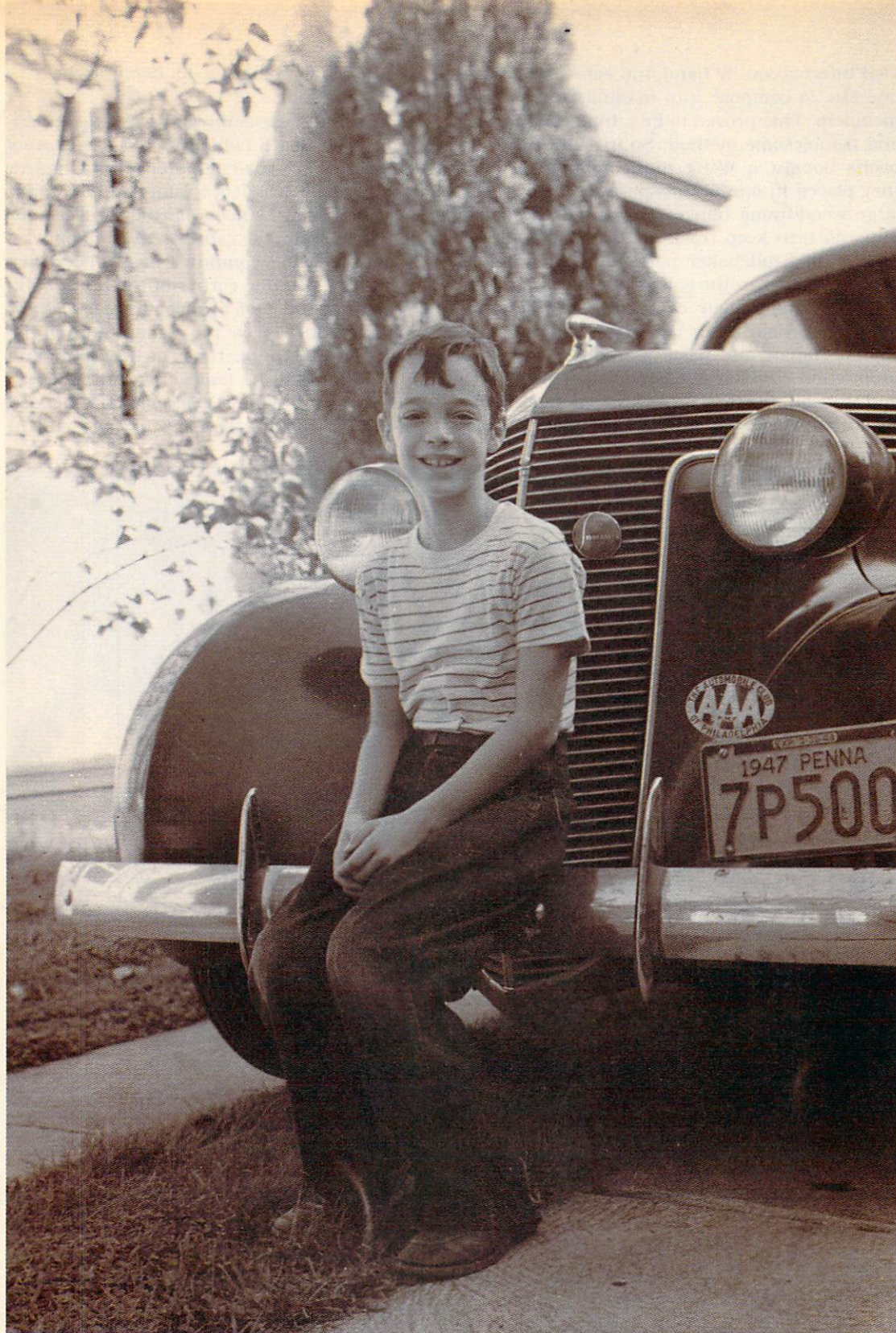
The Seebachs moved to Minnesota in 1965, when both had been offered jobs as mathematics professors at St. Olaf College. It seemed prudent to look for a newer Studebaker since the couple knew they'd still be making frequent trips to Northwestern University in Evanston, Illinois, where they would continue to work on their doctoral dissertations. The purchase was intended to replace their aging autos, but somehow three became the magic number and the Seebachs began to think about their cars as a collection, a long-lasting hobby—and eventually, a family business. "By the time you have three of anything, people start calling you and offering you more," said Linda. "If you have one cat, you have one cat. If you have two cats, you have two cats. But if you have three cats, people start calling and saying, 'You collect cats, don't you?'"

A LABOR OF LOVE

Keeping track of a collection of several thousand car parts is no easy task. In addition, the Seebach family, including their 11-year-old

DANIEL and KAREN KLASSEN are software authors who live in Northfield, Minnesota. Karen's last article for FAMILY COMPUTING was "Castles, Cathedrals, and Computers," published in the November issue.

In 1947, young Arthur Seebach sat proudly on the fender of his family's 1937 Studebaker—the same car that would later be the first in his own collection of vintage automobiles.



son, Peter, is active in three car clubs: The Studebaker Club, the Packard Club (Packard bought out Studebaker in the early 1950s), and the Hudson Club.

The Seebachs enjoy their involvement with vintage-car clubs because the organizations are family-oriented. In addition to hosting car shows throughout the year, the clubs often organize social events such as picnics, dinners, and outings where children are almost always welcome.

Linda, who taught at St. Olaf for six years, now works at home full time maintaining the mailing lists for two of the car clubs, producing a car club newsletter, and publishing repair and parts manuals. She incorporated the business, Small World Press, in 1977. (Arthur is less involved in the home business because his teaching job keeps him busy.)

The Seebachs' interest in collectible automobiles developed long before personal computers were even invented. At first, the couple

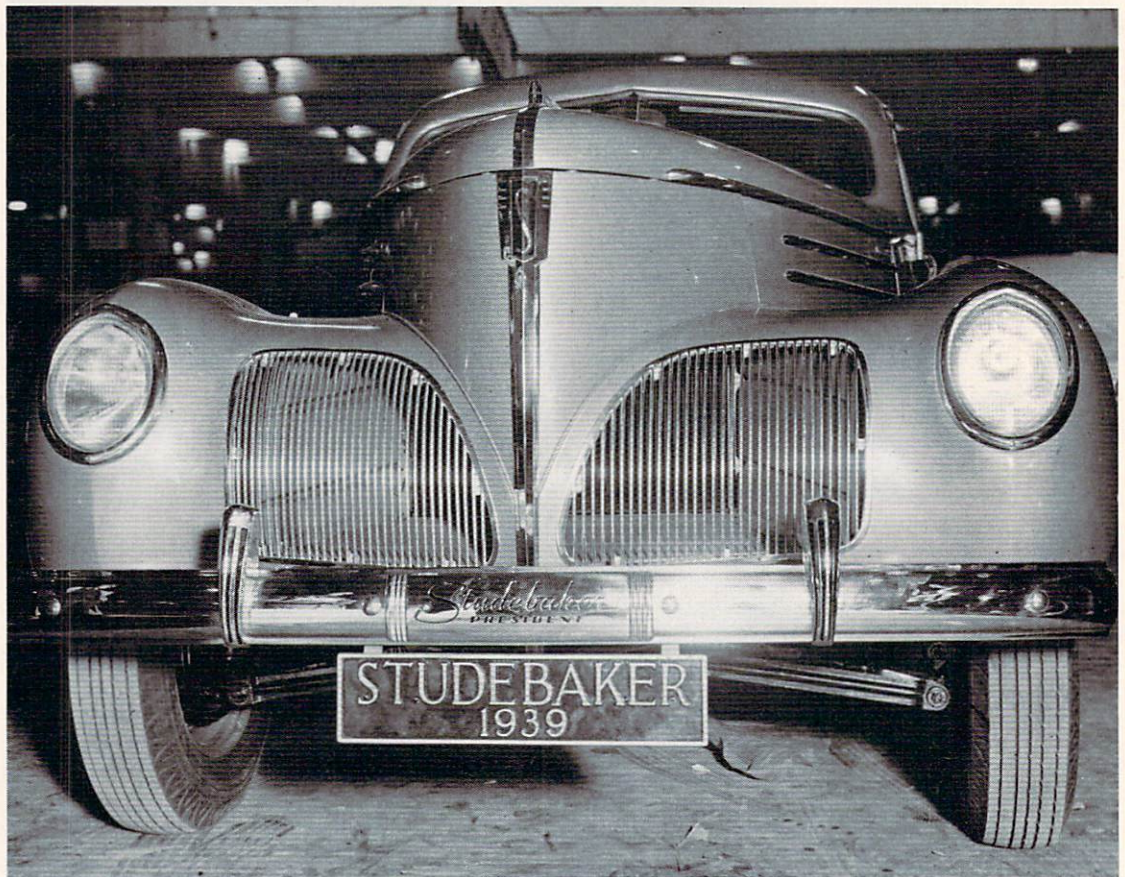
filed information by hand and sent it to someone else to compose into mailings to car-club members. This proved to be a time-consuming and troublesome method. So in 1977 the Seebachs bought a Wang minicomputer, which they placed in one of the spare rooms of their large wood-frame house. They used the computer to help keep track of their personal inventory of Studebaker parts, to store billing records related to the sale of the parts, and to file and update their car clubs' membership lists. They also began using the computer to compile repair and parts manuals for out-of-production cars like the Studebaker, Packard, and Hudson. Since the cars are no longer manufactured, there was no central factory source

have the same computer at home as he'd be using at St. Olaf.

Most of the car-club work was soon transferred to the Heath (which has 64K and runs CP/M programs). The computer is attached to a hard (Winchester) disk to store and maintain the wealth of files, since a hard disk allows for much greater storage capacity than a floppy.

The old Wang computer hasn't been discarded. It sits in one corner of the house, still filled with the files of Studebaker parts. Now, however, Linda is so busy maintaining the mailing lists and publishing the newsletter and manuals that she no longer has time to keep up the parts business. Occasionally a good friend will call asking for a specific part and one

The imposing front end of a 1939 Studebaker State President.



THE BETTMANN ARCHIVE

for information, and the Seebachs found an eager audience for the manuals. Their clients include other collectors attempting to restore their old cars, and mechanics who work on these vintage autos.

MOVING ON TO MICROS

As the wave of personal computers spread, the Seebachs discovered that it cost more to maintain their Wang minicomputer for one year than it would to purchase a microcomputer that could do the same thing. After looking at a number of options, they decided to purchase a Heath H-89 computer, which they built themselves from a kit. Arthur was able to get a discount on the computer kit through the college, which was purchasing Heath computers for its students and faculty. He was eager to

of the Seebachs will check the Wang to see if they have it, but they're no longer taking as many requests.

After studying a number of data-base management systems they could use for their home business, the Seebachs narrowed their choices down to *Condor* and *dBase II*. Finally, they selected *dBase II*, because they wanted a powerful data-management tool for constructing and manipulating numeric and character information files that they could customize to meet their needs.

A special feature of *dBase II* is its own English-style program building language, which lets users write menus and programs to support specific applications. Linda uses it to index membership records, add names to the list, and update information when necessary.

Now it only takes her 15 to 20 seconds to add a new name to her list.

Linda maintains membership lists for the Hudson and Packard car clubs, lists that total more than 6,000 names. She's negotiating with a third car club to organize and maintain their membership records, which should be a fairly easy task since she's already customized *dBase II* to meet the needs of such clubs.

SPREADING THE WORD

In addition to *dBase II*, Linda uses the *PIE* text-editing program (from Software Toolworks) to help produce the national newsletter of the Packard Club. After she's finished the writing and editing, Linda loads the disks into

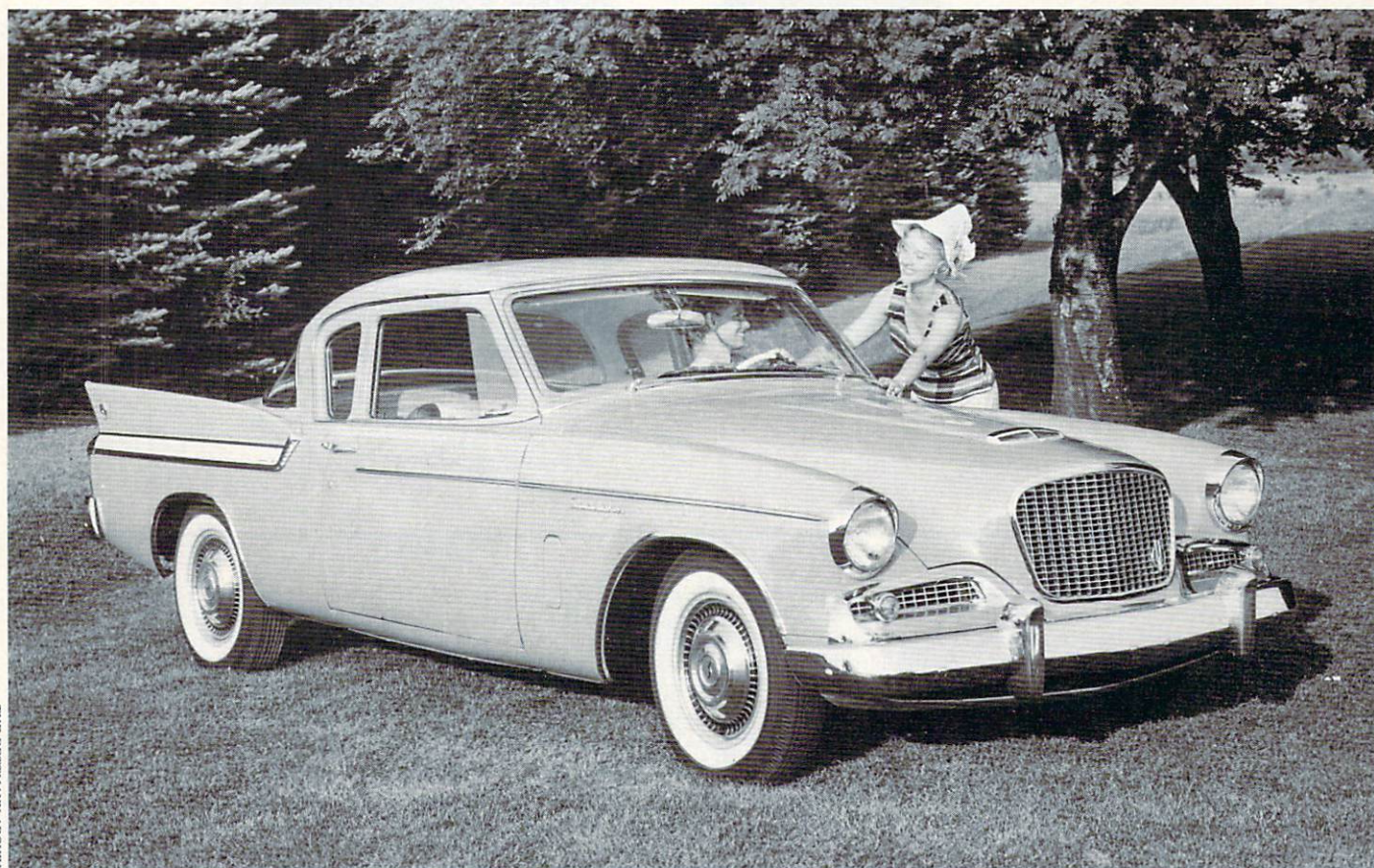
MORE THAN A BUSINESS

Using a computer for home business doesn't mean you can't find a number of other uses for it. For example, the Seebach family uses their Heath as a terminal into CompuServe, to access a number of different data bases, into the Dow Jones financial service, and into UNIX, an educational network. Linda also uses the computer to study Chinese; she devoted an entire week to putting her vocabulary words on a data base.

Eleven-year-old Peter shares his parents' affection for computers, though his interests run more to games than Studebakers. His favorite is *Zeetle-Deet* (published by Software Wizardry), and he's especially fond of adventure



After Peter Seebach was born in a Swiss hospital in 1972, his mother brought him home in a Studebaker Avanti.



the phototypesetting machine she and Arthur purchased with another couple in 1982. She then takes the galley sheets produced by the phototypesetter and, with scissors and wax, prepares the layout. The newsletter includes club news, want ads and other advertising, and a section called "The Showroom," which allows members to spotlight their cars with black-and-white photographs.

The addition of a phototypesetter to this home business has certainly been a bonus. Linda is now hoping to sell time on the machine to other people who need access to a typesetter in order to produce newsletters or other printed materials. (For more information on at-home phototypesetting, see the *Home Business* column in the February issue of FAMILY COMPUTING.)

and strategy games. Peter also copies games from books and magazines and makes changes in them. One of his favorite activities is using the computer to design color graphics, so last Christmas the family purchased a program called *Palette*, which allows for the creation of color graphics using either the keyboard or a light pen.

A new microcomputer, the Zenith 100, has just found a home at the Seebachs. The system, which also runs *dBase II*, has been integrated into their business operation.

The Seebachs now use their computers when they want to relax and have fun, as well as for their hobby and home business. What began as a simple interest in old cars has turned into a thriving home business—one in which personal computers play a major role. ☐

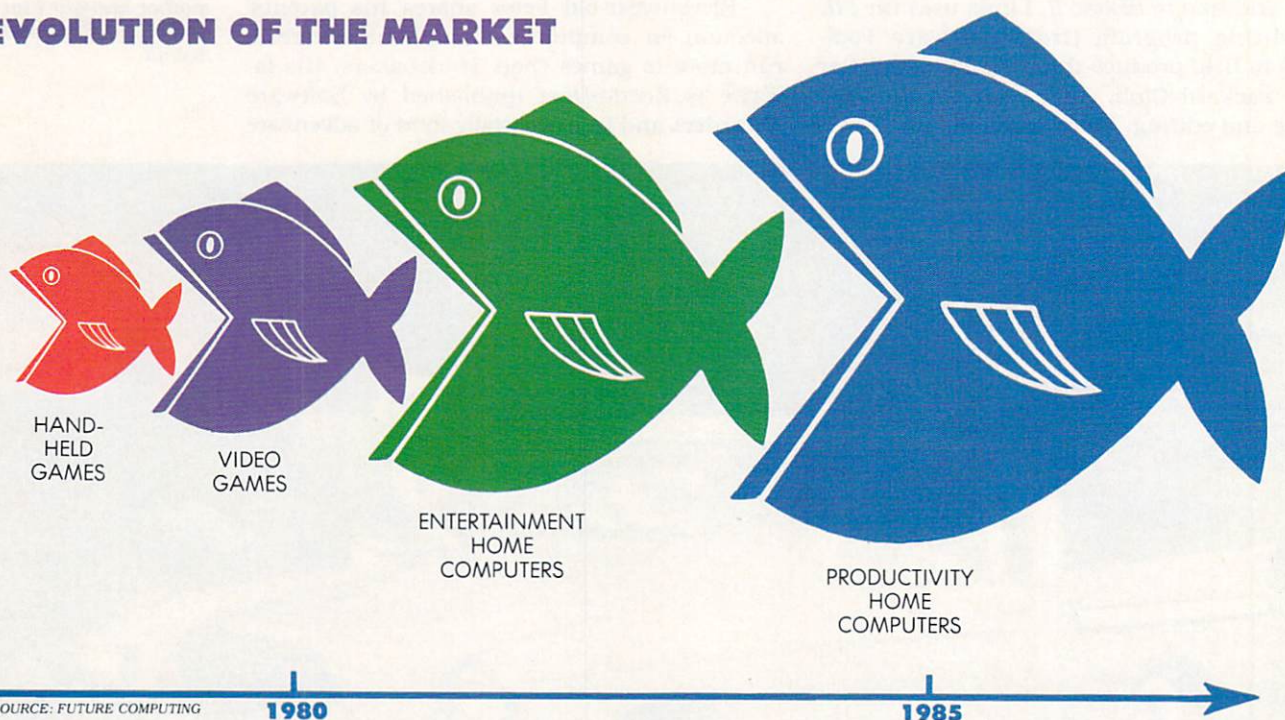
The 1961 Studebaker Hawk was billed as a family sports car.

FISHING FOR A COMPUTER?

HERE'S AN OVERVIEW OF MAJOR MARKET TRENDS
TO MAKE YOU A SMARTER SHOPPER

BY NICK SULLIVAN

EVOLUTION OF THE MARKET



When thinking about which computer to buy for home use, several brands often pop to mind. The only way to differentiate between them is by personal preference for the overall feel, and "anyone's guess" as to the manufacturer's stability and long-term support. But with an understanding of what's going on in the industry, you might be able to turn a wild guess into an informed one.

The most prevalent industry trends reflect new consumer trends. Computer buyers were once hobbyists, hackers, and businesses. Now, parents, children, teachers, artists, and independent business people are buying or thinking of buying computers. To sell to these new shoppers, manufacturers have made marketing a number one priority. Besides spending more on advertising, it means making computers easier to use and more productive, and supplying complete, ready-to-go systems.

1983

Last year was a wild one in the home computer industry,

characterized by price cuts, heavy losses at several companies, and the demise of others. These events largely overshadowed the sale of four million home computers, which brought the number of computers in U.S. households to an estimated 7.6 million.

Price Cuts. Timex—treating computers like watches—lowered the price of its Timex 1000 to under \$100, a new low in the industry. During last Christmas' selling season, it could be found for under \$30. Texas Instruments followed suit. The price on its TI-99/4A, which once sold for \$750, was lowered to under \$100—and finally to \$50 when TI discontinued the model and unloaded remaining inventory. The Commodore 64, which was introduced in 1982 at \$595, was selling for less than \$200 by mid-summer of 1983.

Apple, Radio Shack (for Models III and 4), and IBM held their prices at lofty levels, thus splitting the market and giving it two opposite poles: "High end" and "low end." There was nothing in the middle.

Heavy Losses. The ram-

nant price-cutting spurred sales, but had a quick and negative effect on the profits of some companies. Texas Instruments and Timex were so hard hit they both dropped out of the home computer business—TI in October, 1983, and Timex the following February. Atari, which didn't cut prices as drastically as some others, lost over \$500 million for the year.

By the end of 1983, the lineup looked like this: Commodore was batting lead off in the low end, with an estimated 35 percent share of the market. In the high end, IBM's PC and Apple's IIe—each with about a 20 percent share—were vying for the cleanup spot.

1984

Another year, another market. The primary focus has switched from price-cutting to price stabilization. Atari took a strong stand on the downward price spiral by actually raising the cost of its new 600XL and 800XL models. Surprisingly, the only price-cutting to date has come from the high end, where Apple dropped the price of its IIe.

Several other changes in the climate may prove more significant in the long run. These include widespread management changes at major computer companies, a new technique of "bundling" products, and the emergence of a "middle ground" price-wise.

The Package-Goods Challenge. To lead them into the mass market, two leading computer companies have brought in marketing talent from package-goods companies. Atari, founded by Nolan Bushnell, who went on to start Pizza Time Theatre, brought in James Morgan from Philip Morris as chief executive officer. Apple, founded by "two kids in a garage"—Steve Jobs and Steve Wozniak—lured John Sculley from PepsiCo to lead the company's battle against IBM and its push into the home market.

Marketing upstages innovation. Old pros replacing young entrepreneurs and founding fathers is a symptom of marketing's new importance in the industry. Innovative new products used to be the driving force. But now, most compa-

nies are filling out their product lines—or bringing out “look-alikes” of successful ideas. The mad rush to literally “copy” the successful IBM PC epitomizes this wide-ranging trend. And, instead of just selling to hobbyists and hackers—which was the case just a few years ago—many microcomputer manufacturers are trying to sell to the mass market. This includes Apple and IBM, which have until now concentrated on the business market. The end result is that marketing, and especially advertising, is increasingly important to success.

Computer companies spent \$380 million on advertising in 1983, an increase of 75 percent over 1982, and that is expected to increase another 90 percent in 1984, according to industry estimates. More TV advertising can be expected, too, partly because the retailers are demanding it. Last Christmas, many ordered large shipments of new computers that didn't arrive. These retailers are now wary of wild new product promises, and say they won't give shelf space to products that aren't supported with heavy advertising.

More for your money. While computer prices aren't being “slashed” this year, in many ways the consumer is getting more for the dollar. Last year many manufacturers sold the computer/keyboard unit as a stand-alone, at “come-on” prices. Consumers then found they had to pay as much or more to buy a disk drive, monitor, and printer—to make the computer truly useful. Now, computers are more often being sold as part of a complete system, bundled with peripherals and even software. This makes buying a computer a less complicated enterprise; and, it makes the computer a ready-made productivity tool. It gives consumers more of a reason to buy.

This is not a totally new idea. Kaypro—which markets a transportable computer—has long been selling a complete system (for \$1,595) that includes well over \$1,000 worth of software. But such bundling is new for computer marketers targeting the home market. It began when Coleco announced its ADAM—a complete computer system, with built-in word processing and a printer—last June.

The Middle Ground. Coleco's ADAM, selling for about \$750, foreshadowed the emergence of a major new pricing segment—the middle ground.

This \$500 to \$1,000 category was further reinforced when IBM introduced its PCjr, selling for \$669 or \$1,295, depending on the model. And it should be solidified with Apple's new computer (not yet announced at press time), which is expected to sell in the \$700–\$900 range, according to trade sources. Because of the initial interest in ADAM, and the brand-name strength of Apple and IBM, analysts expect this middle ground to become the fastest-growing segment, and perhaps even the nucleus, of the market.

APPLE

The Apple II line, which started in 1977 and was largely responsible for popularizing microcomputers, is still going strong. More software is available for Apple IIs than for any other computer, and it's well distributed among the business, home, and education categories. Apple's new Macintosh (see review) indicates the company is still as innovative as it was in the early days. Founders Steve Jobs (chairman) and Steve Wozniak (principal engineer) are still there, and with ex-Pepsi marketer John Sculley as president, are taking on IBM as if it were Coca-Cola. They're convinced there's an Apple generation to back up their challenge.

ATARI

Atari's got a great computer, as Alan Alda will tell you. Very few could make a case otherwise. Atari thinks enough of its product to have raised prices despite slow sales. Software designers love the Atari's color and sound capabilities. And Atari owners are fanatics when in defense of “their” machine.

The company has suffered from mismanagement, and a misread of the market. They felt that the video-game boom would carry them longer than it did, while other companies concentrated on turning their computers into educational, home productivity, and business tools. The result: life-threatening losses in 1983.

Now, with Philip Morris' James Morgan as chief executive officer, Atari is taking the same tack, and adding spreadsheet and word-processing programs to its large (over 2,000), but game-heavy, software base. Atari is selling a \$760 word-processing package—which includes the 600XL, a printer, and AtariWriter. Its new Atari Learning Systems division is developing educational soft-

ware. And, under the trademark ATARISOFT, the company is translating its popular software for other computer brands. Atari appears to be healing internal wounds and making a comeback, but still faces stiff competition.

COLECO

Primarily a toy company, Coleco cut its teeth in the electronics field with its popular ColecoVision video-game machine. Now it has moved into the computer market with ADAM, the complete computer system. While Coleco is known as a marketing-driven company, its recent agreement with Honeywell to set up a nationwide network of service centers indicates it will support ADAM owners well beyond the initial sale. Except for ColecoVision game cartridges, however, which run on the ADAM, there is still very little software available.

Wall Street analysts speculate that development and production costs on the ADAM have put Coleco in a cash-flow bind, but President Arnold Greenberg has repeatedly denied this.

COMMODORE

Commodore has sold over two million VIC-20s and over one million Commodore 64s. Its revenue's hit the billion-dollar mark in 1983. Commodore is also a big software company—it claims to have sold over \$100 million worth in 1983. Because of this, some analysts think that Commodore is trying to execute the age-old razor-and-blade strategy: Selling computers cheaply, and then going to market with software to run on those computers.

But Commodore has a few hurdles to clear. Jack Tramiel, who founded the company in 1958, recently resigned, leaving questions about future directions. And two new computers that Commodore previewed at a trade show, the 264 and 364, received a lukewarm reception from both retailers and the press. Commodore now says it will delay bringing them to market indefinitely. Another thorn in the company's side is the reported high rate of returns from dealers and owners who are complaining about defective computers and disk drives. *The Wall Street Journal* said late last year that the return rate on computers was up to 30 percent. Commodore will have to improve its quality control to maintain long-term credibility as a manufacturer.

For all this, Commodore is a

profitable and stable company with a secure position in the market, and a product (the 64) that offers good value for the price.

IBM

After silently watching Apple's and Radio Shack's success at selling personal computers to businesses, IBM finally entered the market in 1982 with its IBM PC. In a mere two years that product has become an industry standard, and spawned a host of look-alike computers. In fact, some observers think that the IBM standard will bring the Japanese into the market. It gives them an established model to copy and improve upon.

Meanwhile, IBM is using the PC as the flagship of an expanding line. IBM has added the PCjr, PC XT, and a Portable PC, and is well on its way to becoming the General Motors of the computer industry. You generally pay a little more for an IBM computer than you would for an equivalent model from another company—but you're assured of service and software support. And IBM's not going to go out of business.

RADIO SHACK

Radio Shack has products at both the low end (TRS-80 Color Computer 2) and high end (TRS-80 Models III, 4, 12, 16, and 2000) of the market. The Color Computer is primarily a home entertainment computer, while the others are designed more for business use than entertainment. The latest entry, the Model 2000, uses the MS-DOS operating system, which allows it to run much of the software developed for the IBM PC. Finally, the Model 100, a portable “lap” computer, was probably the most innovative product introduced in 1983.

The virtues of Radio Shack are its wide distribution and excellent support and service. All its computers are supported with a wide line of peripherals and software; and with more than 8,000 Radio Shack outlets worldwide, you can be sure service is close at hand. For those living in rural areas without many computer stores, this is a real plus.

LOOKING AHEAD

For more brand-specific information, look for “Buyer's Guide to the Leading Computer Brands,” “Buyer's Guide to Portable Computers,” and “Shopping Do's and Don'ts,” in upcoming issues. **RE**

IBM PC Software: the value of choosing



Shoes.

If they don't fit, they're not worth wearing.

Software programs.

If they don't fit, they're not worth using.

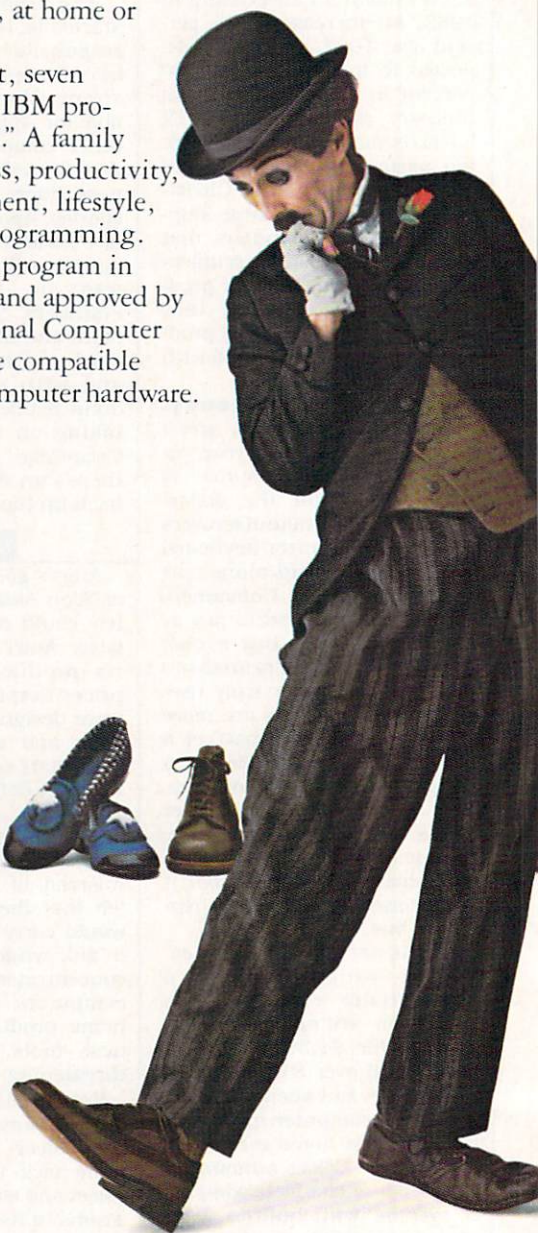
That's why it's altogether fitting that IBM Personal Computer Software offers you a choice.

Size up the selection.

You'll find many types of programs in the IBM software library. They'll help keep you on your toes in the office, at home or in school.

There are, in fact, seven different categories of IBM programs called "families." A family of software for business, productivity, education, entertainment, lifestyle, communications or programming.

Of course, every program in every family is tested and approved by IBM. And IBM Personal Computer Software is made to be compatible with IBM Personal Computer hardware.



programs that fit.

Putting your best foot forward.

Although every person isn't on equal footing when it comes to using personal computer software, there's something for almost everyone in the IBM software library.

For example, you may be on a shoestring budget and want a big selection of programs with small price tags.

You may be introducing students to computing and want programs that are simple to use and simple to learn.

You may run a business requiring sophisticated inventory and payroll programs. Or you may run a business requiring a single accounting program.

You may write interoffice memos and want a streamlined word processing program. Or you may be a novelist looking for a program with features worth writing home about.

Now you can find IBM Personal Computer Software that fits — to help you accomplish specific tasks and reach individual goals.

Stroll into a store today.

What's the next step?


Visit an authorized IBM Personal Computer dealer or IBM Product Center near you. To find out exactly where, call 800-447-4700. In Alaska or Hawaii, 800-447-0890.






Ask your dealer to demonstrate your choice of programs. Then get comfortable. Sit down at the keyboard and try IBM software on for size.





Personal Computer Software

See jane™ run




Once there was a  time,

before the written word, when  people used  pictures to communicate. Symbols representing entire  ideas were easy to  see and understand. And the people were comfortable with this language. And they were  happy.




But then came the  computer.


And symbols were replaced by complicated commands. Soon data processing meant learning a whole new vocabulary. And the  people became frightened of the new computer language. And they were  sad.

Then came Jane.

Absolutely, positively, unequivocally, unquestionably, the most simple way to operate a  computer. Jane does away with the keyboard . Instead, a simple, hand-held device called a  mouse selects from a variety of applications. From letters to lists, to calculations and spreadsheets. Jane does them all.

Jane does away with complex command words.

Instead, simple, easy-to-understand    pictures tell the computer what to do. From one operation to many, all on one screen at the same time.

Best of all, Jane doesn't cost lots of  money. Now everyone can use a home computer. Jane gives back to the people a language they understand.

And they  Jane. You can too.

One word is worth a thousand pictures.

See Jane run at Softcon '84.

jane

Jane comes complete with Janewrite™, Janecalc™, Janelist™, and of course, a mouse.

the Programmer



ILLUSTRATION BY BARTON STABLER

★	M A Y	★
<p>BEGINNER PROGRAMS Page 64</p> <p>Keep down the cost of long distance phone calls. This year give a Mother's Day Card that'll always be remembered.</p>	<p>PUZZLE Page 84</p> <p>You've got the plans and the parts; can you piece together the mystery invention and watch it perform on your screen?</p>	<p>READER-WRITTEN PROGRAM Page 88</p> <p>Chart your ups and downs with a <i>Biorhythm</i> program for the TRS-80 Color Computer.</p>

ILLUSTRATION BY JIM CHERRY III

Cherry

PHONE COST MONITOR

BY JOEY LATIMER

Is the pleasure of talking long distance to your grandfather across the country marred by your worries of how much the call is costing? *Phone Cost Monitor* translates minutes into cents, right as you talk! You can also use it as a timer, and have your computer warn you when you've reached the total amount of money you wish to spend, or the length of time you wish to talk. (Note: The program can only give you an approximate cost since billing standards vary from state to state.)

Before using the program, first call your local operator and find out the length of the initial period (often one or three minutes), the cost of the initial period, and the cost of each minute thereafter. Be sure to explain where you are calling from and to, and what day of the week (including holidays) and time of day you intend to make the call. (This program won't work for calls that start and end during different rate periods.) To stop the program once you've completed the call, press any key. Type RUN, press RETURN or ENTER, and the program will start again.

ADAM, Apple, Atari, IBM PCjr, TI-99/4A, and TRS-80



Color Computer owners should note that the last number in line 670 fine-tunes the computer's timer. This number varies from computer to computer because some brands run faster than others. In addition, the timing of your computer may be slightly different from ours. Before actually using the program, you should first run at least a three-minute test against a clock to see if it times you for exactly three minutes (if you have the patience, a longer test period is recommended). If the program is running fast or slow, increase or decrease the number in line 670, starting first with a change of five.

ADAM/Phone Cost Monitor

```

70 HOME
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "Do you want to know ..."
110 PRINT
120 PRINT "1) When a certain amount of"
130 PRINT "money has been spent?"
140 PRINT "2) When a given amount of"
150 PRINT "time has elapsed?"
160 PRINT "3) Total charges for a call?"
180 PRINT
190 PRINT "Please enter number";
200 GET s$

```

```

220 IF s$ < "1" OR s$ > "3" THEN 200
240 HOME
250 PRINT "What is the initial charge for"
260 PRINT "this call?"
270 PRINT
280 PRINT "(Example: $?.59)"
290 PRINT
300 INPUT "$ "; ft
310 PRINT
320 INPUT "For how many minutes?"; bg
350 HOME
360 PRINT "How much for each minute"
370 PRINT "afterward?"
380 PRINT
390 INPUT "$ "; aa
400 HOME
410 ON VAL(s$) GOTO 420,470,510
420 PRINT "What do you want to spend"
430 PRINT "on this call?"
440 PRINT
450 INPUT "$ "; sp
460 GOTO 510
470 PRINT "How many minutes do you want"
480 PRINT "to talk?"
490 PRINT
500 INPUT "Minutes:"; tm
510 HOME
520 PRINT "Press <RETURN> when the other"
530 PRINT "party answers the phone."
550 GET a$
560 IF a$ <> CHR$(13) THEN 550
600 HOME
610 k = PEEK(64885)
620 co = ft
630 PRINT "-----"
640 PRINT "MONEY          ELAPSED TIME"
650 PRINT "SPENT           MINS.--SECS."
660 PRINT "-----"
670 FOR x = 1 TO 920
680 NEXT x
690 sec = sec + 1
700 IF sec > 59 THEN min = min + 1
710 IF sec > 59 THEN sec = 0
730 IF min >= bg AND sec = 1 THEN co = co + aa
780 VTAB 5
790 HTAB 0
800 PRINT co;" ";
810 VTAB 5
820 HTAB 11
830 PRINT min;" ";
840 VTAB 5
850 HTAB 18
860 PRINT sec;" "
870 IF (s$ = "1" AND co >= sp) OR (s$ = "2" AND min >=
tm) THEN 910
880 IF PEEK(64885) <> k THEN 1110
900 GOTO 670
910 HOME
920 IF s$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF s$ = "2" THEN PRINT "TIME'S UP!"
1100 END
1110 PRINT "STOPPED."
1120 END

```

Apple/Phone Cost Monitor

```

70 HOME
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY"
130 PRINT "HAS BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME"
150 PRINT "HAS ELAPSED?"

```

```

160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 GET S$
220 IF S$ < "1" OR S$ > "3" THEN 200
240 HOME
250 PRINT "WHAT IS THE INITIAL CHARGE FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $.59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 INPUT "FOR HOW MANY MINUTES?";BG
350 HOME
360 PRINT "HOW MUCH FOR EACH MINUTE AFTERWARD?"
380 PRINT
390 INPUT "$";AA
400 HOME
410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO SPEND ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 HOME
520 PRINT "PRESS <RETURN> WHEN THE OTHER PARTY"
530 PRINT "ANSWERS THE PHONE."
550 GET A$
560 IF A$ <> CHR$(13) THEN 550
600 HOME
620 CO = FT
630 PRINT "-----"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "-----"
670 FOR X = 1 TO 616
680 NEXT X
690 SEC = SEC + 1
700 IF SEC > 59 THEN MIN = MIN + 1
710 IF SEC > 59 THEN SEC = 0
730 IF MIN > = BG AND SEC = 1 THEN CO = CO + AA
780 VTAB 5
790 HTAB 2
800 PRINT CO;"  ";
810 VTAB 5
820 HTAB 11
830 PRINT MIN;"  ";
840 VTAB 5
850 HTAB 18
860 PRINT SEC;"  ";
870 IF (S$ = "1" AND CO > = SP) OR (S$ = "2" AND MIN
> = TM) THEN 910
880 IF PEEK (- 16384) > 127 THEN 1110
900 GOTO 670
910 HOME
920 IF S = 1 THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S = 2 THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE ALARM"
980 PRINT "AND END PROGRAM."
990 PRINT CHR$(7);
1000 FOR Z = 1 TO 100:NEXT Z
1080 IF PEEK (- 16384) < 127 THEN 790
1110 PRINT "STOPPED."
1120 END

```

Atari/Phone Cost Monitor

```

10 OPEN #1,4,0,"K:"
70 PRINT CHR$(125)
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."

```

```

110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY"
130 PRINT "HAS BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME"
150 PRINT "HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 GET #1,S
210 IF S<49 OR S>51 THEN 200
220 S=VAL(CHR$(S))
240 PRINT CHR$(125)
250 PRINT "WHAT IS THE INITIAL CHARGE"
260 PRINT "FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $.59)"
290 PRINT
300 INPUT FT
310 PRINT
320 PRINT "FOR HOW MANY MINUTES?"
330 PRINT
340 INPUT BG
350 PRINT CHR$(125)
360 PRINT "HOW MUCH FOR EACH MINUTE AFTERWARD?"
380 PRINT
390 INPUT AT
400 PRINT CHR$(125)
410 ON S GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO"
430 PRINT "SPEND ON THIS CALL?"
440 PRINT
450 INPUT SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES DO YOU WANT TO TALK?"
490 PRINT
500 INPUT TM
510 PRINT CHR$(125)
520 PRINT "PRESS <RETURN> WHEN THE OTHER PARTY"
530 PRINT "ANSWERS THE PHONE."
550 GET #1,A
560 IF A<>155 THEN 550
570 POKE 752,1
600 PRINT CHR$(125)
620 CO=FT
630 PRINT "-----"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "-----"
670 FOR X=1 TO 200
680 NEXT X
690 SEC=SEC+1
700 IF SEC>59 THEN MIN=MIN+1
710 IF SEC>59 THEN SEC=0
730 IF MIN>=BG AND SEC=1 THEN CO=CO+AT
780 POSITION 2,5
790 PRINT CO;"  ";
800 POSITION 13,5
810 PRINT MIN;"  ";
820 POSITION 20,5
830 PRINT SEC;"  ";
840 IF (S=1 AND CO>=SP) OR (S=2 AND MIN>=TM) THEN 910
880 IF PEEK(764)<>255 THEN 1110
900 GOTO 670
910 PRINT CHR$(125)
920 IF S=1 THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S=2 THEN PRINT "TIME'S UP!"
950 POKE 764,255
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE"
980 PRINT "THE ALARM AND END THE PROGRAM."
990 PRINT CHR$(253);
1080 IF PEEK(764)=255 THEN 990
1110 PRINT "STOPPED."
1120 END

```

BEGINNER PROGRAMS

Commodore 64/Phone Cost Monitor

```

70 PRINT CHR$(147)
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY HAS"
130 PRINT "   BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME HAS"
150 PRINT "   ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 GET S$
210 IF S$ = "" THEN 200
220 IF S$ < "1" OR S$ > "3" THEN 200
240 PRINT CHR$(147)
250 PRINT "WHAT IS THE INITIAL CHARGE FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 INPUT "FOR HOW MANY MINUTES";BG
350 PRINT CHR$(147)
360 PRINT "HOW MUCH FOR EACH MINUTE AFTERWARD?"
380 PRINT
390 INPUT "$";AT
400 PRINT CHR$(147)
410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO SPEND ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 PRINT CHR$(147)
520 PRINT "PRESS <RETURN> WHEN THE OTHER PARTY"
530 PRINT "ANSWERS THE PHONE."
550 GET A$
560 IF A$ <> CHR$(13) THEN 550
570 TIMES$ = "000000"
600 PRINT CHR$(147)
620 CO = FT
630 PRINT SPC(7);"-----"
640 PRINT SPC(9);"MONEY      ELAPSED TIME"
650 PRINT SPC(9);"SPENT      MINS.--SECS."
660 PRINT SPC(7);"-----"
670 MIN = VAL(MID$(TIMES$,3,2))+VAL(LEFT$(TIMES$,2))*60
680 SEC = VAL(RIGHT$(TIMES$,2))
730 IF FL = 0 AND MIN >= BG AND SEC = 1 THEN CO = CO+AT
760 IF SEC = 1 THEN FL = 1
770 IF SEC <> 1 THEN FL = 0
780 PRINT CHR$(19),TAB(209);CO;
790 PRINT CHR$(19),TAB(220);MIN;
800 PRINT CHR$(19),TAB(228);RIGHT$(TIMES$,2)
840 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
TM) THEN 910
880 GET A$
890 IF A$ <> "" THEN 1110
900 GOTO 670
910 PRINT CHR$(147)
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE THE ALARM"
980 PRINT "AND END THE PROGRAM."
990 POKE 54296,15
1000 POKE 54277,96
1010 POKE 54278,0
1020 POKE 54273,34
1030 POKE 54272,75
1040 POKE 54276,33

```

```

1050 FOR DE = 1 TO 50
1060 NEXT DE
1070 POKE 54276,0
1080 GET A$
1090 IF A$ = "" THEN 1000
1110 PRINT "STOPPED."
1120 END

```

IBM PC/Phone Cost Monitor

```

70 CLS
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY HAS BEEN"
130 PRINT "   SPENT?"
130 PRINT "2) WHEN A GIVEN AMOUNT OF TIME HAS ELAPSED?"
140 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 S$ = INKEY$
210 IF S$ = "" THEN 200
220 IF S$ < "1" OR S$ > "3" THEN 200
240 CLS
250 PRINT "WHAT IS THE INITIAL CHARGE FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 INPUT "FOR HOW MANY MINUTES";BG
350 CLS
360 PRINT "HOW MUCH FOR EACH MINUTE AFTERWARD?"
380 PRINT
390 INPUT "$";AT
400 CLS
410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO SPEND ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 CLS
520 PRINT "PRESS <ENTER> WHEN THE OTHER PARTY ANSWERS"
530 PRINT "THE PHONE."
550 A$ = INKEY$
560 IF A$ <> CHR$(13) THEN 550
570 TIMES$ = "00:00:00"
600 CLS
610 CO = FT
630 PRINT SPC(23);STRING$(32,45)
640 PRINT SPC(25);"MONEY";SPACES$(11);"ELAPSED TIME"
650 PRINT SPC(25);"SPENT";SPACES$(11);"MINS.--SECS."
660 PRINT SPC(23);STRING$(32,45)
670 MIN = VAL(MID$(TIMES$,4,2))+VAL(LEFT$(TIMES$,2))*60
680 SEC = VAL(RIGHT$(TIMES$,2))
730 IF FL = 0 AND MIN >= BG AND SEC = 1 THEN CO = CO+AT
760 IF SEC = 1 THEN FL = 1
770 IF SEC <> 1 THEN FL = 0
780 LOCATE 5,26
790 PRINT CO;
800 LOCATE 5,42
810 PRINT MIN;
820 LOCATE 5,50
830 PRINT SEC
870 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
TM) THEN 910
880 A$ = INKEY$

```

Just when all computer games have started to seem the same, here's a thrilling new twist – software matched up with an exciting boardgame!

Every step on the big colorful gameboard, and the action-packed, on-screen adventures that result, depends on your skill and luck – and your opponents! *Chivalry*™ confronts you with challenges demanding the skills of a master gamesplayer as you battle thieves, witches, and trolls in 20 arcade-style games. 1 to 4 players.

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

For the Apple® computer.

Look for *Chivalry* in finer computer stores everywhere. Or order by calling toll free 1-800-852-5000, Dept. AE-6. Only \$49.95. Price includes disk, poster, gameboard, playing pieces, storage case and instructions.

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**Weekly Reader
Family Software**

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Chivalry™ is alive!

BEGINNER PROGRAMS

```

890 IF A$ <> "" THEN 1110 ELSE 670
910 CLS
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE THE ALARM AND END
THE PROGRAM."
990 SOUND 3000,1
1000 FOR DL = 1 TO 100
1010 NEXT DL
1080 A$ = INKEY$
1090 IF A$ = "" THEN 990
1110 PRINT "STOPPED."
1120 END

```

IBM PCjr/Phone Cost Monitor

```

70 CLS
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY HAS"
130 PRINT "BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME"
150 PRINT "HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 S$ = INKEY$
210 IF S$ = "" THEN 200
220 IF S$ < "1" OR S$ > "3" THEN 200
240 CLS
250 PRINT "WHAT IS THE INITIAL CHARGE"
260 PRINT "FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 INPUT "FOR HOW MANY MINUTES";BG
350 CLS
360 PRINT "HOW MUCH FOR EACH MINUTE AFTERWARD?"
380 PRINT
390 INPUT "$";AT
400 CLS
410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO SPEND ON"
430 PRINT "THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 CLS
520 PRINT "PRESS <ENTER> WHEN THE OTHER PARTY"
530 PRINT "ANSWERS THE PHONE."
550 A$ = INKEY$
560 IF A$ <> CHR$(13) THEN 550
600 CLS
610 CO = FT
630 PRINT STRING$(22,45)
640 PRINT "MONEY";SPACES(5);"ELAPSED TIME"
650 PRINT "SPENT";SPACES(5);"MINS.--SECS."
660 PRINT STRING$(22,45)
670 FOR X = 1 TO 515
680 NEXT X
690 SE = SE+1
700 IF SE > 59 THEN MIN = MIN+1
710 IF SE > 59 THEN SE = 0
730 IF MIN >= BG AND SE = 1 THEN CO = CO+AT
780 LOCATE 5,3

```

```

790 PRINT CO;
800 LOCATE 5,12
810 PRINT MIN;
820 LOCATE 5,19
830 PRINT SE
870 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
TM) THEN 910
880 A$ = INKEY$
890 IF A$ <> "" THEN 1110 ELSE 670
910 CLS
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE THE ALARM AND"
980 PRINT "END THE PROGRAM."
990 SOUND 3000,1
1000 FOR DL = 1 TO 100
1010 NEXT DL
1080 A$ = INKEY$
1090 IF A$ = "" THEN 990
1110 PRINT "STOPPED."
1120 END

```

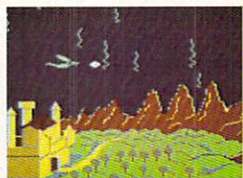
TI-99/4A/Phone Cost Monitor

```

70 CALL CLEAR
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF"
130 PRINT "MONEY HAS BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF"
150 PRINT "TIME HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 INPUT S$
220 IF S$<"1" THEN 200
230 IF S$>"3" THEN 200
240 CALL CLEAR
250 PRINT "WHAT IS THE INITIAL CHARGE"
260 PRINT "FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 PRINT "FOR HOW MANY MINUTES?"
330 PRINT
340 INPUT BG
350 CALL CLEAR
360 PRINT "HOW MUCH FOR EACH MINUTE"
370 PRINT "AFTERWARD?"
380 PRINT
390 INPUT "$";AT
400 CALL CLEAR
410 ON VAL(S$)GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO SPEND"
430 PRINT "ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 520
470 PRINT "HOW MANY MINUTES"
480 PRINT "DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 CALL CLEAR
520 PRINT "PRESS <ENTER> WHEN THE OTHER"
530 PRINT "PARTY ANSWERS THE PHONE."
550 CALL KEY(O,KEY,STATUS)
560 IF KEY<>13 THEN 550
600 CALL CLEAR

```

DRAGONRIDERS OF PERN.[™] FLY THE UNFRIENDLY SKIES.



Shooting down the menacing and constantly multiplying Threads isn't easy, but it's only one of the challenges in this official computer game version of Anne McCaffrey's famous book series.

Your strategy will be put to the test as you try to negotiate alliances with Pern's Lord Holders in an attempt to form the most powerful Weyr on the planet. Should you take a firm stance or compromise? Will asking a Craftmaster for assistance increase your chances for success? Maybe you should invite prospective allies to a Wedding or even a Dragon Hatching. Remember to check the Lord Holders personality traits

first. It may be critical to your success.

Numerous screens combine to create truly unique and challenging game play. There's even a practice screen to sharpen your Thread Fighting skills.

If you liked the books, you'll love the game. After all, how often do you get the chance to actually fly a dragon?

One to four players, joystick and keyboard controlled.



EPYX[™]
COMPUTER SOFTWARE

Strategy Games for the Action-Game Player



BEGINNER PROGRAMS

```

620 CO=FT
630 PRINT "-----"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "-----"
670 FOR X=1 TO 95
680 NEXT X
690 SEC=SEC+1
700 IF SEC<60 THEN 730
710 MIN=MIN+1
720 SEC=0
730 IF MIN<60 THEN 760
740 IF SEC<>1 THEN 760
750 CO=CO+AT
760 PRINT
780 PRINT "$";CO;" "; "MIN:";MIN;" "; "SEC:";SEC
840 IF $$<>"1" THEN 860
850 IF CO>=SP THEN 910
860 IF $$<>"2" THEN 880
870 IF MIN>=TM THEN 910
880 CALL KEY(0,KEY,STATUS)
890 IF STATUS<>0 THEN 1110
900 GOTO 670
910 CALL CLEAR
920 IF $$<>"1" THEN 950
930 PRINT "YOUR MONEY IS SPENT!"
940 GOTO 960
950 PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE THE"
980 PRINT "ALARM AND END THE PROGRAM."
990 CALL SOUND(100,110,1)
1080 CALL KEY(0,KEY,STATUS)
1090 IF STATUS=0 THEN 990
1110 PRINT "STOPPED."
1120 END

```

Timex Sinclair 1000 w/16K RAM Pack & Timex Sinclair 1500/Phone Cost Monitor

```

10 LET OM=0
20 LET NINES=0
30 LET FL=0
40 LET MIN=0
50 LET SEC=0
70 SLOW
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT"
130 PRINT "OF MONEY HAS BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME"
150 PRINT "HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER"
200 LET $$=INKEY$
210 IF $$="" THEN GOTO 200
220 IF $$<"1" OR $$>"3" THEN GOTO 200
240 CLS
250 PRINT "WHAT IS THE INITIAL CHARGE"
260 PRINT "FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: .59)"
290 PRINT
300 INPUT FT
320 PRINT "FOR HOW MANY MINUTES?"
340 INPUT BG
350 CLS
360 PRINT "HOW MUCH FOR EACH MINUTE"
370 PRINT "AFTERWARD?"
390 INPUT AT
400 CLS
410 GOTO ($$="1")*420+($$="2")*470+($$="3")*510
420 PRINT "WHAT DO YOU WANT TO"
430 PRINT "SPEND ON THIS CALL?"
450 INPUT SP

```

```

460 GOTO 510
470 PRINT "HOW MANY MINUTES"
480 PRINT "DO YOU WANT TO TALK?"
500 INPUT TM
510 CLS
520 PRINT "PRESS <ENTER> WHEN THE OTHER"
530 PRINT "PARTY ANSWERS THE PHONE."
550 LET AS=INKEY$
560 IF AS<>CHR$ 118 THEN GOTO 550
600 CLS
620 LET CO=FT
630 PRINT "-----"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "-----"
670 POKE 16436,255
680 POKE 16437,255
690 LET SEC=INT((65536-(256*PEEK 16437+PEEK 16436))/60)
700 LET MIN=INT(SEC/60)
710 LET SEC=SEC-MIN*60
720 IF MIN<9 THEN GOTO 750
730 LET NINES=NINES+9
740 GOTO 670
750 IF SEC>59 THEN LET SEC=0
760 LET MIN=MIN+NINES
770 IF SEC=0 AND FL=0 AND MIN>=BG THEN LET CO=CO+AA
780 LET FL=1
790 IF MIN<>0M THEN LET FL=0
800 LET OM=MIN
810 PRINT AT 4,0;CO;" "; "MIN:"; " "; "SEC:"; " "
840 IF ($$="1" AND CO>=SP) OR ($$="2" AND MIN>=TM) THEN
  N GOTO 910
880 LET AS=INKEY$
890 IF AS<>"" THEN GOTO 1110
900 GOTO 690
910 CLS
920 IF $$="1" THEN PRINT "YOUR MONEY IS SPENT."
930 IF $$="2" THEN PRINT "TIME IS UP."
1100 STOP
1110 PRINT "STOPPED."
1120 STOP

```

TRS-80 Color Computer/Phone Cost Monitor

```

70 CLS
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF"
130 PRINT "MONEY HAS BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME"
150 PRINT "HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 $$ = INKEY$
210 IF $$ = "" THEN 200
220 IF $$ < "1" OR $$ > "3" THEN 200
240 CLS
250 PRINT "WHAT IS THE INITIAL CHARGE"
260 PRINT "FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 PRINT "FOR HOW MANY MINUTES?";
330 PRINT
340 INPUT BG
350 CLS
360 PRINT "HOW MUCH FOR EACH"
370 PRINT "MINUTE AFTERWARD?"
380 PRINT
390 INPUT "$";AT

```



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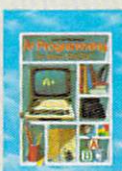
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BEGINNER PROGRAMS

```

400 CLS
410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO"
430 PRINT "SPEND ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES"
480 PRINT "DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 CLS
520 PRINT "PRESS <ENTER> WHEN THE OTHER"
530 PRINT "PARTY ANSWERS THE PHONE."
550 A$ = INKEY$
560 IF A$ <> CHR$(13) THEN 550
600 CLS
620 CO = FT
630 PRINT "-----"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "-----"
670 FOR X = 1 TO 350
680 NEXT X
690 SEC = SEC+1
700 IF SEC > 59 THEN MIN = MIN+1
710 IF SEC > 59 THEN SEC = 0
730 IF MIN >= BG AND SEC = 1 THEN CO = CO+AT
780 PRINT@128,CO;" ";
790 PRINT@136,MIN;" ";
800 PRINT@143,SEC;" ";
840 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
    TM) THEN 910
880 A$ = INKEY$
890 IF A$ <> "" THEN 1100
900 GOTO 670
910 CLS
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE"
980 PRINT "THE ALARM AND END THE PROGRAM."
990 SOUND 250,1
1080 A$ = INKEY$
1090 IF A$ = "" THEN 990
1100 PRINT "STOPPED."
1120 END

```

TRS-80 Model III/Phone Cost Monitor

```

70 CLS
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY HAS BEEN
    SPENT?"
130 PRINT "2) WHEN A GIVEN AMOUNT OF TIME HAS ELAPSED?"
140 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 S$ = INKEY$
210 IF S$="" THEN 200
220 IF S$ < "1" OR S$ > "3" THEN 200
240 CLS
250 PRINT "WHAT IS THE INITIAL CHARGE FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 PRINT "FOR HOW MANY MINUTES?"
330 PRINT
340 INPUT BG
350 CLS
360 PRINT "HOW MUCH FOR EACH MINUTE AFTERWARD?"

```

```

380 PRINT
390 INPUT "$";AT
400 CLS
410 ON VAL(S$) GOTO 420, 470, 510
420 PRINT "WHAT DO YOU WANT TO SPEND ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 CLS
520 PRINT "PRESS <ENTER> WHEN THE OTHER PARTY ANSWERS
    THE PHONE."
550 A$ = INKEY$
560 IF A$ <> CHR$(13) THEN 550
570 POKE 16921,00
580 POKE 16920,00
590 POKE 16919,00
600 CLS
620 CO = FT
630 PRINT "-----"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "-----"
670 MIN = VAL(MID$(TIME$,13,2))+VAL(MID$(TIME$,10,2))*
    60
680 SEC = VAL(RIGHT$(TIME$,2))
730 IF FL=0 AND MIN>=BG AND SEC=1 THEN CO=CO+AT
760 IF SEC = 1 THEN FL = 1
770 IF SEC <> 1 THEN FL = 0
780 PRINT @ 256,CO;" ";
790 PRINT @ 266,MIN;" ";
800 PRINT @ 273,SEC;" ";
840 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
    TM) THEN 910
880 A$=INKEY$
890 IF A$ <> "" THEN 1110
900 GOTO 670
910 CLS
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
1110 PRINT "STOPPED."
1120 END

```

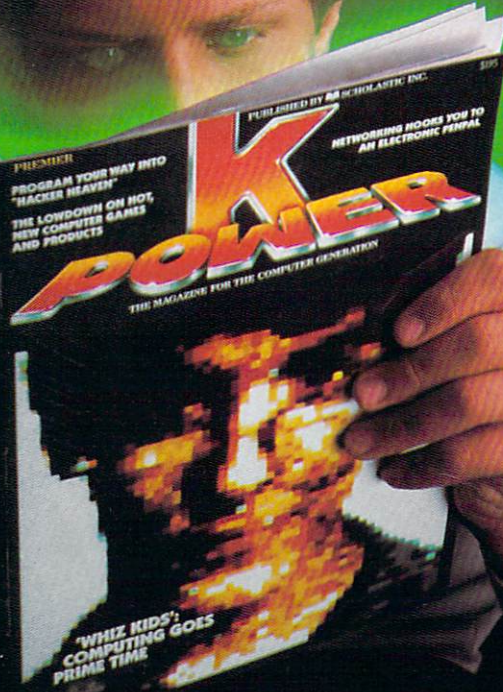
VIC-20/Phone Cost Monitor

```

70 PRINT CHR$(147)
80 PRINT "TELEPHONE COST MONITOR"
100 PRINT "DO YOU WANT TO KNOW..."
120 PRINT "1) WHEN A CERTAIN"
130 PRINT "AMOUNT HAS BEEN SPENT?";
140 PRINT "2) WHEN A GIVEN AMOUNT";
150 PRINT "OF TIME HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR"
170 PRINT "A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 GET S$
210 IF S$ = "" THEN 200
220 IF S$ < "1" OR S$ > "3" THEN 200
240 PRINT CHR$(147)
250 PRINT "WHAT IS THE INITIAL"
260 PRINT "CHARGE FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 INPUT "FOR HOW MANY MINUTES";BG
350 PRINT CHR$(147)
360 PRINT "HOW MUCH FOR EACH"
370 PRINT "MINUTE AFTERWARD?"
380 PRINT
390 INPUT "$";AT
400 PRINT CHR$(147)

```

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BEGINNER PROGRAMS

```

410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO"
430 PRINT "SPEND ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES"
480 PRINT "DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 PRINT CHR$(147)
520 PRINT "PRESS <RETURN> WHEN"
530 PRINT "THE OTHER PARTY"
540 PRINT "ANSWERS THE PHONE."
550 GET A$
560 IF A$ <> CHR$(13) THEN 550
570 TIMES$ = "000000"
600 PRINT CHR$(147)
620 CO = FT
630 PRINT "-----"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "-----"
670 MIN = VAL(MID$(TIMES$,3,2))+VAL(LEFT$(TIMES$,2))*60
680 SEC = VAL(RIGHT$(TIMES$,2))
730 IF FL = 0 AND MIN >= BG AND SEC = 1 THEN CO = CO+,
T
760 IF SEC = 1 THEN FL = 1
770 IF SEC <> 1 THEN FL = 0
780 PRINT CHR$(19),TAB(110);CO;
790 PRINT CHR$(19),TAB(120);MIN;
800 PRINT CHR$(19),TAB(127);RIGHT$(TIMES$,2)
840 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
TM) THEN 910
880 GET A$
890 IF A$ <> "" THEN 1110
900 GOTO 670
910 PRINT CHR$(147)
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO"
980 PRINT "SILENCE THE ALARM AND END THE PROGRAM."
990 POKE 36878,101
1000 POKE 36874,215
1010 POKE 36874,241
1020 FOR DE = 1 TO 100
1030 NEXT DE
1040 POKE 36874,0
1080 GET A$
1090 IF A$ = "" THEN 1000
1110 PRINT "STOPPED."
1120 END

```

MODIFICATION

TRS-80 Model 4/Phone Cost Monitor

Use the Model III version, with the following alterations:
Omit lines 580 and 590. Add line 60:

```
60 PRINT CHR$(15)
```

Finally, change lines 570, 670, and 780-800 to read as follows:

```

570 SYSTEM "TIME 00:00:00"
670 MIN=VAL(MID$(TIMES$,4,2))+VAL(LEFT$(TIMES$,2))*60
780 PRINT@402,CO;"    "
790 PRINT@411,MIN;"    "
800 PRINT@418,SEC;"    "

```

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MOTHER'S DAY CARD

BY JOEY LATIMER

This Mother's Day, why not say it with your computer? Put aside your favorite game and type in our *Mother's Day Card* program. Set your computer to all upper-case letters, run the program, and answer the questions. Then call your mother into the room. After she's answered a few questions, a personalized *Mother's Day Card*, which says everything you've been too shy to say for years, will appear on the screen! We promise you she'll never forget it! (And while you're at it, why not wrap a ribbon around the computer, or surprise her with a rose on the keyboard?)

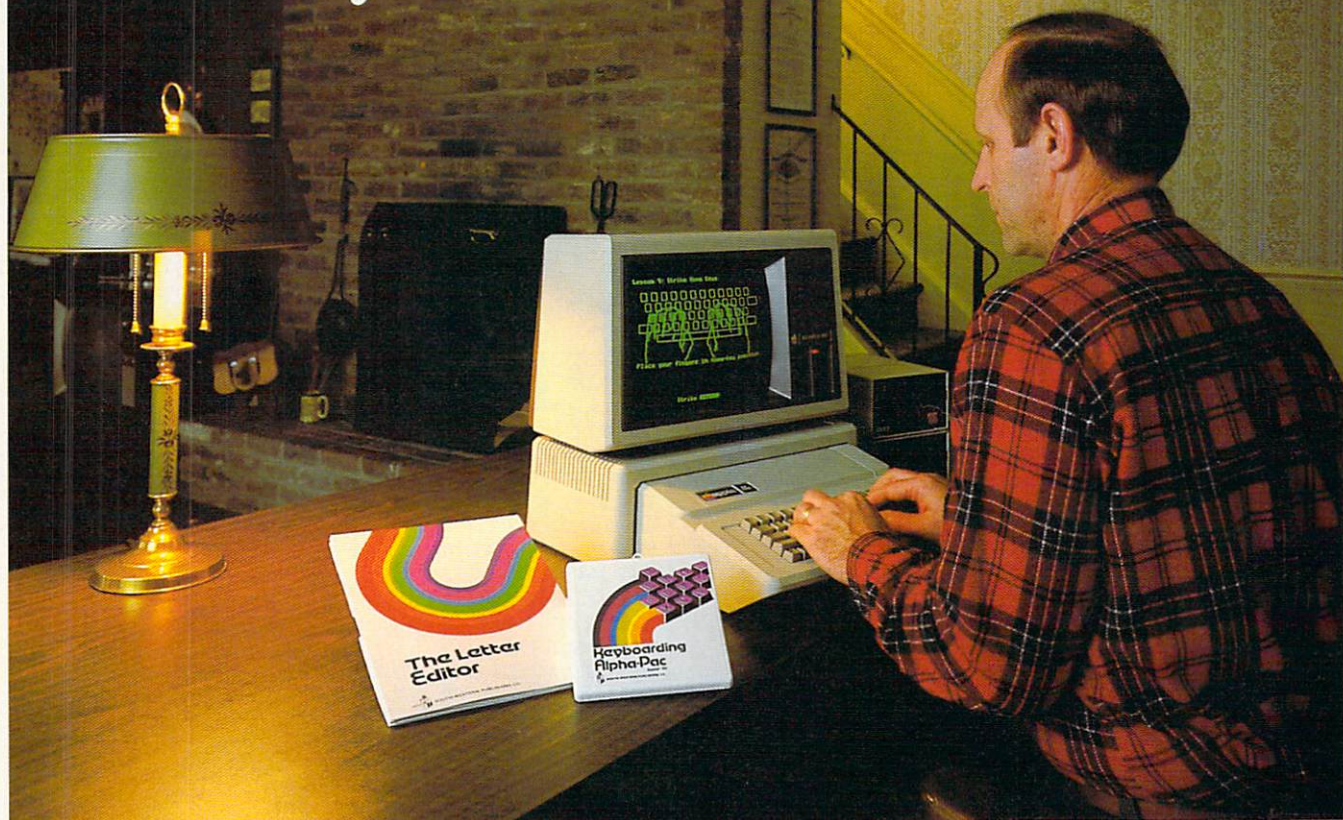


ADAM/Mother's Day Card

```

10 HOME
20 PRINT "MOTHER'S DAY CARD"
30 FOR d = 1 TO 2000
40 NEXT d
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT n$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT p$
110 IF LEFT$(p$,1) <> "Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT pn$
140 HOME
150 PRINT "O.K., ";n$;"! PRESS <RETURN>,"
160 PRINT "THEN GO GET YOUR MOTHER."
170 INPUT r$
180 HOME
190 PRINT "HI MOM!"
200 PRINT
210 GOSUB 1010
220 PRINT "IF YOU COULD TAKE A TRIP TO"
230 PRINT "ANYPLACE IN THE WORLD,"
240 PRINT "WHERE WOULD YOU GO?"
250 INPUT pl$
260 HOME
270 PRINT "WHO IS THE MOST"
280 PRINT "HANDSOME MOVIE STAR?"
290 INPUT ms$
300 HOME
310 PRINT "WHAT IS YOUR FAVORITE"
320 PRINT "GOURMET DISH?"
330 INPUT gm$
340 HOME
350 PRINT "IF YOU HAD A MILLION DOLLARS,"
360 PRINT "WHAT IS THE FIRST"
370 PRINT "THING YOU WOULD BUY?"
380 PRINT "(USE 'A' OR 'AN')"
```

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BEGINNER PROGRAMS

```

460 PRINT "I'D GIVE YOU"
470 PRINT " ";ms$;"S NUMBER,"
480 PRINT "BUT THAT MIGHT NOT BE SO GOOD."
490 PRINT "I WON'T COOK YOU"
500 PRINT " ";gm$;"",
510 PRINT "'CAUSE I'D BURN IT"
520 PRINT "TILL IT'S BLACK."
530 PRINT "I CAN'T BUY YOU"
540 PRINT " ";ob$
550 PRINT "WITH THE MONEY THAT I LACK."
560 PRINT
570 PRINT "BUT ..."
580 FOR d = 1 TO 10000
590 NEXT d
600 HOME
610 PRINT "I CAN GIVE YOU LOVE."
620 PRINT
630 PRINT
640 PRINT TAB(4);"*HAPPY MOTHER'S DAY*"
650 PRINT
660 PRINT TAB(5);"LOVE, ";n$
670 IF LEFT$(p$,1) <> "Y" THEN 670
680 PRINT TAB(7);"(AND ";pn$;" TOO)"
690 GOTO 690
1000 HOME
1010 PRINT "PLEASE PRESS <RETURN> AFTER"
1020 PRINT "TYPING EACH ANSWER."
1030 PRINT
1040 RETURN

```

Apple/Mother's Day Card

```

10 HOME
20 PRINT "MOTHER'S DAY CARD"
30 FOR D = 1 TO 2000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT N$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT P$
110 IF LEFT$(P$,1) <> "Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PN$
140 HOME
150 PRINT "O.K., ";N$;"! PRESS <RETURN>,"
160 PRINT "THEN GO GET YOUR MOTHER."
170 INPUT R$
180 HOME
190 PRINT "HI MOM!"
200 PRINT
210 GOSUB 1010
220 PRINT "IF YOU COULD TAKE A TRIP TO ANYPLACE"
230 PRINT "IN THE WORLD, WHERE WOULD YOU GO?"
240 INPUT PL$
250 HOME
260 PRINT "WHO IS THE MOST HANDSOME MOVIE STAR?"
270 INPUT MS$
280 HOME
290 PRINT "WHAT IS YOUR FAVORITE GOURMET DISH?"
300 INPUT GM$
310 HOME
320 PRINT "IF YOU HAD A MILLION DOLLARS,"
330 PRINT "WHAT IS THE FIRST THING YOU WOULD BUY?"
340 PRINT "(USE 'A' OR 'AN')"

```

```

470 PRINT "'CAUSE I'D BURN IT TILL IT'S BLACK."
480 PRINT "I CAN'T BUY YOU"
490 PRINT " ";OB$
500 PRINT "WITH THE MONEY THAT I LACK."
510 PRINT
520 PRINT "BUT ... I CAN GIVE YOU LOVE."
530 PRINT
540 PRINT
550 PRINT TAB(6);"*HAPPY MOTHER'S DAY*"
560 PRINT
570 PRINT TAB(7);"LOVE, ";N$
580 IF LEFT$(P$,1) <> "Y" THEN 580
590 PRINT TAB(9);"(AND ";PN$;" TOO!)"
600 GOTO 600
1000 HOME
1010 PRINT "PLEASE PRESS <RETURN> AFTER"
1020 PRINT "TYPING EACH ANSWER."
1030 PRINT
1040 RETURN

```

Atari/Mother's Day Card

```

10 DIM N$(37),P$(1),PN$(37),R$(1),PL$(37),MS$(37),GM$(
37),OB$(37)
20 PRINT CHR$(125);"MOTHER'S DAY CARD"
30 FOR D=1 TO 1000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT N$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT P$
110 IF P$<>"Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PN$
140 PRINT CHR$(125);"O.K., ";N$;"! PRESS <RETURN>,"
150 PRINT "THEN GO GET YOUR MOTHER."
160 INPUT R$
170 PRINT CHR$(125);"HI MOM!"
180 PRINT
190 GOSUB 1010
200 PRINT "IF YOU COULD TAKE A TRIP TO"
210 PRINT "ANYPLACE IN THE WORLD, WHERE"
220 PRINT "WOULD YOU GO?"
230 INPUT PL$
240 PRINT CHR$(125);"WHO IS THE MOST HANDSOME MOVIE ST
AR?"
250 INPUT MS$
260 PRINT CHR$(125);"WHAT IS YOUR FAVORITE GOURMET DIS
H?"
270 INPUT GM$
280 PRINT CHR$(125);"IF YOU HAD A MILLION DOLLARS,"
290 PRINT "WHAT IS THE FIRST THING YOU WOULD BUY?"
300 PRINT "(USE 'A' OR 'AN')"

```

```

550 GOTO 550
1000 PRINT CHR$(125);
1010 PRINT "PLEASE PRESS <RETURN> AFTER"
1020 PRINT "TYPING EACH ANSWER."
1030 PRINT
1040 RETURN

```

Commodore 64/Mother's Day Card

```

10 PRINT CHR$(147);CHR$(5);"MOTHER'S DAY CARD"
20 FOR D=1 TO 1000
30 NEXT D
40 GOSUB 1000
50 PRINT "WHAT IS YOUR FIRST NAME?"
60 INPUT N$
70 PRINT
80 PRINT "DO YOU HAVE A PET? (Y/N)"
90 INPUT P$
100 IF LEFT$(P$,1)<>"Y" THEN 130
110 PRINT "WHAT IS YOUR PET'S NAME?"
120 INPUT PN$
130 PRINT CHR$(147);"O.K., ";N$;"! PRESS <RETURN>,"
140 PRINT "THEN GO GET YOUR MOTHER."
150 INPUT R$
160 PRINT CHR$(147);"HI MOM!"
170 PRINT
180 GOSUB 1010
190 PRINT "IF YOU COULD TAKE A TRIP TO ANYPLACE"
200 PRINT "IN THE WORLD, WHERE WOULD YOU GO?"
210 INPUT PL$
220 PRINT CHR$(147);"WHO IS THE MOST HANDSOME MOVIE ST
AR?"
230 INPUT MS$
240 PRINT CHR$(147);"WHAT IS YOUR FAVORITE GOURMET DIS
H?"
250 INPUT GM$
260 PRINT CHR$(147);"IF YOU HAD A MILLION DOLLARS,"
270 PRINT "WHAT IS THE FIRST THING YOU WOULD BUY?"
280 PRINT "(USE 'A' OR 'AN')
290 INPUT OB$
300 PRINT CHR$(147);"DEAR MOM,"
310 PRINT
320 PRINT "I CAN'T SEND YOU TO"
330 PRINT " ";PL$;" "
340 PRINT "ALTHOUGH I WISH I COULD."
350 PRINT "I'D GIVE YOU"
360 PRINT " ";MS$;"'S NUMBER,"
370 PRINT "BUT THAT MIGHT NOT BE SO GOOD."
380 PRINT "I WON'T COOK YOU"
390 PRINT " ";GM$;" "
400 PRINT "'CAUSE I'D BURN IT TILL IT'S BLACK."
410 PRINT "I CAN'T BUY YOU"
420 PRINT " ";OB$
430 PRINT "WITH THE MONEY THAT I LACK."
440 PRINT
450 PRINT "BUT ... I CAN GIVE YOU LOVE."
460 PRINT
470 PRINT
480 PRINT TAB(6);"*HAPPY MOTHER'S DAY*"
490 PRINT
500 PRINT TAB(7);"LOVE, ";N$
510 IF LEFT$(P$,1)<>"Y" THEN 510
520 PRINT TAB(9);"(AND ";PN$;" TOO!)"
530 GOTO 530
1000 PRINT CHR$(147);
1010 PRINT "PLEASE PRESS <RETURN> AFTER"
1020 PRINT "TYPING EACH ANSWER."
1030 PRINT
1040 RETURN

```

IBM PC/Mother's Day Card

```

10 CLS
20 PRINT "MOTHER'S DAY CARD"
30 FOR D=1 TO 1000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT N$
80 PRINT

```

```

90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT P$
110 IF LEFT$(P$,1)<>"Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PN$
140 CLS
150 PRINT "O.K., ";N$;"! PRESS <ENTER>, THEN GO GET YO
UR MOTHER."
160 INPUT R$
170 CLS
180 PRINT "HI MOM!"
190 PRINT
200 GOSUB 1010
210 PRINT "IF YOU COULD TAKE A TRIP TO ANYPLACE IN THE
WORLD, WHERE WOULD YOU GO?"
220 INPUT PL$
230 CLS
240 PRINT "WHO IS THE MOST HANDSOME MOVIE STAR?"
250 INPUT MS$
260 CLS
270 PRINT "WHAT IS YOUR FAVORITE GOURMET DISH?"
280 INPUT GM$
290 CLS
300 PRINT "IF YOU HAD A MILLION DOLLARS, WHAT IS THE F
IRST THING YOU WOULD BUY?"
310 PRINT "(USE 'A' OR 'AN')
320 INPUT OB$
330 CLS
340 PRINT "DEAR MOM,"
350 PRINT
360 PRINT "I CAN'T SEND YOU TO ";PL$;" "
370 PRINT "ALTHOUGH I WISH I COULD."
380 PRINT "I'D GIVE YOU ";MS$;"'S NUMBER,"
390 PRINT "BUT THAT MIGHT NOT BE SO GOOD."
400 PRINT "I WON'T COOK YOU ";GM$;" "
410 PRINT "'CAUSE I'D BURN IT TILL IT'S BLACK."
420 PRINT "I CAN'T BUY YOU ";OB$
430 PRINT "WITH THE MONEY THAT I LACK."
440 PRINT
450 PRINT "BUT ... I CAN GIVE YOU LOVE."
460 PRINT
470 PRINT
480 PRINT TAB(15);"*HAPPY MOTHER'S DAY*"
490 PRINT
500 PRINT TAB(16);"LOVE, ";N$
510 IF LEFT$(P$,1)<>"Y" THEN 510
520 PRINT TAB(18);"(AND ";PN$;" TOO!)"
530 GOTO 530
1000 CLS
1010 PRINT "PLEASE PRESS <ENTER> AFTER TYPING EACH ANS
WER."
1020 PRINT
1030 RETURN

```

IBM PCjr/Mother's Day Card

```

10 CLS
20 PRINT "MOTHER'S DAY CARD"
30 FOR D=1 TO 1000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT N$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT P$
110 IF LEFT$(P$,1)<>"Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PN$
140 CLS
150 PRINT "O.K., ";N$;"! PRESS <ENTER>,"
160 PRINT "THEN GO GET YOUR MOTHER."
170 INPUT R$
180 CLS
190 PRINT "HI MOM!"
200 PRINT
210 GOSUB 1010
220 PRINT "IF YOU COULD TAKE A TRIP TO"
230 PRINT "ANYPLACE IN THE WORLD,"

```



Today's most innovative educational software began here 60 years ago.

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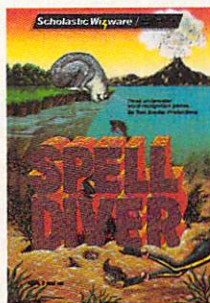
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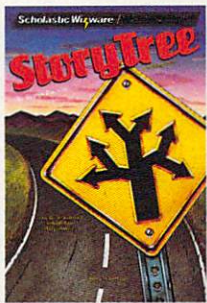
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Spelldiver, Agent U.S.A. and Bannercatch designed and developed by Tom Snyder Productions, Inc. Story Tree designed and developed by George Brackett.



Spelldiver, Agent U.S.A. and Bannercatch available for Atari 800/1200/XL, Commodore, Apple and IBM versions available soon. Story Tree available for Apple.

BEGINNER PROGRAMS

```

240 PRINT "WHERE WOULD YOU GO?"
250 INPUT PL$
260 CLS
270 PRINT "WHO IS THE MOST HANDSOME MOVIE STAR?"
280 INPUT MS$
290 CLS
300 PRINT "WHAT IS YOUR FAVORITE GOURMET DISH?"
310 INPUT GS$
320 CLS
330 PRINT "IF YOU HAD A MILLION DOLLARS,"
340 PRINT "WHAT IS THE FIRST THING YOU WOULD BUY?"
350 PRINT "(USE 'A' OR 'AN')"

```

TI-99/4A/Mother's Day Card

```

10 CALL CLEAR
20 PRINT "MOTHER'S DAY CARD"
30 FOR D=1 TO 1000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT NS$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT PS$
110 IF SEG$(PS$,1,1)<>"Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PN$
140 CALL CLEAR
150 PRINT "O.K., ";NS$;"! PRESS <ENTER>,"
160 PRINT "THEN GO GET YOUR MOTHER."
170 INPUT RS$
180 CALL CLEAR
190 PRINT "HI MOM!"
200 PRINT
210 GOSUB 1010
220 PRINT "IF YOU COULD TAKE A TRIP TO"
230 PRINT "ANYPLACE IN THE WORLD, WHERE"
240 PRINT "WOULD YOU GO?"
250 INPUT PL$
260 CALL CLEAR
270 PRINT "WHO IS THE MOST"
280 PRINT "HANDSOME MOVIE STAR?"
290 INPUT MS$
300 CALL CLEAR
310 PRINT "WHAT IS YOUR FAVORITE"
320 PRINT "GOURMET DISH?"

```

```

330 INPUT GS$
340 CALL CLEAR
350 PRINT "IF YOU HAD A MILLION"
360 PRINT "DOLLARS, WHAT IS THE FIRST"
370 PRINT "THING YOU WOULD BUY?"
380 PRINT "(USE 'A' OR 'AN')"

```

Timex Sinclair 1000 w/16K RAM Pack, 1500, & 2068/Mother's Day Card

```

10 CLS
20 SLOW
30 PRINT "MOTHER'S DAY CARD"
40 FOR D=1 TO 100
50 NEXT D
60 GOSUB 1000
70 PRINT "WHAT IS YOUR FIRST NAME?"
80 INPUT NS$
90 PRINT
100 PRINT "DO YOU HAVE A PET? (Y/N)"
110 INPUT PS$
120 IF PS$(1)<>"Y" THEN GOTO 150
130 PRINT "WHAT IS THE NAME OF YOUR PET?"
140 INPUT AS$
150 CLS
160 PRINT "O.K., ";NS$;" PRESS <ENTER>,"
170 PRINT "THEN GO GET YOUR MOTHER."
180 INPUT TS$
190 CLS
200 PRINT "HI MOM."
210 PRINT
220 GOSUB 1010
230 PRINT "IF YOU COULD TAKE A TRIP TO"
240 PRINT "ANYPLACE IN THE WORLD,"
250 PRINT "WHERE WOULD YOU GO?"
260 INPUT LS$
270 CLS
280 PRINT "WHO IS THE MOST"
290 PRINT "HANDSOME MOVIE STAR?"
300 INPUT MS$
310 CLS
320 PRINT "WHAT IS YOUR FAVORITE"
330 PRINT "GOURMET DISH?"
340 INPUT GS$
350 CLS
360 PRINT "IF YOU HAD A MILLION DOLLARS,"
370 PRINT "WHAT IS THE FIRST THING"

```

```

380 PRINT "YOU WOULD BUY?"
390 PRINT "(USE A OR AN)"
400 INPUT B$
410 CLS
420 PRINT "DEAR MOM,"
430 PRINT
440 PRINT "I CANNOT SEND YOU TO"
450 PRINT " ";L$;","
460 PRINT "ALTHOUGH I WISH I COULD."
470 PRINT "I WOULD GIVE YOU"
480 PRINT " ";M$;"S NUMBER,"
490 PRINT "BUT THAT MIGHT NOT BE SO GOOD."
500 PRINT "I WILL NOT COOK YOU"
510 PRINT " ";G$;","
520 PRINT "CAUSE I WOULD BURN IT"
530 PRINT " TILL IT WAS BLACK."
540 PRINT "I CANNOT BUY YOU"
550 PRINT " ";B$
560 PRINT "WITH THE MONEY THAT I LACK."
570 PRINT
580 PRINT "BUT ... I CAN GIVE YOU LOVE."
590 PRINT
600 PRINT TAB 4;"*HAPPY MOTHERS DAY*"
610 PRINT
620 PRINT TAB 5;"LOVE, ";N$
630 IF P$(1)<>"Y" THEN GOTO 630
640 PRINT TAB 7;"(AND ";A$;" TOO)"
650 GOTO 650
1000 CLS
1010 PRINT "PLEASE PRESS <ENTER> AFTER"
1020 PRINT "TYPING EACH ANSWER."
1030 PRINT
1040 RETURN

```

TRS-80 Color Computer/Mother's Day Card

```

10 CLS
20 PRINT "MOTHER'S DAY CARD"
30 FOR D=1 TO 1000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT N$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT P$
110 IF LEFT$(P$,1)<>"Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PN$
140 CLS
150 PRINT "O.K., ";N$;"! PRESS <ENTER>,"
160 PRINT "THEN GO GET YOUR MOTHER."
170 INPUT R$
180 CLS
190 PRINT "HI MOM!"
200 PRINT
210 GOSUB 1010
220 PRINT "IF YOU COULD TAKE A TRIP TO"
230 PRINT "ANYPLACE IN THE WORLD, WHERE"
240 PRINT "WOULD YOU GO?"
250 INPUT PL$
260 CLS
270 PRINT "WHO IS THE MOST"
280 PRINT "HANDSOME MOVIE STAR?"
290 INPUT MS$
300 CLS
310 PRINT "WHAT IS YOUR FAVORITE"
320 PRINT "GOURMET DISH?"
330 INPUT GM$
340 CLS
350 PRINT "IF YOU HAD A MILLION DOLLARS,"
360 PRINT "WHAT IS THE FIRST THING"
370 PRINT "YOU WOULD BUY?"
380 PRINT "(USE 'A' OR 'AN')'"
390 INPUT OB$
400 CLS
410 PRINT "DEAR MOM,"
420 PRINT

```

```

430 PRINT "I CAN'T SEND YOU TO"
440 PRINT " ";PL$;","
450 PRINT "ALTHOUGH I WISH I COULD."
460 PRINT "I'D GIVE YOU"
470 PRINT " ";MS$;"S NUMBER,"
480 PRINT "BUT THAT MIGHT NOT BE SO GOOD."
490 PRINT "I WON'T COOK YOU"
500 PRINT " ";GM$;","
510 PRINT "'CAUSE I'D BURN IT TILL IT'S"
520 PRINT " BLACK."
530 PRINT "I CAN'T BUY YOU"
540 PRINT " ";OB$
550 PRINT "WITH THE MONEY THAT I LACK."
560 PRINT "BUT ...";
570 FOR D=1 TO 5000
580 NEXT D
590 CLS
600 PRINT "I CAN GIVE YOU LOVE."
610 PRINT
620 PRINT
630 PRINT TAB(6);"*HAPPY MOTHER'S DAY*"
640 PRINT
650 PRINT TAB(7);"LOVE, ";N$
660 IF LEFT$(P$,1)<>"Y" THEN 660
670 PRINT TAB(9);"(AND ";PN$;" TOO!)"
680 GOTO 680
1000 CLS
1010 PRINT "PLEASE PRESS <ENTER> AFTER"
1020 PRINT "TYPING EACH ANSWER."
1030 PRINT
1040 RETURN

```

TRS-80 Model III/Mother's Day Card

```

10 CLEAR 1000
20 CLS
30 PRINT "MOTHER'S DAY CARD"
40 FOR D=1 TO 1000
50 NEXT D
60 GOSUB 1000
70 PRINT "WHAT IS YOUR FIRST NAME?"
80 INPUT N$
90 PRINT
100 PRINT "DO YOU HAVE A PET? (Y/N)"
110 INPUT P$
120 IF LEFT$(P$,1)<>"Y" THEN 150
130 PRINT "WHAT IS YOUR PET'S NAME?"
140 INPUT PN$
150 CLS
160 PRINT "O.K., ";N$;"! PRESS <ENTER>,"
170 PRINT "THEN GO GET YOUR MOTHER."
180 INPUT R$
190 CLS
200 PRINT "HI MOM!"
210 PRINT
220 GOSUB 1010
230 PRINT "IF YOU COULD TAKE A TRIP TO"
240 PRINT "ANYPLACE IN THE WORLD, WHERE"
250 PRINT "WOULD YOU GO?"
260 INPUT PL$
270 CLS
280 PRINT "WHO IS THE MOST HANDSOME MOVIE STAR?"
290 INPUT MS$
300 CLS
310 PRINT "WHAT IS YOUR FAVORITE GOURMET DISH?"
320 INPUT GM$
330 CLS
340 PRINT "IF YOU HAD A MILLION DOLLARS,"
350 PRINT "WHAT IS THE FIRST THING YOU WOULD BUY?"
360 PRINT "(USE 'A' OR 'AN')'"
370 INPUT OB$
380 CLS
390 PRINT "DEAR MOM,"
400 PRINT
410 PRINT "I CAN'T SEND YOU TO ";PL$;","
420 PRINT "ALTHOUGH I WISH I COULD."
430 PRINT "I'D GIVE YOU ";MS$;"S NUMBER,"
440 PRINT "BUT THAT MIGHT NOT BE SO GOOD."

```

BEGINNER PROGRAMS

```

450 PRINT "I WON'T COOK YOU ";GMS;"",
460 PRINT "'CAUSE I'D BURN IT TILL IT'S BLACK."
470 PRINT "I CAN'T BUY YOU ";OB$
480 PRINT "WITH THE MONEY THAT I LACK."
490 PRINT "BUT ... I CAN GIVE YOU LOVE."
500 PRINT
510 PRINT TAB(9);"*HAPPY MOTHER'S DAY*"
520 PRINT
530 PRINT TAB(10);"LOVE, ";N$
540 IF LEFT$(P$,1)<>"Y" THEN 540
550 PRINT TAB(12);"(AND ";PNS" TOO!)"
560 GOTO 560
1000 CLS
1010 PRINT "PLEASE PRESS <ENTER> AFTER TYPING EACH ANSWER."
1020 PRINT
1030 RETURN

```

TRS-80 Model 4/Mother's Day Card

```

10 CLS
20 PRINT "MOTHER'S DAY CARD"
30 FOR D=1 TO 1000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT N$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT P$
110 IF LEFT$(P$,1)<>"Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PNS
140 CLS
150 PRINT "O.K., ";N$;"! PRESS <ENTER>, THEN GO GET YOUR MOTHER."
160 INPUT R$
170 CLS
180 PRINT "HI MOM!"
190 PRINT

```

```

200 GOSUB 1010
210 PRINT "IF YOU COULD TAKE A TRIP TO ANYPLACE IN THE WORLD, WHERE WOULD YOU GO?"
220 INPUT PL$
230 CLS
240 PRINT "WHO IS THE MOST HANDSOME MOVIE STAR?"
250 INPUT MS$
260 CLS
270 PRINT "WHAT IS YOUR FAVORITE GOURMET DISH?"
280 INPUT GM$
290 CLS
300 PRINT "IF YOU HAD A MILLION DOLLARS, WHAT IS THE FIRST THING YOU WOULD BUY?"
310 PRINT "(USE 'A' OR 'AN'))"
320 INPUT OB$
330 CLS
340 PRINT "DEAR MOM,"
350 PRINT
360 PRINT "I CAN'T SEND YOU TO ";PL$;"",
370 PRINT "ALTHOUGH I WISH I COULD."
380 PRINT "I'D GIVE YOU ";MS$;"'S NUMBER,"
390 PRINT "BUT THAT MIGHT NOT BE SO GOOD."
400 PRINT "I WON'T COOK YOU ";GMS;"",
410 PRINT "'CAUSE I'D BURN IT TILL IT'S BLACK."
420 PRINT "I CAN'T BUY YOU ";OB$
430 PRINT "WITH THE MONEY THAT I LACK."
440 PRINT
450 PRINT "BUT ... I CAN GIVE YOU LOVE."
460 PRINT
470 PRINT
480 PRINT TAB(9) "*HAPPY MOTHER'S DAY*"
490 PRINT
500 PRINT TAB(10) "LOVE, ";N$
510 IF LEFT$(P$,1)<>"Y" THEN 510
520 PRINT TAB(12) "(AND ";PNS;" TOO!)"
530 GOTO 530
1000 CLS
1010 PRINT "PLEASE PRESS <ENTER> AFTER TYPING EACH ANSWER."

```

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```
1020 PRINT
1030 RETURN
```

VIC-20/Mother's Day Card

```
10 PRINT CHR$(147);"MOTHER'S DAY CARD"
20 FOR D=1 TO 1000
30 NEXT D
40 GOSUB 1000
50 PRINT "WHAT IS YOUR NAME?"
60 INPUT N$
70 PRINT
80 PRINT "DO YOU HAVE A PET?"
90 INPUT "(Y/N)";P$
100 IF LEFT$(P$,1)<>"Y" THEN 140
110 PRINT "WHAT'S THE PET'S NAME?"
120 INPUT PNS
130 PRINT CHR$(147);"O.K., ";N$;"!"
140 PRINT "PRESS <RETURN>, THEN"
150 PRINT "GO GET YOUR MOTHER."
160 INPUT R$
170 PRINT CHR$(147);"HI MOM!"
180 PRINT
190 GOSUB 1010
200 PRINT "IF YOU COULD TAKE A"
210 PRINT "TRIP TO ANYPLACE IN"
220 PRINT "THE WORLD, WHERE WOULD YOU GO?"
230 INPUT PL$
240 PRINT CHR$(147);"WHO IS THE MOST"
250 PRINT "HANDSOME MOVIE STAR?"
260 INPUT MS$
270 PRINT CHR$(147);"WHAT IS YOUR FAVORITE GOURMET DIS"
280 INPUT GMS
290 PRINT CHR$(147);"IF YOU HAD A MILLION"
300 PRINT "DOLLARS, WHAT IS THE"
310 PRINT "FIRST THING YOU WOULD BUY?"
320 PRINT "(USE 'A' OR 'AN')"
```

```
330 INPUT OBS
340 PRINT CHR$(147);"DEAR MOM,"
350 PRINT
360 PRINT "I CAN'T SEND YOU TO"
370 PRINT " ";PL$;" "
380 PRINT "ALTHOUGH I WISH I"
390 PRINT " COULD."
400 PRINT "I'D GIVE YOU"
410 PRINT " ";MS$;"'S NUMBER,"
420 PRINT "BUT THAT MIGHT NOT"
430 PRINT " BE SO GOOD."
440 PRINT "I WON'T COOK YOU"
450 PRINT " ";GMS$;" "
460 PRINT "'CAUSE I'D BURN IT"
470 PRINT " TILL IT'S BLACK."
480 PRINT "I CAN'T BUY YOU"
490 PRINT " ";OBS$
500 PRINT "WITH THE MONEY THAT"
510 PRINT " I LACK."
520 PRINT
530 PRINT "BUT ..."
540 FOR D=1 TO 10000
550 NEXT D
560 PRINT CHR$(147);"I CAN GIVE YOU";CHR$(28);" LOVE"
570 PRINT
580 PRINT
590 PRINT CHR$(30);"*HAPPY MOTHER'S DAY*"
600 PRINT
610 PRINT CHR$(28);" LOVE, ";N$
620 IF LEFT$(P$,1)<>"Y" THEN 620
630 PRINT " (AND ";PNS$;" TOO!)"
640 GOTO 640
1000 PRINT CHR$(147)
1010 PRINT "PLEASE PRESS <RETURN>"
1020 PRINT "AFTER TYPING EACH"
1030 PRINT "ANSWER."
1040 PRINT
1050 RETURN
```

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THE MYSTERY OF THE UNKNOWN GADGET

BY PETER FAVARO

Brendan McCorduck is a cabinetmaker by trade, but his passion in life is tinkering. He would, of course, be highly insulted to be known as a common tinkerer and prefers to call himself a "gadgetrist."

While Brendan's ideas are always practical, they are seldom timely. Thus, the world will probably never see the likes of the McCorduck vegetable slicer/clock radio he has spent the last two years perfecting, nor the pocket golf ball washer that rolls idly across his desk. As far as Brendan is concerned, the world just isn't ready to understand the value of such creations, and he remains perfectly content to tinker about his home—an abandoned movie prop house.

When Brendan first got permission to rent the prop house, it was like a dream come true. He loved to pass the time playing with the props and gadgets constructed by his predecessor, a movie engineer who was no doubt "a gadgetrist" in his own right. Though the prop house hadn't been used since the days of silent films, Brendan was so enthralled with the atmosphere that he did little more than dust off most of the props and move his things in right alongside. He even left the old yellow inventory tags on most of the items.

PETER FAVARO, PH.D., is an education and recreation video-game design consultant, whose first invention was a bathtub "boat capsizer" made from the cap of his mom's hair-spray can. He is currently writing a book on educational computing for Prentice-Hall, and is the author of last month's puzzle.

One day recently, while rummaging through an old trunk that had been gathering dust in the corner, Brendan came across an old roll of movie film and a yellowed diary page belonging to the movie engineer and dated 1927. In faded ink, the movie engineer confessed his worries about an unscrupulous propmaster who sought to steal his plans for an invention that would "revolutionize the moving picture industry."

The movie engineer then proceeded to congratulate himself on how he had cleverly constructed his invention out of six movie props, thereby being able to store his invention, unassembled, right under the propmaster's nose! When Brendan held the roll of movie film up to the light, he discovered that it contained the plans for the invention. The frames contained step-by-step directions for assembly, with each frame showing one step. Brendan also noticed that each frame number matched an inventory tag number on a prop in the room.

But to his dismay, Brendan discovered that in order to throw off the unscrupulous propmaster, the movie engineer also had included a number of props and directions that weren't necessary to his invention. Somehow, Brendan had to figure out how to select the correct six props and in which order they should be assembled. If only he could decipher the hidden clues in the peculiar directions!

HOW TO PLAY

Set your computer for all upper-case letters and turn the volume up. Type in an

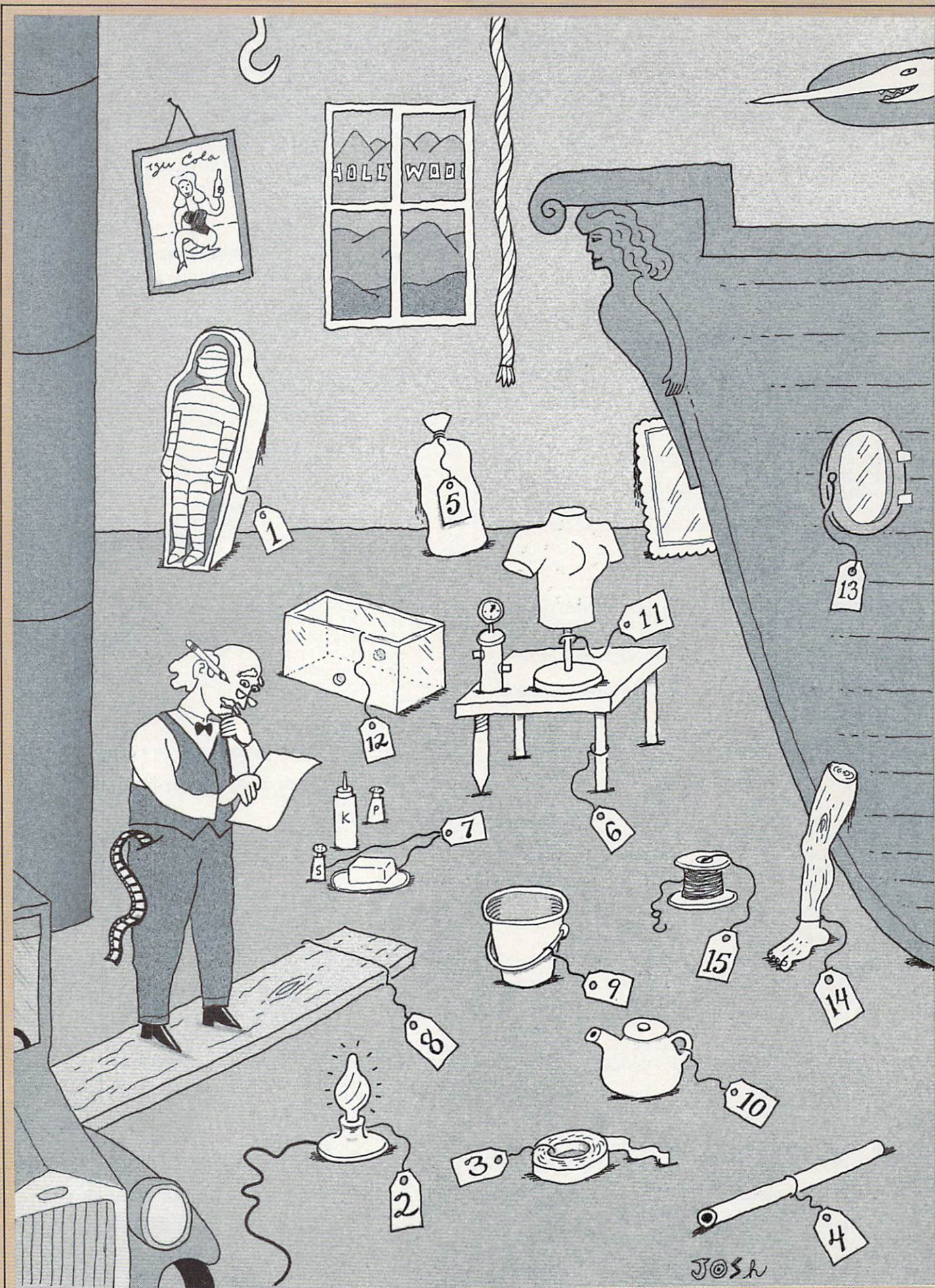
inventory tag number. The corresponding frame on the roll of film will appear on your screen, along with the written directions. Study all the directions carefully, for there's more to them than first meets the eye. You are not allowed to guess until you've viewed at least six frames, whereupon the prompt "S" for solve will appear and remain on the screen. There is no limit to the number of frames that you can view on the roll of film before you guess.

When you are ready to guess, type "S" and then the six inventory tag num-

bers in the order that you think is correct, pressing the RETURN or ENTER key after each entry. The computer will then attempt to assemble the invention, following the sequence you've given. If you select the wrong props, or the correct props in the wrong order, the invention won't work. If you guess correctly, the computer will assemble a working version of the invention, which will perform on your screen. You can get an additional clue by typing "H," for help, after you've guessed incorrectly. The solution will appear in the next issue.

Commodore 64/Mystery Gadget

```
10 DIM A$(27):WL=40:P1=0:PF=0:C=0:C$=CHR$(147)
20 FOR X=1 TO 39:HP$=HP$+CHR$(29):NEXT X
30 FOR X=1 TO 23:VP$=VP$+CHR$(17):NEXT X
40 FOR X=1 TO 15:READ A$(X):NEXT X
50 FOR X=16 TO 20:READ T$:FOR Y=1 TO LEN(T$)-6:E=ASC(MID$(T$,Y,1))+3
60 IF E=49 THEN E=32
70 A$(X)=A$(X)+CHR$(E):NEXT Y:NEXT X
80 FOR X=18 TO 23:AN(X-17)=ASC(MID$(T$,X,1))-68:NEXT X
90 FOR X=21 TO 26:READ A$(X):NEXT X:A$(27)=" "
100 FOR X=1 TO 50:A$(27)=A$(27)+" ":NEXT X
110 FOR X=0 TO 6:READ P(X):NEXT X
120 PRINT C$:R$="NOW PLAYING":GOSUB 3000:R$="*MYSTERY GADGET*":GOSUB 3000
130 H=P(3):GOSUB 2000:R$="ENTER INVENTORY TAG NUMBER,"
140 IF C>=6 THEN R$=R$+" 'S' TO SOLVE,"
150 R$=R$+" OR 'Q' TO QUIT.":GOSUB 1000
160 H=P(5):GOSUB 2000:PRINT "-->":INPUT N$
170 H=P(5):GOSUB 2000:PRINT A$(27);
180 IF LEFT$(N$,1)="Q" THEN PRINT C$:END
190 IF LEFT$(N$,1)="S" AND C>=6 THEN 320
200 IF N$<"1" OR N$>"9" THEN 160
210 N=VAL(N$):IF N<1 OR N>15 THEN 160
220 C=C+1
230 PRINT C$:H=P(0):GOSUB 2000:GOSUB 4000:H=P(6):GOSUB 2000:GOSUB 4000
240 H=P(1):GOSUB 2000:R$="FRAME #"+N$:GOSUB 3000
250 H=P(5):GOSUB 2000:R$="PLEASE PRESS ANY KEY":GOSUB 3000
260 H=P(2):GOSUB 2000:PRINT TAB(WL/3);
270 FOR X=1 TO LEN(A$(N)):PRINT MID$(A$(N),X,1);
280 IF MID$(A$(N),X,1)=" " THEN PRINT:PRINT TAB(WL/3);
290 NEXT X
300 GET K$:IF K$="" THEN 300
310 GOTO 120
320 PRINT C$:R$="ASSEMBLY INSTRUCTIONS":GOSUB 3000
330 H=P(3):GOSUB 2000:R$="ENTER TAG NUMBER FOR":GOSUB 1000
340 CR=4:FOR X=1 TO 6
350 H=P(4):GOSUB 2000:PRINT A$(X+20);" PROP";:INPUT N$
```



PUZZLE

```

360 H=P(4):GOSUB 2000:PRINT A$(27):IF N$<"1" OR N$>"9"
  THEN 350
370 RE(X)=VAL(N$):IF RE(X)<1 OR RE(X)>15 THEN 350
380 H=CR*WL:GOSUB 2000:PF=1
390 RS=TR$+A$(RE(X)):GOSUB 1000:PF=0:NEXT X:TR$=""
420 H=P(3):GOSUB 2000:PRINT A$(27):H=P(5):GOSUB 2000
430 RS="PLEASE PRESS ANY KEY":GOSUB 3000
440 GET K$:IF K$="" THEN 440
450 PRINT C$:H=P(6):GOSUB 2000:RS="PROCESSING ...":GOSUB 3000
460 FOR D=1 TO 25:PRINT:FOR S=1 TO 100:NEXT S:NEXT D
470 FL=0:FOR X=1 TO 6:IF RE(X)<>AN(X) THEN FL=1
480 NEXT X:IF FL=0 THEN 590
490 PRINT C$:RS="BAD GUESS!":GOSUB 3000
500 H=P(3):GOSUB 2000:RS="AN INTERESTING IDEA, THOUGH!":GOSUB 1000
510 RS="PRESS 'H' FOR A HINT, OR ANY OTHER KEY TO CONTINUE PLAY.":GOSUB 1000
520 GET K$:IF K$="" THEN 520
530 IF LEFT$(K$,1)<>"H" THEN 120
540 PRINT C$:RS="A LITTLE HINT ...":GOSUB 3000:H=P(2):GOSUB 2000
550 FOR X=16 TO 19:RS=A$(X):GOSUB 1000:NEXT X
560 H=P(5):GOSUB 2000:RS="PLEASE PRESS ANY KEY":GOSUB 3000
570 GET K$:IF K$="" THEN 570
580 GOTO 120
590 PRINT C$:H=P(0):GOSUB 2000:RS="WHAT'S THAT SIZZLING SOUND?":GOSUB 1000
600 VO=54296:WV=54276:AK=54277:HF=54273:LF=54272
610 FOR X=54272 TO 54296:POKE X,0:NEXT X
620 POKE VO,15:POKE WV,129:POKE AK,15:POKE HF,40:POKE LF,200
630 FOR X=1 TO 1000:NEXT X
640 POKE WV,0:POKE AK,0:PRINT CHR$(158);
650 PRINT C$:FOR X=1 TO LEN(A$(20))
660 PRINT TAB(X+(WL-LEN(A$(20)))/2);MID$(A$(20),X,1);
670 POKE VO,15:POKE WV,129:POKE AK,4:POKE HF,40:POKE LF,200
680 FOR D=1 TO RND(0)*50:NEXT D:POKE WV,0:POKE AK,0
690 NEXT X:PRINT CHR$(158);
700 FOR X=200 TO 1 STEP -1:H=RND(0)*WL*20+WL*2:GOSUB 2000
710 PRINT CHR$(113);
720 POKE VO,15:POKE WV,129:POKE AK,4:POKE HF,40:POKE LF,200
730 FOR D=1 TO RND(0)*X:NEXT D
740 POKE WV,0:POKE AK,0:NEXT X:END
1000 J=0:IF LEN(RS)<=WL THEN PRINT RS:GOTO 1030
1010 FOR I=1 TO WL-1:IF MID$(RS,I,1)=" " THEN J=I
1020 NEXT I:PRINT LEFT$(RS,J):RS=RIGHT$(RS,LEN(RS)-J):CR=CR+1:GOTO 1000
1030 IF PF=1 THEN TR$=RS+" "
1040 RS="":RETURN
2000 VE=INT(H/WL):LA=INT(H-VE*WL+P1)
2010 PRINT CHR$(19);:IF VE>0 THEN PRINT LEFT$(VP$,VE);
2020 IF LA>0 THEN PRINT LEFT$(HP$,LA);
2030 RETURN
3000 PRINT TAB((WL-LEN(RS))/2);RS:RETURN
4000 FOR X=0 TO WL-1:IF X/4=INT(X/4) THEN PRINT CHR$(182);:GOTO 4020
4010 PRINT " ";
4020 NEXT X:RETURN
5000 DATA WRAP ON NONADHESIVE TAPE TO EGYPTIAN MUMMY.
5010 DATA SCREW IN XMAS LIGHTBULB TIGHTLY. PLACE UNDER PAIL AND TURN ON.
5020 DATA NOW OBTAIN GADGET ON TABLE AND TAPE.
5030 DATA TAKE HOLLOW ROD. EASE ENDS THROUGH HOLES IN TANK.
5040 DATA NOW OPEN SANDBAG AND LET EMPTY.
5050 DATA NEXT OPEN POINTED END OF TABLE LEG. REMOVE F LASH POWDER.
5060 DATA FOLLOW INSTRUCTIONS VERY EXACTLY. ADD CONDIMENTS TO PAIL AND SHAKE.
5070 DATA NAIL ONTO PLANK EGYPTIAN MUMMY.
5080 DATA FASTEN ONE UNCOVERED RINSED PAIL TO HOOK.
5090 DATA COVER AND NOTE TEMPERATURE.
5100 DATA NAIL ONTO TORSO ONE WOODEN LEG.

```

```

5110 DATA OVERTURN NEARBY EMPTY TANK.
5120 DATA OPEN OVAL PORTHOLE. SUSPEND WIRE WITH HOOK.
5130 DATA BUILD ANOTHER DUPLICATE LEG.
5140 DATA TWIST WIRE OVER ROD LEAVING HOOK DANGLING.
5150 DATA CFOPQ.>KA.CLOBLPQRETMKO
5160 DATA VLR.PELRIA.HKLT+++FDEWOI
5170 DATA QEFKDP.>OB.PMBIIBA.LRQFDHTJH
5180 DATA %QELRDE.QEBV.ALK$.PELT&FSLKFD
5190 DATA >.MLM&LOK.J>@EFKBP$HMKF
5200 DATA FIRST,SECOND,THIRD,FOURTH,FIFTH,SIXTH
5210 DATA 40,120,240,600,720,800,840

```

TI-99/4A w/TI Extended BASIC/Mystery Gadget

```

10 DIM A$(27),A(15):: WL=28 :: P1=1 :: PF=0 :: C=0 :: SP=5
20 FILMS=RPT$("F",16):: CALL CHAR(96,FILMS):: POP$="5E FEF8FC317DFF66" :: CALL CHAR(100,POP$)
30 FOR X=1 TO 15 :: READ A$(X):: NEXT X
40 FOR X=16 TO 20 :: READ T$ :: FOR Y=1 TO LEN(T$)-6 :: E=ASC(SEG$(T$,Y,1))+3
50 IF E=49 THEN E=32
60 A$(X)=A$(X)&CHR$(E):: NEXT Y :: NEXT X
70 FOR X=18 TO 23 :: AN(X-17)=ASC(SEG$(T$,X,1))-68 :: NEXT X
80 FOR X=21 TO 26 :: READ A$(X):: NEXT X
90 A$(27)=" " :: FOR X=1 TO SP :: A$(27)=A$(27)&A$(27) :: NEXT X
100 FOR X=0 TO 6 :: READ P(X):: NEXT X
110 CALL CLEAR :: ROW=0 :: RS="NOW PLAYING" :: GOSUB 3000 :: RS="*MYSTERY GADGET*" :: GOSUB 3000
120 H=P(3):: GOSUB 2000 :: RS="ENTER INVENTORY TAG NUMBER,"
130 IF C>=6 THEN RS=RS$ " 'S' TO SOLVE,"
140 RS=RS$ " OR 'Q' TO QUIT." :: GOSUB 1000
150 INPUT "-->":N$
160 IF SEG$(N$,1,1)="Q" THEN CALL CLEAR :: END
170 IF SEG$(N$,1,1)="S" THEN 310
180 IF N$<"1" OR N$>"9" THEN 110
190 N=VAL(N$):: IF N<1 OR N>15 THEN 150
200 C=C+1
210 CALL CLEAR :: H=P(0):: GOSUB 2000 :: GOSUB 4000 :: H=P(6):: GOSUB 2000 :: GOSUB 4000
220 H=P(1):: GOSUB 2000 :: RS="FRAME #"&N$ :: ROW=VE-1 :: GOSUB 3000
230 H=P(5):: GOSUB 2000 :: RS="PLEASE PRESS ANY KEY" :: ROW=VE-1 :: GOSUB 3000
240 H=P(2):: GOSUB 2000
250 COLUMN=LA+INT(WL/3)
260 FOR X=1 TO LEN(A$(N)):: DISPLAY AT(VE,COLUMN):SEG$(A$(N),X,1)
270 IF SEG$(A$(N),X,1)=CHR$(32) THEN VE=VE+1 :: COLUMN=LA+INT(WL/3):: GOTO 290
280 COLUMN=COLUMN+1
290 NEXT X
300 CALL KEY(0,K,S):: IF S=0 THEN 300 ELSE 110
310 CALL CLEAR :: FOR X=1 TO 6 :: DISPLAY AT(1,3):"*ASSEMBLY INSTRUCTIONS*"
320 DISPLAY AT(23,1):"ENTER TAG NUMBER FOR..."
330 DISPLAY AT(24,1):A$(X+20)&" PROP";:N$=""
340 CALL KEY(0,K,S):: IF S=0 THEN 340
350 IF K=13 THEN IF N$<>" " THEN 370 ELSE 340
360 N$=N$&CHR$(K):: DISPLAY AT(24,LEN(A$(X+20))+7+LEN(N$)-1):CHR$(K):: GOTO 340
370 DISPLAY AT(22,1):A$(27):: DISPLAY AT(23,1):A$(27):IF N$<"1" OR N$>"9" THEN 330
380 RE(X)=VAL(N$):: IF RE(X)<1 OR RE(X)>15 THEN 330
390 IF X=1 THEN H=588 ELSE H=SV*WL
400 GOSUB 2000
410 PF=1
420 RS=TR$&A$(RE(X)):GOSUB 1000 :: PF=0 :: NEXT X :: TR$=""
430 RS="PROCESSING..." :: ROW=22 :: GOSUB 3000 :: FOR X=1 TO 24 :: PRINT :: NEXT X
440 CALL SOUND(4250,110,1)
450 FL=0 :: FOR X=1 TO 6 :: IF RE(X)<>AN(X) THEN FL=1

```

```

460 NEXT X :: IF FL=0 THEN 550
470 CALL CLEAR :: R$="BAD GUESS!" :: ROW=2 :: GOSUB 30
480
490 H=P(3):: GOSUB 2000 :: R$="AN INTERESTING IDEA, TH
OUGH!" :: GOSUB 1000
490 R$="PRESS 'H' FOR A HINT, OR ANY OTHER KEY TO CONT
INUE PLAY." :: GOSUB 1000
500 CALL KEY(0,K,S):: IF S=0 THEN 500 ELSE IF K<>72 TH
EN 110
510 CALL CLEAR :: R$="A LITTLE HINT..." :: ROW=1 :: GO
SUB 3000 :: H=P(2)
520 FOR X=16 TO 19 :: R$=A$(X):: GOSUB 2000 :: GOSUB 1
000 :: H=H+28 :: NEXT X
530 R$="PLEASE PRESS ANY KEY" :: ROW=12 :: GOSUB 3000
540 CALL KEY(0,K,S):: IF S=0 THEN 540 ELSE 110
550 CALL CLEAR :: CALL SCREEN(2):: FOR X=1 TO 9 :: CAL
L COLOR(X,16,2):: NEXT X :: H=P(0):: R$="WHAT'S THAT S
IZZLING SOUND?" :: GOSUB 1000
560 FOR X=1 TO 100 :: FOR D=1 TO INT(RND*2):: NEXT D :
: CALL SOUND(-100,-5,0):: NEXT X
570 CALL CLEAR :: FOR X=1 TO LEN(A$(20))
580 DISPLAY AT(1,X+(WL-LEN(A$(20)))/2):SEG$(A$(20),X,1
)
590 FOR S=1 TO INT(RND*50):: NEXT S :: CALL SOUND(-1,-
5,0)
600 NEXT X :: FOR X=200 TO 1 STEP -1 :: H=INT(RND*7)+
3 :: V=INT(RND*27)+1
610 CALL HCHAR(H,V,100,1):: CALL SOUND(X,-1,1)
620 FOR D=1 TO INT(RND*X):: NEXT D :: NEXT X
630 END
1000 J=0 :: IF LEN(R$)<WL THEN DISPLAY AT(VE,LA):R$ ::
GOTO 1070
1010 FOR I=1 TO WL-1 :: IF SEG$(R$,I,1)=" " THEN J=I
1020 NEXT I
1030 IF J=0 THEN LA=1 :: IF PF=1 THEN PRINT :: GOTO 10
00 :: ELSE VE=VE+1 :: GOTO 1000
1040 DISPLAY AT(VE,LA):SEG$(R$,J,1):: R$=SEG$(R$,J+1,L
EN(R$)-(J-1)):: LA=1 :: IF PF=0 THEN VE=VE+1
1050 IF PF=1 THEN PRINT
1060 GOTO 1000
1070 SV=VE :: IF PF=0 THEN VE=VE+1
1080 RETURN
2000 VE=INT(H/WL):: LA=H-VE*WL+P1 :: RETURN
3000 ROW=ROW+1 :: DISPLAY AT(ROW,(WL-LEN(R$))/2):R$ ::
RETURN
4000 FOR X=1 TO WL-1
4010 IF X/4=INT(X/4) THEN CALL HCHAR(VE,LA+X,96,1) ELSE
DISPLAY AT(VE,LA+X):" "
4020 NEXT X :: RETURN
5210 DATA 28,84,168,420,504,560,588

```

After you have typed in the above lines, add DATA lines 5000-5200 from the Commodore 64 version.

TRS-80 Model 4/Mystery Gadget

```

10 CLEAR 2000: DIM A$(27): WL=80: P1=0: PF=0: C=0: SP=6: PRIN
T CHR$(15)
20 FOR X=1 TO 15: READ A$(X): NEXT X
30 FOR X=16 TO 20: READ T$: FOR Y=1 TO LEN(T$)-6: E=ASC(M
ID$(T$,Y,1))+3
40 IF E=49 THEN E=32
50 A$(X)=A$(X)+CHR$(E): NEXT Y: NEXT X
60 FOR X=18 TO 23: AN(X-17)=ASC(MID$(T$,X,1))-68: NEXT X
70 FOR X=21 TO 26: READ A$(X): NEXT X
80 A$(27)=" ": FOR X=1 TO SP: A$(27)=A$(27)+A$(27): NEXT
X
90 FOR X=0 TO 6: READ P(X): NEXT X
100 CLS: R$="NOW PLAYING": GOSUB 3000: R$="*MYSTERY GADGE
T*": GOSUB 3000
110 H=P(3): GOSUB 2000: R$="ENTER INVENTORY TAG NUMBER,"
120 IF C>=6 THEN R$=R$+" 'S' TO SOLVE,"
130 R$=R$+" OR 'Q' TO QUIT.": GOSUB 1000
140 H=P(5): GOSUB 2000: PRINT "-->": INPUT N$
150 H=P(5): GOSUB 2000: PRINT A$(27)
160 IF LEFT$(N$,1)="Q" THEN CLS: END

```

```

170 IF LEFT$(N$,1)="S" AND C>=6 THEN 290
180 IF N$<"1" OR N$>"9" THEN 140
190 N=VAL(N$): IF N<1 OR N>15 THEN 140
200 C=C+1
210 CLS: H=P(0): GOSUB 2000: GOSUB 4000: H=P(6): GOSUB 2000
: GOSUB 4000
220 H=P(1): GOSUB 2000: R$="FRAME #"+N$: GOSUB 3000
230 H=P(5): GOSUB 2000: R$="PLEASE PRESS ANY KEY": GOSUB
3000
240 H=P(2): GOSUB 2000: PRINT TAB(WL/3);
250 FOR X=1 TO LEN(A$(N)): PRINT MID$(A$(N),X,1);
260 IF MID$(A$(N),X,1)=" " THEN PRINT: PRINT TAB(WL/3);
270 NEXT X
280 K$=INKEY$: IF K$="" THEN 280 ELSE 100
290 CLS: R$="*ASSEMBLY INSTRUCTIONS*": GOSUB 3000
300 H=P(3): GOSUB 2000: R$="ENTER INVENTORY TAG NUMBER F
OR ...": GOSUB 1000
310 CR=2: FOR X=1 TO 6
320 H=P(4): GOSUB 2000: PRINT A$(X+20); " PROP": INPUT N$
330 H=P(4): GOSUB 2000: PRINT A$(27): IF N$<"1" OR N$>"9"
THEN 320
340 RE(X)=VAL(N$): IF RE(X)<1 OR RE(X)>15 THEN 320
350 H=CR*WL: GOSUB 2000: PF=1
360 R$=R$+A$(RE(X)): GOSUB 1000: PF=0: NEXT X: TR$=""
370 H=P(3): GOSUB 2000: PRINT A$(27): H=P(5): GOSUB 2000
380 R$="PRESS ANY KEY": GOSUB 3000
390 K$=INKEY$: IF K$="" THEN 390
400 CLS: H=P(6): GOSUB 2000: R$="PROCESSING ...": GOSUB 30
00
410 FOR D=1 TO 25: PRINT: FOR S=1 TO 100: NEXT S: NEXT D
420 FL=0: FOR X=1 TO 6: IF RE(X)<>AN(X) THEN FL=1
430 NEXT X: IF FL=0 THEN 520
440 CLS: R$="BAD GUESS!": GOSUB 3000
450 H=P(3): GOSUB 2000: R$="AN INTERESTING IDEA, THOUGH!
": GOSUB 1000
460 R$="PRESS 'H' FOR HELP, OR ANY OTHER KEY TO CONTIN
UE PLAY.": GOSUB 1000
470 K$=INKEY$: IF K$="" THEN 470 ELSE IF K$<>"H" THEN 1
00

```

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```

480 CLS:R$="A LITTLE HINT ...":GOSUB 3000:H=P(2):GOSUB
2000
490 FOR X=16 TO 19:R$=A$(X):GOSUB 1000:NEXT X
500 H=P(5):GOSUB 2000:R$="PLEASE PRESS ANY KEY":GOSUB
3000
510 K$=INKEY$:IF K$="" THEN 510 ELSE 100
520 CLS:R$="WHAT'S THAT SIZZLING SOUND?":GOSUB 1000
530 FOR X=1 TO 1000:NEXT X
540 CLS:FOR X=1 TO LEN(A$(20))
550 PRINT TAB(X+(WL-LEN(A$(20)))/2);MID$(A$(20),X,1);
570 FOR D=1 TO RND(100):NEXT D
580 NEXT X:PRINT "!":FOR X=200 TO 1 STEP -1:H=RND(800)
+128:GOSUB 2000
590 PRINT CHR$(166);CHR$(165);CHR$(157)
610 FOR D=1 TO RND(X):NEXT D
620 NEXT X:END
1000 J=0:IF LEN(R$)<=WL THEN PRINT R$:GOTO 1030
1010 FOR I=1 TO WL-1:IF MID$(R$,I,1)=" " THEN J=I
1020 NEXT I:PRINT LEFT$(R$,J):R$=RIGHT$(R$,LEN(R$)-J):
CR=CR+1:GOTO 1000
1030 IF PF=1 THEN TR$=R$+" "
1040 RETURN
2000 PRINT @H,"":RETURN
3000 PRINT TAB((WL-LEN(R$))/2);R$:RETURN
4000 FOR X=0 TO WL-1:IF X/4=INT(X/4) THEN PRINT CHR$(1
91);:ELSE PRINT " ";
4010 NEXT X:RETURN
5210 DATA 80,240,480,1200,1360,1600,1760

```

After you have typed in the above lines, add DATA lines 5000-5200 from the Commodore 64 version.

MODIFICATIONS FOR OTHER COMPUTERS

Because of space limitations, we could not print the ADAM, Atari, IBM PC, IBM PCjr, Timex 2068, TRS-80 Color Computer, TRS-80 Model III and VIC-20 versions of this program. (Note: the Color Computer version requires Extended Color BASIC.)

If you would like a free translation of this program for one of these computers, send a self-addressed, stamped envelope to Karen Cohen, "Mystery Gadget," FAMILY COMPUTING, 730 Broadway, New York, NY 10003. Please write which version you want in the lower left-hand corner of the envelope.

Apple/Mystery Gadget

Enter the TRS-80 Model 4 version, changing CLS to HOME wherever it appears. Then change RND to RND(1) in lines 570 and 610, and change RND(800)*128 in line 580 to RND(1)*800+80. Finally, change lines 10, 280, 310, 390, 470, 530, 560, 590, 600, 620, 2000, 4000, 4010, and 5210 to read as follows:

```

10 DIM A$(27):WL=40:P1=1:PF=0:C=0:SP=5
280 GET K$:GOTO 100
310 CR=4:FOR X=1 TO 6
390 GET K$
470 GET K$:IF LEFT$(L$,1)<>"H" THEN 100
530 FOR X=1 TO 1000:A=PEEK(-16336):A=PEEK(-16336):NEXT
X
560 A=PEEK(-16336):A=PEEK(-16336)
590 INVERSE:PRINT "*";
600 A=PEEK(-16336):A=PEEK(-16336)
620 NEXT X:NORMAL:END
2000 VE=INT(H/WL):LA=H-VE*WL+P1:VTAB VE:HTAB LA:RETURN
4000 FOR X=0 TO WL-1:NORMAL:IF X/4=INT(X/4) THEN INVER
SE
4010 PRINT " ":NEXT X:NORMAL:RETURN
5210 DATA 40,120,240,600,720,800,840

```

SOLUTION TO LAST MONTH'S PUZZLE

To determine which letter in the crater name each alien gives you, count the number of physical ways each alien differs from King Proto. Mox differs in three ways, thus he always gives you the third letter. The others are: Vov 1; Tri 4; Imo 1; Diz 2; Kak 1; Cee 2; Zuu 2; Ool 1; Uto 1; Ex 1; and Jol 5.

I GOT BIORHYTHM!

A Program That Charts Your Ups and Downs

BY GAY DAWN CRAWFORD

My first experience with biorhythms was in the lobby of a movie theater in 1978. I noticed an unusual-looking machine, which claimed to be able to chart my good and bad days for any given month. Out of curiosity, I dropped a quarter into the slot. Out came a piece of paper with three different wavy lines. I didn't understand them, but, intrigued, I bought a book on the subject.

Biorhythms, I learned, originated more than 90 years ago. Wilhelm Fliess, a nose-and-throat specialist and close associate of Sigmund Freud, noticed a regularity in his patients' illnesses. Based on these observations, he developed the biorhythm theory. Many studies indicate that biorhythms can predict a person's performance, though scientists have never been able to prove the theory's legitimacy. Still, biorhythms can be a fun and interesting subject, and it quickly became my most popular hobby.

Soon, it seemed, everyone wanted their cycles charted. I charted couples' compatibility; pregnant women's likely date of birth (including my daughter's); and even my coworkers' compatibility with our boss. This sometimes got a little embarrassing when a small crowd would develop

GAY DAWN CRAWFORD is a housewife and mother of one (soon to be two) who resides with her husband in Merriam, Kansas. This month her critical days fall on the 2nd and 3rd, when she "probably won't do too much except watch TV. That doesn't sound too dangerous!"



After charting her mood swings, Gay relaxes at a real swing set with her daughter, Kelly.

around my desk! Our boss would come over and break us up, but he was a good sport, and told me his birthday, so I could chart his biorhythm, too (at home, of course!)

HOW MY PROGRAM WORKS

First, enter your date of birth (digits only). Invalid entries (e.g. February 31) will not be accepted. Next, enter the month and year you wish to see charted. The days of the month will appear at the top of the chart, with the first of the month on the left. Although every day of the

month is displayed, only the digits for the even-numbered days appear on the screen. Days with two digits (e.g. 19) should be read from top to bottom.

The blue curve is for the Physical cycle, indicated by the letter "P" in the margin. (On a black-and-white TV you can identify the blue curve because "P" is aligned with its highest peak.) The blue curve represents your energy, coordination, and endurance. The green curve represents your Sensitivity ("S") cycle, and has to do with your moods, feelings, and emotions. The red curve represents your Intellectual ("I") cycle, and has to do with your memory, judgment, reasoning, and mental alertness.

A critical day occurs when one or more curves cross the horizontal ("critical") line at the center of the screen. These days require extra caution. It doesn't matter if two individual curves cross each other; it is only when they cross the critical line. When a particular curve is above the center line, your feelings and capabilities on that day tend to be more positive; when below the center line, they're more negative. To clear the chart from the screen, press any key.

To check if the program is working correctly, enter the date you were born. All three curves should meet at the critical line on your birthdate, then proceed upwards.

TRS-80 Color Computer w/Extended Color BASIC/ Biorhythms

```
10 DIM M(12),A$(5),D(5)
20 PI=3.14159
30 CLS(3):I$=CHR$(182)+" BIORHYTHMS "+CHR$(182)
40 FOR J=35 TO 479 STEP 33:PRINT@J,I$;
50 SOUND (J/3),1:NEXT J
60 SOUND 208,1:PRINT@421,"BY";:PRINT@449,"G.D.CRAWFORD";
70 FOR T=1 TO 2000:NEXT T
80 FOR J=1 TO 12:READ M(J):NEXT J
90 FOR J=0 TO 5:READ A$(J):A$(J)=A$(J)+"BR10":NEXT J
100 CLS:PMODE 0:LF=0
110 PRINT "ENTER DATE OF BIRTH:"
120 PRINT:PRINT " MONTH"
130 INPUT " (1-12).....";D(1)
140 IF D(1)<1 OR D(1)>12 THEN SOUND 200,1:GOTO 130
150 PRINT:PRINT " DAY"
160 INPUT " (1-31).....";D(2)
170 IF D(2)=2 AND D(1)=29 THEN LF=1:GOTO 190
180 IF D(2)<1 OR D(2)>M(D(1)) THEN SOUND 200,1:GOTO 160
190 PRINT:PRINT " YEAR"
200 INPUT " (4 DIGITS)....";D(3)
210 IF LF=1 AND (D(3)/4<INT(D(3)/4) OR D(3)/100=INT(D(3)/100)) THEN PRINT "NOT A LEAP YEAR!":SOUND 200,1:PRINT:LF=0:GOTO 110
220 IF D(3)<1000 OR D(3)>9999 THEN SOUND 200,1:GOTO 200
230 CLS:PRINT "ENTER DATE TO BE CHARTED:"
240 PRINT:PRINT " MONTH"
250 INPUT " (1-12).....";D(4)
260 IF D(4)<1 OR D(4)>12 THEN SOUND 200,1:GOTO 250
270 PRINT:PRINT " YEAR"
280 INPUT " (4 DIGITS)....";D(5)
290 IF D(5)<1000 OR D(5)>9999 THEN SOUND 200,1:GOTO 280
300 IF (D(5)>D(3)) OR (D(5)=D(3) AND D(4)>=D(1)) THEN
310 PRINT "THAT'S BEFORE YOU WERE":PRINT "BORN! TRY A GAIN.":SOUND 200,1
320 FOR T=1 TO 1000:NEXT T:GOTO 230
330 PMODE 3,1:PCLS:SCREEN 1,1
340 COLOR 6,5
350 FOR J=0 TO (M(D(4))*8) STEP 8
360 LINE (J,15)-(J,175),PSET
370 NEXT J
380 LY=ABS(D(4)=2 AND D(5)/4=INT(D(5)/4) AND D(5)/100=INT(D(5)/100))
```

```
390 LINE (0,96)-((M(D(4))+LY)*8,96),PSET
400 DRAW "BM73,6"
410 FOR I=0 TO 1:FOR J=1 TO 5
420 DRAW A$(I):NEXT J:NEXT I
430 DRAW "BU4BR1E1R2F1G1F1D1G1L2H1"
440 DRAW "BM9,14"
450 FOR J=1 TO 3
460 FOR L=1 TO 5:DRAW A$(L):NEXT L
470 NEXTJ
480 DRAW "BM250,76;R4BU2BL2D4"
490 DRAW "BM250,116;R4"
500 DRAW "BM254,34;L4D2R4D2L4"
510 COLOR 8,5:DRAW "BM250,23;R2NR2D5NL2R2"
520 COLOR 7,5:DRAW "BM250,49;U4R4D2L3"
530 J=(D(5)-D(3))*365:IF J=0 THEN 550
540 FOR X=D(3) TO D(5)-1:IF X/4=INT(X/4) AND X/100<>INT(X/100) THEN J=J+1:NEXT X
550 FOR X=1 TO D(1)-1
560 J=J-M(X):NEXT X
570 J=J-D(2)
580 IF D(1)>2 THEN J=J-LF
590 FOR X=1 TO D(4)-1
600 J=J+M(X):NEXT X
610 IF D(4)-1>2 THEN J=J+LY
620 H=INT((J/23-INT(J/23))*23+.5)*8
630 I=INT((J/28-INT(J/28))*28+.5)*8
640 K=INT((J/33-INT(J/33))*33+.5)*8
650 FOR X=0 TO 8*((M(D(4))+LY)
660 Y=96-50*SIN(H/92*PI)
670 C=7:GOSUB 1000
680 Y=96-60*SIN(I/112*PI)
690 C=6:GOSUB 1000
700 Y=96-70*SIN(K/132*PI)
710 C=8:GOSUB 1000
720 H=H+1:I=I+1:K=K+1:NEXT X
730 I$=INKEY$:IF I$="" THEN 730
740 CLSO
750 PRINT@256,"DO YOU WANT ANOTHER ONE (Y/N)";:INPUT I$
760 IF LEFT$(I$,1)="Y" THEN 100
770 CLS:END
1000 PSET(X,Y,C)
1010 RETURN
2000 DATA 31,28,31,30,31,30,31,31,30,31,30,31
2010 DATA BU4BR1R1E1D5NL2R2BR1
2020 DATA BU4BRER2FDGL2GDR4BR
2030 DATA BENR5E4D5BR
2040 DATA BR2U4ER2BD2NL2FDGNL2BRBE
2050 DATA BRUEHERFGFDGNLBR2
2060 DATA BEU3ER3FD3GNL3BR
```

BUG CONTROL CENTER

Corrections to some programs from previous issues.

In the VIC-20 version of *First Bloom* (March issue, page 98), line 1060 is incorrect. You can get a more pleasing picture by substituting the following for that line:
1060 DATA 7926,7927,7929,7929,7937,7938,7940,7940,7903

In the Timex version of *Kids' Allowance Planner* (March issue, pages 92, 94), there is a misprint in line 450. The line should read as follows:
450 PRINT "\$";

The VIC-20 version of *Shopper Search* (December issue, page 142) is too large for the VIC's 5K memory. However, it will work with the 8K or 16K RAM Pack.

In the Apple version of *Dollar Bill Serial Number* (November issue, page 122), line 760 has an extra parenthesis. The line should read as follows:

```
760 PRINT " "; CHR$(34); A$(D(4)); "!"; CHR$(34)
```

Finally, the Apple version of *Learn Names Quicker!* (Premier issue, page 80) has an extra line. The program will work properly if you delete line 30.

We regret these errors and apologize for any inconvenience they may have caused you.

WHAT'S IN STORE

NEW HARDWARE ANNOUNCEMENTS*

LEADING EDGE PERSONAL COMPUTER/RANA DUAL DISK
DRIVE FOR APPLE/MODEM FOR TIMEX/APE-FACE PRINTER
INTERFACE FOR ATARI/ANIMATION STATION

COMPUTERS

Leading Edge Personal Computer

MANUFACTURER: Leading Edge Products, Inc., 225 Turnpike St., Canton, MA 02020; (800) 343-6833

PRICE: \$2,895

The new Leading Edge Personal Computer is based on an improved version of the 16-bit microprocessor used in the IBM PC, allowing it to run up to 50 percent faster than the IBM PC. The Leading Edge computer system offers 128K, an RS-232 serial port, seven expansion slots (that accept IBM circuit boards), a 12-inch monochrome monitor, and two built-in disk drives—each with 320K storage capability.



Three programs come "bundled" with the computer: MS-DOS 1.25 (a disk-operating system), Microsoft GW BASIC, and the *Leading Edge Word-Processing Package*. The Leading Edge PC can also run MS-DOS 2.0. In addition, the new computer includes a time-of-day digital clock with battery backup. While Leading Edge calls this computer "IBM-compatible," and says it will run most IBM software, you should make sure packages you are interested in will work. Check with Leading Edge for a list of available software and the system requirements. To run IBM graphics software, the Leading Edge

computer needs a graphics expansion board and a graphics monitor, neither of which are part of the base system.

INTERFACES

Ape-Face Printer Interface (Atari)

MANUFACTURER: Digital Devices Corp., 151 Sixth St., Suite 127, O'Keefe Bldg., Atlanta, GA 30313; (404) 872-4430

PRICE: \$89



Connecting an Atari computer to a non-Atari printer requires an external interface box. Since the Atari 850 interface module is difficult (if not impossible) to find in the stores, Digital Devices' Ape-Face is a timely alternative.

The Ape-Face comes in two models—the 48P for the Atari 400 and 800 models, and the XLP for the new XL line. It simply connects to the proper I/O port on the Atari computer and then to most parallel printers, such as an Epson or Okidata.

MODEMS

Byte-Back Modem (Timex Sinclair 1000/1500)

MANUFACTURER: Byte-Back Co., Rte. 3, Box 147, Brodie Rd., Leesville, SC 29070; (803) 532-5812

PRICE: \$149; kit, \$119

For Timex 1000 owners who feel cut off from communications with the outside world, the Byte-Back MD-2B modem may be the ticket. (It also

works with the Timex 1500.) The modem plugs into the expansion slot on the rear of the computer. It has a similar expansion port on the rear of the module to allow "piggy backing" of other peripherals, such as a printer or memory packs.

You plug the modem's telephone cable into a telephone jack (the cable is included), dial a number on your telephone, flip a switch, and hang up the telephone receiver. The software (included) does much of its work automatically—including "downloading" incoming data to memory or the printer when the screen is full—without requiring any specific commands.

The modem requires no extra memory, but with 64K it can store up to 60 screens of data. The MD-2B has an RS-232 serial printer port, and also is fully compatible with the Timex 2040 printer.

Byte-Back's MD-2 modem (not to be confused with the MD-2B) cannot answer calls, but can originate them.

MISCELLANEOUS

Anchor Pad Security System

MANUFACTURER: Anchor Pad International, Inc., 3224 Thatcher Ave., Marina Del Rey, CA 90292; (800) 235-7972

PRICE: \$100–\$350

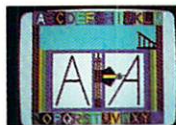
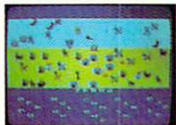
Worried about a burglar removing your computer? Interested in preventing your children or others from accidentally erasing a program or data from the computer? Anchor Pad International addresses both of these concerns with the Computer Security System and "Crime Stopper."

The Computer Security System consists of a unique self-adhesive mat and locking system that requires no drilling to install. Attempts to re-

**These products have been announced by manufacturers, but are not necessarily in the stores yet. Some products may still be under development, and others may be in test markets only. Call or write the manufacturer for expected date of delivery.*



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Futurehouse products are available for Commodore 64/Vic 20, Atari, TRS-80 Color, and IBM PC jr. computers. When ordering please specify computer, cassette or disk and memory.

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WHAT'S IN STORE NEW HARDWARE

move, by force, a computer locked with this system would do damage before it could actually be separated, rendering the computer useless and less attractive to a burglar. In addition, the sight of a difficult or time-consuming job will deter most burglars.

The "Crime Stopper" (\$100), a key-locking device, prevents use of the computer without a proper key. Locksmiths cannot duplicate the key because blanks are not available.

For those who don't want to use keys, a magnetic card reader (\$150-\$300) is available. The chances of counterfeiting or duplicating the magnetic encoding on the cards is one in 10 million, according to the company.

The security system comes in a variety of sizes and shapes for use with any desk-top computer. Two of the three systems may be combined to form a total protection environment for the computer.

Animation Station

MANUFACTURER: Suncom Inc., 650 Anthony Trail, Suite E, Northbrook, IL 60062; (312) 291-9780

PRICE: \$79.95 (Atari and Commodore), \$114.95 (IBM and Apple)



Animation Station, a new addition to the touch-tablet market, should be available in June or July. Suncom says the grid-surfaced tablet will allow users to draw; design maps, charts, and graphs; and do word processing.

With the stylus in the graphics-tablet mode, what's written or drawn on the 4½-by-6½ inch surface ap-

pears on the computer screen. In the joystick-emulation mode, when the stylus is lifted from the tablet, the cursor automatically centers itself—a plus for game playing.

In the STAMPS mode, the user can create and store icons and move them by placing windows—actually square outlines of varying size—on top. For instance, if you are redecorating your home or apartment, you could create icons to represent a couch, a chair, and a table. Then you could move them around to find the best possible arrangement.

Early versions of the Animation Station will include a utility software program, but Suncom promises five additional programs will be available by the end of the summer. Future plans include spreadsheet and database management programs.

Rana 8086/2 Disk Drives

MANUFACTURER: Rana Systems, 21300 Superior St., Chatsworth, CA 91311; (213) 709-5484

PRICE: \$1,500

Rana, the third-party disk-drive manufacturer, has developed a dual disk drive for the Apple II line of computers. The 8086/2 dual drive can read both Apple disks (in Apple DOS 3.3 format) and MS-DOS disks (in MS-DOS 2.0 format). This gives Apple II users access to a wide range of software, including some written for the IBM PC. Apple supports and endorses this new disk drive.

Each drive accepts double-sided disks, and can store 320K. The Rana 8086/2 comes with a software package that includes MS-DOS 2.0, GW BASIC (an advanced BASIC from Microsoft), and Microsoft Windows (an enhancement to MS-DOS that allows use of a mouse to control programs).



Syntauri Simply Music Systems

MANUFACTURER: Syntauri Corp., 4962 El Camino Real, Suite 112, Los Altos, CA 94022; (415) 466-1273


PRICE: \$1,295 (Simply Music Five System); \$995 (Simply Music Four System)

With a Syntauri Simply Music System connected to a 64K Apple II plus or IIe (with a disk drive and monitor), computer users can learn about and create music.



The "Simply Music" systems are based on the more complex alpha-Syntauri, which has earned acclaim and widespread use among professional musicians. Syntauri Corp. provides "velocity sensitive musical keyboards"—along with keyboard interface cards and cables, sound-synthesis hardware, foot pedals, software, and instruction manuals—to allow almost anyone to play and record music.

Users can choose among five modes—ORCHESTRATE, RECORD/PLAYBACK, INSTRUMENTS, SONGS, and DISPLAYS—to create and save their compositions or sounds. The monitor displays notes, as they're touched, on a representation of either a keyboard or a music staff—an essential aspect for music novices. Further instruction lies in playing along with one or more of the 100 sounds stored in the Syntauri system.

(For information about one alpha-Syntauri fan, jazz musician Herbie Hancock, see "Tickling the Keyboard" in FAMILY COMPUTING's April issue.) 

Looks like a Ferrari. Drives like a Rolls. Parks like a Beetle.



Ask your computer dealer
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The all new, 1984 Indus GT.TM

The most advanced, most handsome disk
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Nestled into its soundproofed chassis is the
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well worth it.



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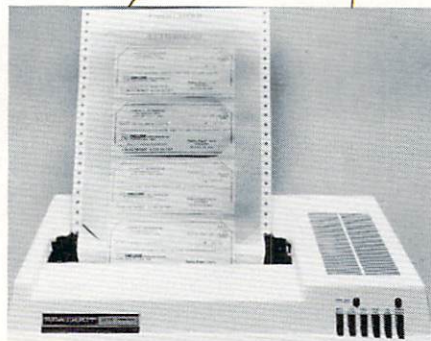
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WHAT'S IN STORE



CHECK IT OUT

If you use your computer to pay bills and print out checks on a regular basis, slot your personal checks into the Paper Caper II. Made out of special heavy-duty paper that's virtually impossible to tear, it will hold up to seven checks at a time, plus two standard $8\frac{1}{2} \times 11$ -inch letterheads, carrying them through a $9\frac{1}{2}$ -inch tractor-driven or roller-type printer. The Paper Caper II's available for \$20 from Services Squared, Box 2665, Las Cruces, NM 88004-2665; (505) 522-4925.

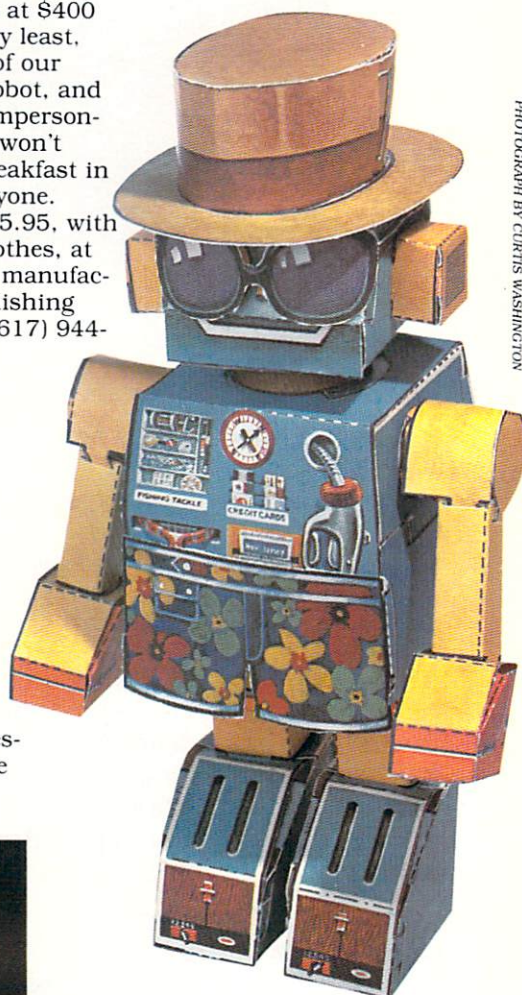
WHAT'S COOKING

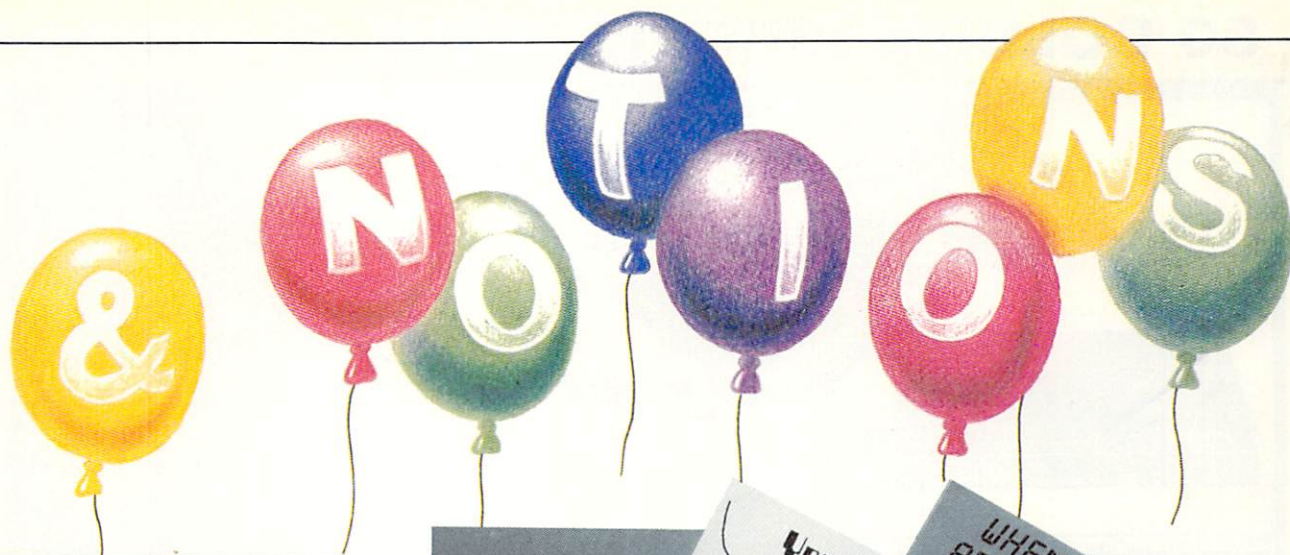
Computers are on the rise and so are these shortbread cookies that look (with a little imagination) like disks. Purchase these delights, concocted especially for easy input, for \$5 a box (plus shipping and handling) from the manufacturer: Sweet Company, 21267 Stevens Creek Blvd., Cupertino, CA 95014; (408) 973-0622.



THE NEXT BEST THING

Robots are intriguing, but at \$400 to \$1,200 a shot at the very least, they're a bit beyond most of our means. Meet Humphrey Robot, and settle for his 12-inch tall impersonation of the real thing. He won't walk, talk, or bring you breakfast in bed, but he will delight anyone. Humphrey's available for \$5.95, with a full wardrobe of paper clothes, at bookstores or through the manufacturer: Addison-Wesley Publishing Co., Reading, MA 01867; (617) 944-3700.





FLOPPY BIRTHDAY

Computer-savvy friends and family will appreciate these messages with a micro motif. Two dozen different cards are available for every purpose and occasion—from birthday greetings to congratulation wishes and more. Order packages of 10 assorted

cards for \$12.45, or 24 for \$25.95, from the Micro Goodies Catalog, 88 Orchard Rd., CN-5283, Princeton, NJ 08549; (800) 221-0866. Or contact the manufacturer: Computer Greetings, 2661 Lakeview Dr., San Leandro, CA 94577; (415) 483-8482.



PHOTOGRAPH BY CURTIS WASHINGTON

MICRO CHIC

Electrify your wardrobe with selections from a line of microchip miscellany—from chips for his cuff links to chips for her ears. 24-karat gold-plated Chip Jewelry costs from \$11.95 for the tiny chip earrings to \$30 for the cuff links, and \$17.95 for the lapel pin pictured here. (Shipping costs extra.) They're available from The Computer Museum Store, Museum Wharf, 300 Congress St., Boston, MA 02210; (617) 426-2800.

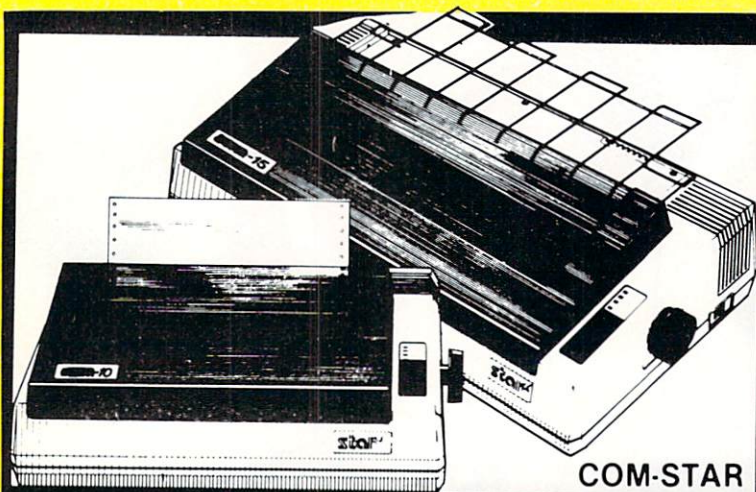


HEADWARE

Yesteryear's blue-striped train conductor's cap has acquired new meaning. This line of headwear blends the contemporary and the old with special sewn-on, computer-related labels. Made in youth and adult sizes, the caps cost \$4.95 (youth) and \$5.95 (adult), plus shipping and handling, and are available from Station Products, P.O. Box 90898, Los Angeles, CA 90009; (213) 641-1319.

PHOTOGRAPH BY GARY KANE

80 COLUMN PRINTER SALE—\$149.00*



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*STX-80 COLUMN PRINTER—\$149.00

Prints full 80 columns. Super silent operation, 60 CPS, prints Hi-resolution graphics and block graphics, expanded character set, exceptionally clear characters, fantastic print quality, uses inexpensive thermal paper! Best thermal printer in the U.S.A.! (Centronics Parallel Interface).

**DELUXE COMSTAR T/F 80 CPS PRINTER—\$199.00

The COMSTAR T/F (Tractor Friction) PRINTER is exceptionally versatile. It prints 8½" x 11" standard size single sheet stationary or continuous feed computer paper. Bi-directional, impact dot matrix, 80 CPS, 224 characters. (Centronics Parallel Interface).

Premium Quality—120 CPS COMSTAR T/F SUPER-10X PRINTER—\$289.00

COMSTAR T/F (Tractor Friction) SUPER-10X PRINTER gives you all the features of the COMSTAR T/F PRINTER plus a 10" carriage, 120 CPS, 9 x 9 dot matrix with double strike capability for 18 x 18 dot matrix (near letter quality), high resolution bit image (120 x 144 dot matrix), underlining, back spacing, left and right margin settings, true lower decenders with super and subscripts, prints standard, italic, block graphics

and special characters, plus 2K of user definable characters! The COMSTAR T/F SUPER-10X PRINTER was Rated No. 1 by "Popular Science Magazine." It gives you print quality and features found on printers costing twice as much!! (Centronics Parallel Interface) (Better than Epson FX 80).

Premium Quality—120 CPS COMSTAR T/F SUPER-15½" PRINTER—\$379.00

COMSTAR T/F SUPER 15½" PRINTER has all the features of the COMSTAR T/F SUPER-10X PRINTER plus a 15½" carriage and more powerful electronics components to handle large ledger business forms! (Better than Epson FX 100).

Superior Quality SUPER HIGH SPEED—160 CPS COMSTAR T/F 10" PRINTER—\$489.00

SUPER HIGH SPEED COMSTAR T/F (Tractor Friction) PRINTER has all the features of the COMSTAR SUPER-10X PRINTER plus SUPER HIGH SPEED PRINTING—160 CPS, 100% duty cycle, 8K buffer, diverse character fonts, special symbols and true decenders, vertical and horizontal tabs. RED HOT BUSINESS PRINTER at an unbelievable low price!! (Serial or Centronics Parallel Interface)

Superior Quality SUPER HIGH SPEED—160 CPS COMSTAR T/F 15½" PRINTER—\$579.00

SUPER HIGH SPEED COMSTAR T/F 15½" PRINTER has all the features of the SUPER HIGH SPEED COMSTAR T/F 10" PRINTER plus a 15½" carriage and more powerful electronics to handle larger ledger business forms! Exclusive bottom paper feed!!

PARALLEL INTERFACES

For VIC-20 and COM-64—\$49.00
For All Apple Computers—\$79.00

NOTE: Other printer interfaces are available at computer stores!

Double Immediate Replacement Warranty

We have doubled the normal 90 day warranty to 180 days. Therefore if your printer fails within "180 days" from the date of purchase you simply send your printer to us via United Parcel Service, prepaid. We will IMMEDIATELY send you a replacement printer at no charge, prepaid. This warranty, once again, proves that WE LOVE OUR CUSTOMERS!

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(more power than Apple II at half the price)

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- TRACTION FRICTION PRINTER \$99.00 *

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(a real computer at the price of a toy)

\$79.50*

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- 32K RAM EXPANDER \$85.00

* COMMODORE 64 COMPUTER \$99.50

You pay only \$199.50 when you order the powerful 84K COMMODORE 64 COMPUTER! LESS the value of the SPECIAL SOFTWARE COUPON we pack with your computer that allows you to SAVE OVER \$100 off software sale prices!! With only \$100 of savings applied, your net computer cost is \$99.50!!

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When you buy the Commodore 64 Computer from Protecto Enterprises you qualify to purchase ONE SOFTWARE BONUS PACK for a special price of \$24.95!! Normal price is \$49.95 (40 programs on disk or 24 programs on 5 tapes).

* 170K DISK DRIVE \$159.00

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* TRACTION FRICTION PRINTER \$99.00

You pay only \$199.00 when you order the Comstar T/F deluxe line printer that prints 8 1/2 x 11 full size, single sheet, roll or fan fold paper, labels etc. 40, 66, 80, 132 columns. Impact dot matrix, bi-directional, 80 CPS. LESS the value of the SPECIAL SOFTWARE COUPON we pack with your printer that allows you to SAVE OVER \$100 off software sale prices!! With only \$100 of savings applied your net printer cost is only \$99.00.

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Now you program 80 COLUMNS on the screen at one time! Converts your Commodore 64 to 80 COLUMNS when you plug in the 80 COLUMN EXPANSION BOARD!! List \$199—PLUS—you also can get an 80 COLUMN BOARD WORD PROCESSOR with mail merge, terminal emulator, ELECTRONIC SPREAD SHEET. List \$59.00 SALE \$24.95 if purchased with 80 COLUMN BOARD!! (Tape or Disk)

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Name	List	Sale	Coupon
Executive Word Processor	\$99.00	\$69.00	\$59.00
Executive Data Base	\$69.00	\$59.00	\$39.00
20,000 Word Dictionary	\$24.95	\$19.95	\$14.95
Electronic Spreadsheet	\$59.95	\$49.00	\$39.00
Accounting Pack	\$49.00	\$39.00	\$29.00
Total 5.2			
Word Processor			
Tape	\$69.00	\$49.00	\$34.00
Disk	\$79.95	\$59.00	\$39.00
Total Text 2.6			
Word Processor			
Tape	\$44.95	\$34.95	\$22.00
Disk	\$49.00	\$39.00	\$27.00
Total Label 2.6			
Tape	\$24.95	\$18.00	\$12.00
Disk	\$29.95	\$23.00	\$15.00
Programmers			
Helper (Disk)	\$59.00	\$39.95	\$29.95
80 Column Screen (Disk)	\$59.95	\$39.95	\$29.95
Crush-Crumble-Chomp (Tape/Disk)	\$29.95	\$24.95	\$19.95
Pilstop (Cartridge)	\$39.95	\$29.95	\$24.95
Typing Teacher (Tape/Disk)	\$29.95	\$24.95	\$15.00
Sprite Designer (Disk)	\$16.95	\$14.95	\$10.00
Fireball Joy Stick	\$24.95	\$15.95	\$10.00
Light Pen	\$39.95	\$16.95	\$14.95
Dust Cover	\$ 8.95	\$ 6.95	\$ 4.60

(See 100 coupon items in our catalog!)

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Sample SPECIAL SOFTWARE COUPON!

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The Cadillac of business programs for Commodore 64 Computers

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

VIC-20 COMPUTER \$79.50

This 25K VIC-20 computer includes a full size 66 key typewriter keyboard color and graphics keys, upper/lower case, full screen editor, 16K level II microsoft basic, sound and music, real time floating point decimal, self teaching book, connects to any T.V. or monitor! (Limit one to a customer!)

40-80 COLUMN BOARD \$59.00

Now you can get 40 OR 80 COLUMNS on your T.V. or monitor at one time! No more running out of line space for programming and making columns! Just plug in this Expansion Board and you immediately convert your VIC-20 computer to 40 OR 80 COLUMNS!! You can also get an 80 COLUMN BOARD WORD PROCESSOR with mail merge, terminal emulator, ELECTRONIC SPREAD SHEET!! List \$59.00. SALE \$24.95 if purchased with 80 COLUMN BOARD! (Tape or Disk).

32K RAM EXPANDER \$85.00

This cartridge increases programming power over 8 times!! Expands total memory to 57K (57,000 bytes) almost Com-64 power! Block switches are on outside of cover! Has expansion port!! Lists for \$199 (OUR BEST BUY!)

60K MEMORY EXPANDER \$49.00

Sixslot Board — Switch selectable — Reset button — Ribbon cable — CARDCO. A must to get the most out of your VIC-20 Computer!

8K RAM CARTRIDGE \$39.00

Increases programming power 2 1/2 times. Expands total memory to 33K (33,000 bytes). Memory block switches are on outside of cover! Includes FREE \$16.95 game.

16K RAM CARTRIDGE \$55.00

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

9" GREEN SCREEN MONITOR \$69.00

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

12" GREEN OR AMBER MONITOR \$99.00

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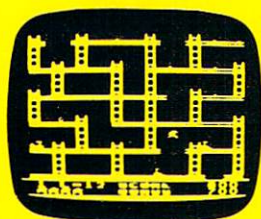
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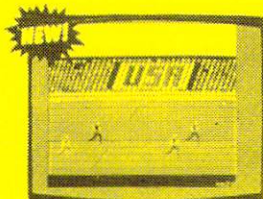
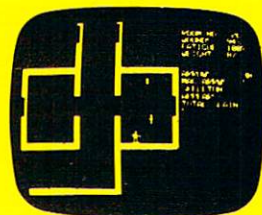
Award Winning Games



Jumpman — If you like Donkey Kong, you'll love Jumpman. Over 30 different screens with 8 speeds and 5 skill levels make this the fastest action game in the country. You must leap girders, climb ropes, and scale ladders to reach and diffuse bombs while avoiding robots, birds, bullets, explosives, crumbling walls, vanishing escape routes, and many other obstacles. (Truly a fantastic game!) List \$39.95. **Sale \$24.95** (Disk only).

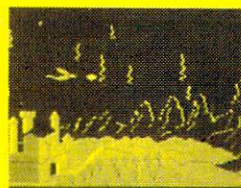
Temple of Apshai — (*computer game of the year*). This is the standard by which other adventure games are judged. Full color graphics portray the temple and all its contents — magic, monsters, doomed cities and damsels in distress. Do battle in real time with over 20 monsters, expansion modules will keep your adventure alive in the future. List \$39.95. **Sale \$24.95.** (tape/disk).

(Also Available For VIC-20)



Summer Games — Now you can compete in the Olympics right along with the real competitors. Compete in track, swimming, diving, cycling, archery, weight lifting, rowing and more. This Olympic game is so realistic it even includes a beautiful opening ceremony and an awards presentation after each event. (Highly recommended, by far the best Olympics game we've seen). List \$39.95. **Sale \$28.00.** (disk only).

Dragon Riders of Pern — Based on the best selling book series by Anne McCaffey (over 10 million sold). This program forces you to make an alliance with the Lord holders, then mount your dragon (stunning graphics) and battle the dreaded thread. (Super fast action with a great theme). List \$39.95. **Sale \$24.00.** (tape/disk).



Fax — Stop wasting quarters! Now you can play Exidy's Fax at home. Play against the computer or an opponent to get the answer first, over 3,700 questions dealing with sports, television, movies, histories, and many more subjects will keep you playing for hours (a must for trivia buffs). List \$34.95. **Sale \$24.95.** (disk only).

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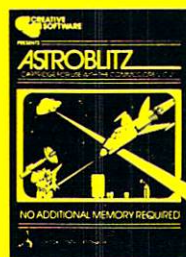
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VIC-20 Cartridge Games



Astroblitz — (Like Defender.) Voted No. 1 computer game overall by Creative Computing! Fantastic copy of an arcade classic.

Destroy alien saucers and gun towers while avoiding enemy objects that float by. List \$34.95. **Sale \$7.95.**

Your Choice

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Serpentine — Awarding winning game. Avoid hostile red snakes and lay your young while getting food to keep you alive. Fantastic strategy game that has become a classic. List \$34.95. **Sale \$9.95.**



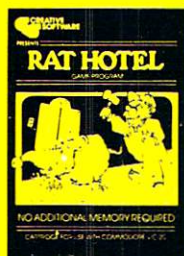
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Below
Cost**

Apple Panic — The fast action computer game hit now comes to the VIC-20. You must dig traps in the brick floor and wait for the wandering apples to fall in.



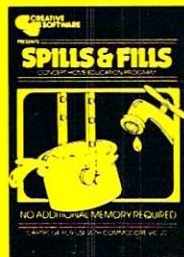
Then simply beat them on the head to push it through and destroy the apple. Otherwise the apple's will roll right over you and kill you. (Fast action.) List \$34.95. **Sale \$7.95.**

**While
They
Last**



Rat Hotel — Here you get to play the rat. Running and jumping from floor to floor in Hotel Paradisimo you must eat whatever you find but Waldo the maintenance man has set many traps for you that you must avoid. Plus Waldo has an atomic elevator that let's him jump several floors at once. See if you can get to the bottom before Waldo does you in. Fantastic graphics and sound. List \$34.95. **Sale \$9.95.**

Terraguard — Your mission is to destroy the aliens before their ship has a chance to land. Move your base along the ground and shoot up at them. List \$34.95. **Sale \$9.95.**



Spills & Fills — How much is too much? How much isn't enough? With this original concept educational game designed for grade schoolers through high school students, you can develop ratio and perspective skills. With three exciting and challenging skill levels, this program presents new and ever-changing challenges for the inquisitive mind. **Sale \$9.95.**

Video Mania — You're in an open field and strange alien creatures are roaming all over. If you stand still too long, they'll collide with you, causing instant annihilation. Your only defense is to destroy them by throwing your electronic, football-shaped alien zapper at them. **Sale \$9.95.**



Trashman (Better than Pacman). Dash for the trash and pick up CASH!!! List \$29.95. **Sale \$9.95.**

Household Finances — This 4 part program will take care of all your family's finances. Record, change and delete expense and income items from 16 categories, monthly and yearly totals are easily graphed and even a budgeting program to help you clamp down on excessive spending. List \$34.95. **Sale \$9.95.**



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WHAT'S IN STORE SOFTWARE GUIDE

QUICK TAKES ON SOFTWARE— NEW AND NOTEWORTHY

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

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, and refers to the software's performance given the limitations and capacities of the particular computer for which it 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; **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
CUT & PASTE Electronic Arts 2755 Campus Dr. San Mateo, CA 94403 (415) 571-7171 \$50 © 1983	Take care of formal correspondence, homework assignments, and other word-processing tasks in easy-to-use, simple package with logical command structure best for occasional use.† —AKER	Commodore 64 (disk). Also available for Apple II/II plus/Ile, 48K (disk); Atari 400/800/XL series, 48K (disk). Versions planned for IBM PC and PCjr.	Defective disks replaced free w/in 90 days; \$7.50 fee thereafter or if user-damaged.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	n/a	A	★ ★ ★ ★
INSTA-WRITER Cimarron Software Microsci Corp. 2158 S. Hathaway St. Santa Ana, CA 92705 (714) 241-5600 \$51.95 © 1983	Word process correspondence and reports with cartridge-based program that lacks sophistication but will be a hit among Commodore owners who have data-cassettes instead of disk drives. —ODISIO	Commodore 64 (cartridge).	No returns, no backup policy.	★ ★ ★	★ ★ ★	★ ★ ★	n/a	A	★ ★ ★ ★
MICROSOFT MULTIPLAN HesWare 150 N. Hill Dr. Brisbane, CA 94005 (800) 624-2442 \$99.95 © 1983	Plan budgets, track costs and revenues, analyze data, manipulate figures with powerful electronic spreadsheet. A ledger-page-like program best-suited for small business or other heavy-duty applications.† —AKER	Commodore 64 (disk).	Defective disks replaced free w/in 6 months; \$5 fee if user-damaged or for backup copy.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	n/a	A	★ ★ ★ ★
PRACTICAL ACCOUNTANT Softlink 3255-2 Scott Blvd. Santa Clara, CA 95051 (800) 633-6300 \$149.95 © 1983	Keep track of family or small-business finances with package featuring as many as 50 different expense categories and especially comprehensive tutorial and documentation. —WILSON	Apple II/II plus/Ile, 64K (disk; needs 2 disk drives). Also available for IBM PC/PCjr, 128K (disk).	Defective disks replaced free w/in 30 days; \$15 fee thereafter; user makes backup copy.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	n/a	A	★ ★ ★ ★
SUPER-TEXT PROFESSIONAL Muse Software 347 N. Charles St. Baltimore, MD 21201 (301) 659-7212 \$175 (Apple and IBM) \$99 (Commodore) © 1983	Create reports and incorporate mathematical calculations into text with powerful word-processing package most appropriate for heavy, semiprofessional use.† —WILSON	Apple II w/Applesoft ROM/II plus/Ile, 48K (disk). Also available for Commodore 64 (disk); IBM PC, 128K (disk). Version planned for Atari.	Defective disks replaced free; backup copy included; \$10 fee if user-damaged.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	n/a	A	★ ★ ★ ★

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

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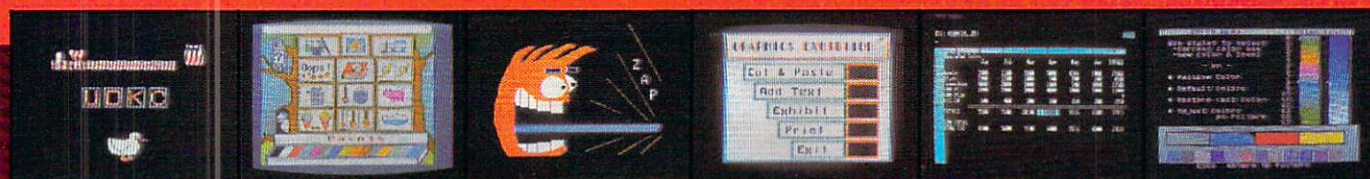
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*The Atari and Commodore 64 versions of our graphics software are now available in cartridge form.

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SOFTWARE GUIDE

EDUCATION/FUN LEARNING

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
ALLIGATOR MIX Developmental Learning Materials One DLM Park Allen, TX 75002 (800) 527-4747 \$34 © 1983	Kids in first through third grade math levels drill and practice basic addition and subtraction in arcade-style game that tests three degrees of skill at nine speeds. —HIRTE	Apple II/IIe plus/IIe, 48K (disk). Also available for Atari 400/800/XL series, 48K (disk); Commodore 64 (disk); IBM PC, 64K (disk); TI-99/4A (cartridge).	Defective material replaced free w/in 6 months; \$25 fee thereafter or for backup copy.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
I AM THE C-64, VOLS. 1-6 Creative Software 230 E. Caribbean Dr. Sunnyvale, CA 94089 (408) 745-1655 \$29.95 (Vols. 1-6) © 1983	New Commodore 64 owners familiarize themselves with the machine's capabilities, learning about the keyboard and elementary BASIC programming.† —BYRNE	Commodore 64 (disk).	Defective or user-damaged disks replaced free w/in 90 days.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
MATCH-WITS CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2525 \$29.95 © 1983	The whole family can match corresponding pairs in Concentration-like game that tests knowledge in subjects such as cities, famous people, or ones you create yourself. —MORRIS	Apple II plus/IIe, 48K (disk). Also available for Commodore 64 (disk); IBM PC/PCjr, 64K (DOS 1.1 disk); 128K (other DOS disks). IBM requires color card.	Defective or user-damaged disks replaced free w/in 90 days; \$5 fee thereafter.	★ ★	★ ★	★ ★	★ ★	A	★ ★
M-SS-NG L-NKS Sunburst Education 39 Washington Ave., Room AB Pleasantville, NY 10570 (800) 431-6616 \$39.95 © 1983	Kids ages 9+ learn verbal skills (reading comprehension, spelling, sentence structure) and the characteristics of verbal communication by filling in missing letters in words of passages taken from classic and popular contemporary children's literature.† —MORRIS	Apple II/IIe plus/IIe, 48K (disk). Also available for Atari 400/800/XL series, 48K (disk); IBM PC, 64K (DOS 1.0 or 1.1 disk); 128K (DOS 2.0 disk); TRS-80 Models I/III/4, 48K (disk).	Defective disks replaced free w/in 90 days.	★ ★ ★	★ ★ ★	★ ★ ★	n/a	E	★ ★ ★
MUSIC EDUCATOR I Timex Computer Corp. P.O. Box 2655 Waterbury, CT 06720 (800) 248-4639 \$9.95 © 1983	Newcomers to music are introduced to the basics: Notes on the treble clef, 4/4 time, and elementary notation. Simple program includes tests, takes maximum advantage of the TS's limited capabilities. —ROBERTS	TS 1000/1500, 16K (cassette).	Defective cassettes replaced free.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
STORY TREE Scholastic/Wizware 730 Broadway New York, NY 10003 (212) 505-3000 \$39.95 © 1984	Children ages 12+ create their own interactive branching stories, making up plots with different endings and practicing writing skills in package best-suited to more verbally inclined kids (and adults).† —MORRIS	Apple II w/Applesoft ROM/II plus/IIe, 48K (disk).	Defective disks replaced free w/in 60 days; \$10 fee for 10 months thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	n/a	A	★ ★ ★
THAT'S MY STORY Learning Well 200 S. Service Rd. Roslyn Heights, NY 11577 (800) 645-6564 \$59.95 © 1983	Kids age 7+ build on preprogrammed stories or write their own with easy-to-use creative writing package that uses a "What if . . . ?" format for plot twists and branches. Best for kids and adults who like to write.† —MORRIS	Apple II/II plus/IIe, 48K (disk).	Defective disks replaced free w/in 6 months; \$20 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	n/a	E	★ ★ ★
VERB VIPER Developmental Learning Materials One DLM Park Allen, TX 75002 (800) 527-4747 \$34 © 1983	Kids match verbs and subjects in entertaining drill-and-practice, arcade-style game with nine different speeds, four difficulty levels, and the option to test different kinds of verbs. —HIRTE	Apple II/II plus/IIe, 48K (disk). Versions planned for Atari, Commodore 64, IBM.	Defective disks replaced free w/in 6 months; \$25 fee thereafter or for backup copy.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
WIZARD OF WORDS Advanced Ideas Inc. 2550 Ninth St., Suite 104 Berkeley, CA 94710 (415) 526-9100 \$39.95 © 1983	Kids ages 7-13 and word lovers of any age practice spelling, logic, and reasoning skills in series of five fun word games. Program includes option to make up your own word lists for use in two games.† —BUMGARDNER	Apple II/II plus/IIe, 48K (disk). Also available for Commodore 64 (disk); IBM PC, 128K (disk). IBM PC requires color card.	Defective or user-damaged disks replaced free w/in 1 year; backup copy available free.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	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

NOAH WEBSTER, MEET YOUR MATCH.



A few months ago, Jennifer would rather go to the dentist than do her spelling homework.

Then Mom bought *Crypto Cube*™ by DesignWare™. Now Jennifer has become an absolute word fiend.

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All DesignWare spelling programs combine computer game fun with sound

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GAMES									
Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
BRISTLES First Star Software, Inc. 22 E. 41st St. New York, NY 10017 (212) 532-4666 \$29.95 © 1983	Paint the rooms of a house while avoiding obstacles in easy-to-learn, amusing arcade game with six skill levels. A charmer for ages 10+. —DELSON	Atari 400/800/XL series, 32K (disk), 16K (cartridge and cassette). Also for Commodore 64 (disk, cartridge, and cassette). Joystick(s) required.	Defective material replaced free w/in 90 days; \$9 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
DINO EGGS Micro Fun 2699 Skokie Valley Rd. Highland Park, IL 60635 (312) 433-7550 \$40 (Apple) \$35 (Commodore) © 1983	Rescue baby dinosaurs from contamination as you evade prehistoric creatures and the Dino Mom's dangerous footfalls in challenging arcade game good for ages 9+. —DELSON	Apple II/II plus/IIe, 48K (disk). Also available for Commodore 64 (disk). Versions planned for Atari, IBM PC/PCjr.	Defective disks replaced free w/in 30 days; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
GALACTIC ATTACK Sir-tech Software, Inc. 6 Main St. Ogdensburg, NY 13669 (315) 393-6633 \$29.95 © 1981	Shoot it out with enemy spacecraft in exciting strategy arcade game, a challenge for ages 12+. Flexible play system keeps action varied, game fresh. —DELSON	Apple II/II plus/IIe/III w/ emulator, 48K (disk).	Disks replaced free w/in 30 days; \$5 fee thereafter; backup copy included.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
JULIUS ERVING AND LARRY BIRD GO ONE-ON-ONE Electronic Arts 2755 Campus Dr. San Mateo, CA 94403 (415) 571-7171 \$40 © 1983	Play computer or friend as Dr. J or Larry Bird in first-rate basketball simulation featuring fast action, four play levels, player fatigue, and hot streaks. Excellent challenge for ages 10+; requires practice. —DELSON	Apple II/II plus/IIe, 48K (disk). Also available for Commodore 64 (disk). Joystick required. Versions planned for Atari, IBM PC.	Defective disks replaced free w/in 90 days; \$7.50 fee thereafter or if user-damaged.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A ★ ★ ★	★ ★ ★ ★
NECROMANCER Synapse Software 5221 Central Ave. Richmond, CA 94804 (415) 527-7751 \$34.95 © 1983	Plant and protect trees, then march them into enemy territory and take on opposing forces in fantasy arcade game requiring superior hand-eye coordination, for ages 12+. —DELSON	Atari 400/800/XL series, 32K (disk or cassette). Also available for Commodore 64 (disk or cassette). Joystick required.	Defective material replaced free w/in 90 days; \$5 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D ★ ★	★ ★ ★
OIL BARONS Epyx, Inc. 1043 Kiel Ct. Sunnyvale, CA 94089 (408) 745-0700 Approx. \$40 © 1983	Wheel and deal, form cartels, outbid the competition, in serious, slow-moving, challenging, resource-management game for ages 12+. —DELSON	IBM PC, 64K w/advanced BASIC (disk). Also available for Apple II/II plus/IIe, 48K (disk); Commodore 64 (disk).	Defective disks replaced free w/in 30 days; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D ★ ★	★ ★ ★
PARTHIAN KING. Avalon Hill Game Co. 4517 Harford Rd. Baltimore, MD 21214 (301) 254-5300 \$25 © 1983	As a king you build up an army, engage in combat, make and break alliances, use magic, acquire land for points and gain victory over up to three foes in war game for ages 12+. —DELSON	Apple II/II plus/IIe, 48K (disk). Version planned for Commodore 64.	Defective disks replaced free.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
PROFESSIONAL TOUR GOLF Strategic Simulations, Inc. 883 Stierlin Rd., Bldg. A-200 Mountain View, CA 94043 (415) 964-1353 \$39.95 © 1983	Drive, chip, and putt across two golf courses composed of the world's greatest holes. Use one of 20 real-life golf greats or create your own player with strengths and weaknesses. † —DELSON	Apple II/II plus/IIe/III w/ emulator, 48K (disk). Also available for Commodore 64 (disk).	Defective disks replaced free w/in 30 days; \$10 fee thereafter or for backup copy.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
ROCKY Coleco Industries, Inc. 999 Quaker Lane S. West Hartford, CT 06110 (800) 842-1225 Approx. \$30 © 1984	Take on human or computerized opponent in fast-action boxing match featuring variable skill levels and fluid graphics. Good for ages 10+. —DELSON	Coleco ADAM (cartridge). ColecoVision Super Action Controller(s) required.	Defective cartridges replaced free w/in 90 days.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
SUBMARINE COMMANDER Thorn EMI 1370 Ave. of the Americas New York, NY 10019 (212) 977-8990 \$19.95; \$29.95 (Apple) \$44.95 (Atari) © 1983	Track and follow enemy convoys, use special sonar, and torpedo enemy ships in exciting submarine simulation game popular among players 10+. † —DELSON	Commodore VIC-20, 5K (cartridge). Also available for Apple II/II plus/IIe, 48K (disk); Atari 400/800/XL series, 16K (cartridge).	Defective material replaced through retailer.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★ Excellent; n/a Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart									



THANKS TO COMPU SERVE'S CB SIMULATOR, "DIGITAL FOX" ACCESSED "DATA HARI" AND PROCEEDED TO AN "ALTARED" STATE.

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WHAT'S IN STORE SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 100 for information such as backup policies and addresses of software manufacturers.

HOME BUSINESS & HOME MANAGEMENT

Cut & Paste

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple and Atari. Version planned for IBM PC.
MANUFACTURER: Electronic Arts
PRICE: \$50

What's the use of a personal computer at home? A question we all ask ourselves. Word processing! The answer we get as a matter of course. You may not be composing the Great American Novel on it, but, if you're like a lot of people, you'll find the computer comes in handy for occasional formal correspondence. And term papers will never look the same again.

You may be hesitant to invest hundreds of dollars and weeks of time on a word-processing program. Under the circumstances, you'll find Electronic Arts' first nongame offering a most satisfying tool. *Cut & Paste* comes with an extra disk you can use to store your writing. You can start typing in your letters and homework right away. This disk also has a series of generic formats for documents like memos and business letters. I know this is a friendly, instructive gesture, designed to help you put your program to work immediately, but I found it rather confusing. If you want to enter your own text instead of following the form letter or form memo, you must load the special "blank" document. If it weren't for the command summary card, I'd have been lost.

As always, perseverance pays off. Whatever you do, don't give up. It'll take only a few moments of experimenting and perhaps a lost letter or two before you feel comfortable with a command structure that makes refreshingly good sense. A list of your options is always printed on the bottom of the screen. And there are no commands to remember. Simply move the cursor over the task you want to perform—SAVE, PRINT, CUT (also known as delete), PASTE (also known as insert), etc. and press RETURN.

Word processors will help with schoolwork. They'll help you compose neat, impressive letters with which to elegantly excuse yourself on late mortgage payments, or forcefully convey your anger to a local elected official. *Cut & Paste* doesn't have a fancy spelling checker, or slick and complicated features that allow you to call up some phrase or sentence with the push of a CONTROL key. But these are rarely needed for most home uses. Their absence is one of the reasons for the program's delightful simplicity.

—SHARON ZARDETTO AKER

Microsoft Multiplan

HARDWARE REQUIREMENTS: Commodore 64 (disk).
MANUFACTURER: HesWare
PRICE: \$99.95

More often than not, after an hour or two with a new business or finance program you begin to think of all the shortcomings: "If only they had included . . ." Not so with *Multiplan*: It's a serious spreadsheet program (also known as an electronic worksheet) that includes every feature I could think of as being useful for small business or big home-finance-management tasks.

A spreadsheet program's an invaluable tool in accounting, budget preparation, and finance management. *Multiplan* can handle any kind of data you want to store in row/column format, as you would on an accountant's ledger page. The real advantage of these kinds of programs is in the manipulative and "what if . . ." power you have over the information stored. You can have the computer automatically switch numbers around, rearrange calculations, calculate averages and sums, and pick out maximum and minimum values for certain categories. Find out how the entire spreadsheet would be affected if you changed an item. For instance, suppose you wanted to calculate your average annual income, accounting for mortgage payments on your home. You can easily calculate the effect of variations in the mortgage rate on your income provided you have included a formula taking it into account.

The 400-plus page *Multiplan* manual has to be that large to describe all the features of this tremendously powerful program. Electronic worksheets like *Multiplan* are extremely

versatile, but it takes a lot of work to set one up. Since home budgets, checkbooks, and even bowling league statistics are basically no more than simplified spreadsheets, *Multiplan* does have its home applications. However, its power (not to mention its 422-page manual), makes it most appropriate for business use. —SHARON ZARDETTO AKER

Super-Text Professional

HARDWARE REQUIREMENTS: Apple II w/ Applesoft ROM/II plus/IIe, 48K (disk); Also for Commodore 64 and IBM PC. Atari version planned.
MANUFACTURER: Muse Software
PRICE: \$175 (Apple and IBM), \$99 (Commodore)

Super-Text has all the essentials. You can move, edit, copy, and delete blocks of your copy. Words that split at the end of a line automatically flip down to the next line. It's also laden with the fancy features you'd expect from a more expensive word-processing system. It lets you assign words, numbers, and any sequence of characters to one key. When you want that word, number, or phrase to appear simply hit the ":" key. You can also calculate totals, and add, multiply, and divide numbers within the body of your text—an especially handy feature if you're preparing business reports. When your text exceeds the space limit (about five double-spaced pages per file), you can link it up with other saved files, thanks to a procedure called AUTO-LINK. At any time, you can switch to a special HELP screen that will guide you out of confusions or frustrations.

Of course, with all this power, there are bound to be a few problems. You may have to struggle with the documentation, which lacks a comprehensive index, tutorial, and clear command summary. The complexity of the program means that there are a lot of commands to remember.

Potential word-processing program purchasers should look carefully at their needs. If you're in the market for a package that will take care of a letter or two and prepare neat homework assignments, you'll find less-expensive programs that are significantly easier to use. On the other hand, if you're in the market for a more professional job, *Super-Text* deserves consideration. ►

READER'S DIGEST INTRODUCES PLAY-AND-LEARN SOFTWARE FOR A VERY TOUGH AUDIENCE.



In the eyes of any red-blooded, American four-five-or-six-year-old, computer software is nothing more than a new toy. And when it comes to a new toy, kids have never been known to fool around. It's either good or bad, fun or boring, worth playing with or not, right from the start.

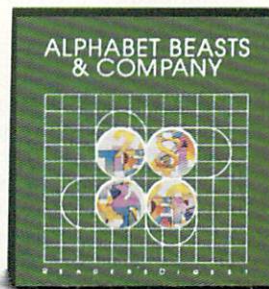
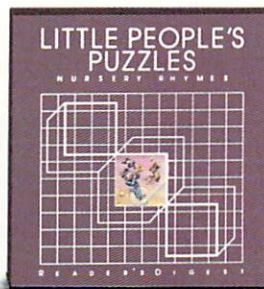
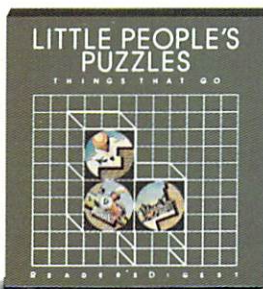
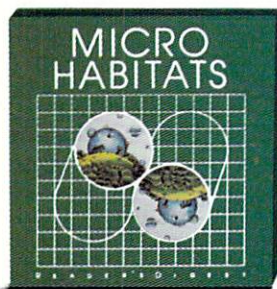
Nothing in between and no bones about it.

So when we created our early learning series, we did it without any illusions. And, judging from the kids who've tried our games so far, there's not a dull learning tool in the group.

Each game is fun. And worth playing over and over. So our programs continually reinforce early learning skills along with basic computer commands. And unlike some other early learning programs, Reader's Digest Software™ games are designed so that even non-readers can follow the fun.

Whether it's Little People's Puzzles™ for pleasure, Micro Habitats,™ the creative construction set, or kooky, unspooky Alphabet Beasts and Company,™ there's a lot of color, animation, sound and even music to turn our toughest customers into a captive audience. Look for it now at your software store or call Customer Service at 800/431-8800. (In NY, AK, HI: 914/241-5727.)

SOFTWARE GOOD ENOUGH TO GO OUT AND BUY A COMPUTER FOR.



Little People's Puzzles, Alphabet Beasts and Company, and Micro Habitats are available for Apple® II, II Plus, IIe: 48K and disk drive, and Commodore™ 64 Machine and disk drive. Color monitor is required for Little People's Puzzles, preferred for Alphabet Beasts and Company. Color monitor and joystick preferred for Micro Habitats. Alphabet Beasts and Company, and Micro Habitats available for IBM® PC and PCjr in spring, 1984. Warranty information available upon request by writing to: Reader's Digest Services, Inc., Microcomputer Software Division, Pleasantville, New York 10570.



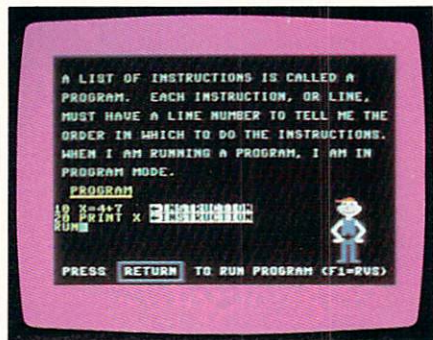
R E A D E R ' S D I G E S T

WHAT'S IN STORE SOFTWARE REVIEWS

Muse's confusing pricing policy suggests that *Super-Text* sell for \$175, while I've seen it sold in special introductory offers for \$99. At the lower price, *Super-Text* is definitely a bargain. At the higher price, it's a fair deal.

—DAVID WILSON

EDUCATION/ FUN LEARNING



I Am the C-64, Vols. 1-3, and 4-6

HARDWARE REQUIREMENTS: Commodore 64 (disk).

MANUFACTURER: Creative Software
PRICE: \$29.95 (Vols. 1-6)

When you get a new computer, you want to begin using it immediately. *I Am the C-64* is a multivolumed tutorial series that should satisfy that novice itch in many new Commodore owners. The lessons are designed to be used in conjunction with the *Commodore 64 User's Guide* that accompanies the computer.

The first disk is enough to get you off to a comfortable start. Clever animated graphics and music keep the pace going through a guided tour of the Commodore keyboard—covering everything from cursor movement to color changes—and on to a BASIC introduction. New Commodore owners agreed that keyboard functions were much easier to understand after a session with the program. An index at the end of Volume 3 allows you to return to any portion of the BASIC tutorial, to review any of the concepts, such as PRINT or GOTO, that you may have missed.

Volume 4, on the second disk, moves on to more advanced levels. A word of caution, however: You'll find it practically impossible to learn to program without the aid of the *User's Guide*, or some other BASIC text

that explains techniques in more detail. The same goes for Volumes 5 and 6, which deal with the graphic elements known as sprites and music programming, respectively.

This series is the kind of tutorial that's long overdue for the Commodore. But it is pretty much a one-shot deal—you're not liable to refer to it time and time again. Still, if you need a program that will soften your introduction to the Commodore 64 and familiarize you with the machine's capabilities, *I Am the C-64* should fit the bill.

—BETSY BYRNE

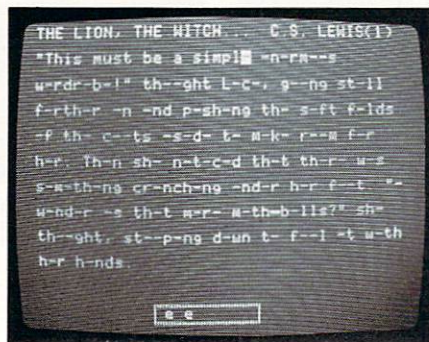
M--ss--ng L--nks

HARDWARE REQUIREMENTS: Apple II/II plus/IIe, 48K (disk). Also for Atari, IBM PC, TRS-80.

MANUFACTURER: Sunburst
PRICE: \$39.95

"--e--oo--e--a--e--i--e--. E--c--y--o--y--a--a--i--i--o--o--a--i--e--o--a--o--e--i--i--e--e--." Can you decipher this passage from *Charlie and the Chocolate Factory*? If not, how about the following? "Th--r--m b--c--m--s--l--nt--v--r--b--d--w--s--w--t--ng n--w f--r Ch--rl--t--st--rt--p--n--ng h--s pr--s--nt."

M--ss--ng L--nks uses passages like these, taken from nine popular children's books, to help kids practice reading skills. The books include classics like *The Secret Garden*, as well as more recent favorites such as *The Cricket in Times Square*. Passages can be displayed with first letters only, words with just vowels or words with just consonants, to name a few. With excerpts running about four times longer than the paragraph above, and a number of options that permit variations in



play, the package provides lots of material!

Children quickly learn the difference between the various formats, learning some interesting things

about communication in the process. For instance, they discover that it's easier to understand a passage with no vowels (the second example above) than one with no consonants. It is just a short jump from this to the discovery that you can write short words using almost no vowels, and that much of everyday expression is carried out using only partial communication.

The program's only flaw is that if you hit ESC accidentally, you must start over. Confirmation ("Are you sure you want to quit?") is a blessed feature for both young typists and old keyboard klutzes like me.

As with all educational software purchases, the decision whether or not to select *M--ss--ng L--nks* rests on whether or not the skills being developed are worth the price. I'm rather skeptical about the "mental magic" and miracle-making of which the packaging boasts. Short of miracles, it can help to teach reading comprehension, spelling, and other similar skills. It will have a useful place in some homes.

—TONY MORRIS

Story Tree

HARDWARE REQUIREMENTS: Apple II w/ Applesoft ROM/II plus/IIe, 48K (disk).
MANUFACTURER: Scholastic/Wizware
PRICE: \$39.95

That's My Story

HARDWARE REQUIREMENTS: Apple II/II plus/IIe, 48K (disk).
MANUFACTURER: Learning Well
PRICE: \$59.95

Jim and Albert, collecting plants in the desert, come upon a ghost town. What if the town is haunted? What if Jim runs ahead and disappears?

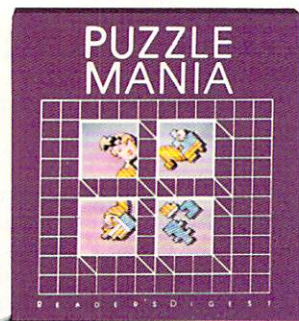
Ralph is tired of being the smallest dragon in the land and decides to make himself noticeable. What if he asks another dragon for help? Or decides to change how he looks?

These are just two of the 12 starter stories in *That's My Story*. Given an initial scenario and two alternatives for the story's continuation, you and your child then select subsequent plot twists. You expand on the original tale, creating an adventure as varied as your imagination.

There aren't any bells and whistles here to increase motivation, but kids who enjoy writing will find *That's My Story* simply captivating. The creative process is really what counts. Starter stories virtually beg to be completed. Even very young children will enjoy sitting on a par-

INTRODUCING PUZZLE MANIA. 7 GREAT PUZZLES CREATED BY US.

THE OTHERS BY PUZZLE MANIACS.



Puzzle Mania™ is a challenging jigsaw program for puzzle lovers. Puzzle Mania is also an inspired jigsaw program for puzzle creators. Because in addition to the seven great puzzles on the disk, you can create your own pictures on the screen, paint them in sixteen different colors and let the program turn them into puzzles to save on a separate disk.

Each Puzzle Mania puzzle (including your own creations) can be played on six levels of difficulty. There's help when you need it. And all turns are tallied. So you can turn the puzzle play into competitive play. If you have to part with a puzzle before it's finished, there's a stop-and-save feature built into the program, too.

Reader's Digest Software™ created Puzzle Mania for kids and their friends and their parents and their grandparents and everybody else who likes fun and games. Look for it at your software store or call Customer Service at 800/431-8800. (In NY, AK, HI: 914/241-5727.)

**SOFTWARE GOOD ENOUGH
TO GO OUT AND BUY A COMPUTER FOR.**

R E A D E R ' S D I G E S T

Warranty information available upon request by writing to: Reader's Digest Services, Inc., Microcomputer Software Division, Pleasantville, N.Y. 10570. Puzzle Mania runs on Apple® II, II Plus, IIe: 48K and disk drive, Commodore™ 64 Machine and disk drive. Color monitor required. IBM® PCjr version available late spring. Puzzle Mania and Reader's Digest Software are trademarks of The Reader's Digest Association, Inc. Apple is a registered trademark of Apple Computer, Inc. Commodore is a trademark of Commodore Electronics Limited. IBM is a registered trademark of International Business Machines, Inc.

WHAT'S IN STORE SOFTWARE REVIEWS

ent's lap and thinking up some of Ralph's alternatives. With Mom and Dad on hand to type in the ideas as they emerge, and to help think up new "what ifs," the fun and excitement of creative exploration can be shared by everyone in the family. If the 12 on the disk aren't enough, you can add as many as 40 more starter stories of your own creation.

The software is very easy to use and forgiving of errors. You can print out your masterpiece, and choose between using all capital letters (for very young users) or upper- and lower-case letters.

A little bit more complicated and difficult to use, *Story Tree* is a more advanced, versatile story-making program. It comes with three complete stories that illustrate the software's potentials. Unlike *That's My Story*, *Story Tree's* tales need not be confined to the "what if" format. This flexibility is an advantage for older users. *Story Tree* also allows you, the author, to designate some branches as choices for the reader to make and others as choices the computer will make randomly. Thus, you may include unpredictable events in your stories to keep them interesting and varied no matter how often they're read. You can print out and edit your "story trees," fiddling until you've got a finished product you can be proud of.

Older, more experienced writers will appreciate *Story Tree's* flexibility. The price paid for that versatility is increased difficulty of use, and slower, more involved operation.

Neither of these packages restricts you simply to writing stories. For example, you can pose real-life choices, such as: We have the opportunity to move to a new city where jobs are available for Dad and Mom. What if we move? What if we remain here? Allowing children to explore options fully, examining choices that will have to be made further down the road, can open the door to more discussion and family fun.

—TONY MORRIS

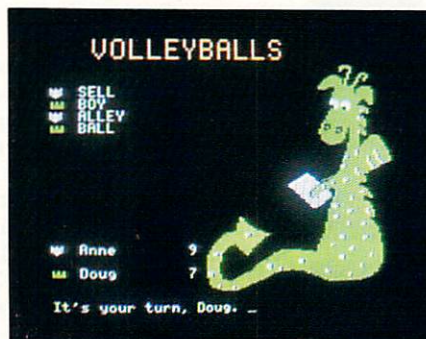
Wizard of Words

HARDWARE REQUIREMENTS: Apple II/II plus/IIe, 48K (disk). Also for Commodore and IBM PC. IBM requires color card.

MANUFACTURER: Advanced Ideas Inc.
PRICE: \$39.95

If you have someone in your house who hates to read, or who can't

spell, or alternatively, someone who absolutely loves words, you'll find *Wizard of Words* a valuable addition to your software library.



spell, or alternatively, someone who absolutely loves words, you'll find *Wizard of Words* a valuable addition to your software library.

It's actually five different computerized versions of word games we've all played before. "Castle Capers" is a hangman-like game in which players can choose such variables as word length and level of difficulty, using words from the 38,000 in the Royal Registry, or drawn from their own lists. "Dragon's Spell" is a word-search game in which players use the letters in a long word to make up as many smaller words as possible. Scrabble lovers will enjoy "Word Spinning," filling their own words into the spaces of a blank crossword board. (It's a real challenge to fill all the squares with words crossing and crisscrossing one another.)

I like the low-key way *Wizard's* games are presented. The emphasis is always on playing, not just on winning or losing. And there's more to be learned here than spelling. In "Herald's Hark," for instance, players have to guess a three-, four-, or five-letter word, selected at random. After each try the computer tells you only how many of the letters in the word you've chosen coincide with those in the selected word. It takes logic and good guessing strategy to be able to discern the correct answer from just these hints.

One of *Wizard's* most valuable features is the utility called "King Author," which allows kids to make up their own lists for use in "Castle Capers" and "Jester's Jumble," a word-scramble game. My kids and their friends delight in customizing their own contests with words pulled from other sources such as textbooks or magazines. In fact, every Monday my 10-year-old comes home and types his weekly spelling lists into his very own (educational) game of "Castle Capers." —MARLENE ANNE BUMGARDNER

GAMES

Professional Tour Golf

HARDWARE REQUIREMENTS: Apple II/II plus/IIe/III w/emulator, 48K (disk). Also for Commodore 64.

MANUFACTURER: Strategic Simulations, Inc.

PRICE: \$39.95

Golfers and nongolfers alike will enjoy this intriguing simulation of the sport of the country club set. An easy start-up play system allows even the most inexperienced gamers to drive, chip, and putt across two excellent golf courses (a composite of great holes from great clubs around the world and the famous Pebble Beach course). Long-time players have the chance to choose such variables as club size, direction of ball (variable stroke for left, right, or straight-away hitting), and the crucial element of wind velocity (which requires extra attention to such details as angle of shot and the location of trees and other obstacles).

Beginners may choose to play as one of 20 preprogrammed golfing greats such as Jack Nicklaus and Arnold Palmer, create a player based

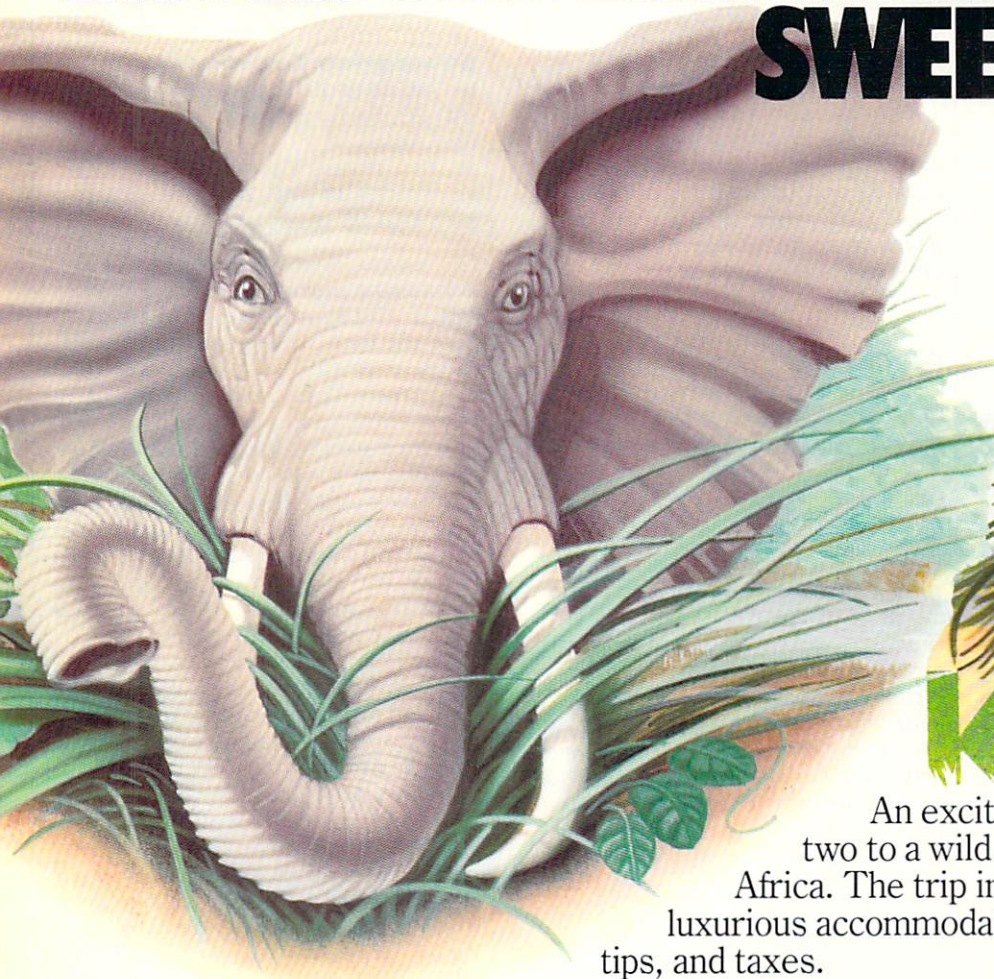


on their own statistics, or build an imaginary "super golfer."

Although it appealed to the younger ages (eight and up), the simplest levels were too easy for many playtesters. There are no wind effects and you can practically prejudge the exact position of a ball before you hit it. But when we changed to the complex mode, playing with wind effects on the ball's flight, and with other variables, the game took on a much more exciting tone.

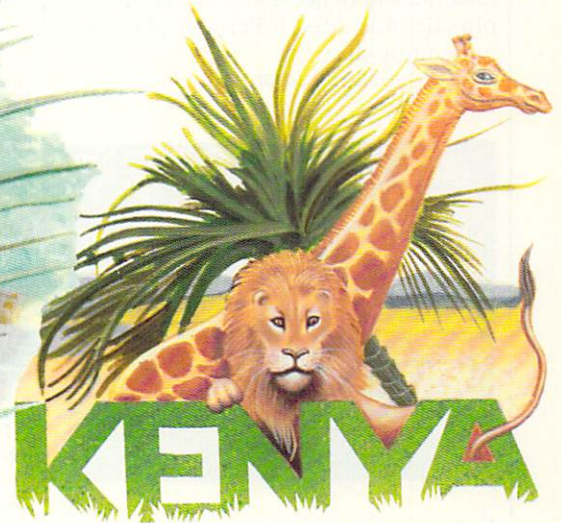
The play action was sufficiently exciting for testers to overlook the game's undistinguished graphics. (Screens consist of either overhead views of individual holes or the putting green.) Authentic golfers applauded the fact that the computer consistently reproduced the stroke of

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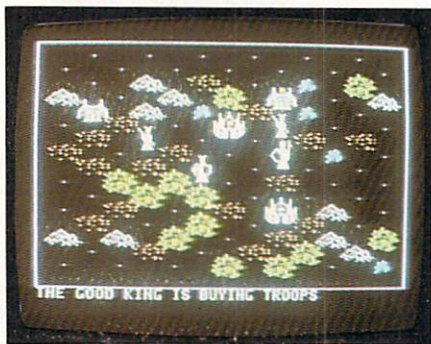
each club. That way, contestants learned from their mistakes. After several practice games they were able to judge distances and play more smoothly and properly.

—JAMES DELSON

Parthian Kings

HARDWARE REQUIREMENTS: Apple II/II plus/IIe, 48K (disk). Version planned for Commodore 64.

MANUFACTURER: Avalon Hill Game Co.
PRICE: \$25



Ruling in the Middle Ages was no picnic. Armies roamed the countryside, plundering at will. Wizards cast spells, defoliating forests. Peasants demanded food and grumbled about taxes when all they'd done was grow and harvest a few crops. I mean, what was a local king supposed to do? Well now you can play Avalon Hill's exciting simulation of medieval life and warfare, *Parthian Kings*, and decide for yourself. You set all the parameters of this war game—from choosing the size and strength of your army to creating the terrain for the computer-generated map on which you play. It's one of the most flexible systems around, and makes for one of the year's most intriguing games.

First off, you determine what sort of soldiers you want in an army (you should store this configuration on a duplicate disk). Next, decide whether to use an existing map created by the computer or devise one of your own. You have a choice of a variety of terrains and may play against up to three opponents (human or computer-generated). Magic's even allowed, if you wish.

In each turn you can build up your army and/or move your pieces, make (and break) alliances with other players, and engage in combat. You accumulate points by eliminating opponents' kings, wizards, and convoy masters, and by occupying lake spaces (also known as hexes).

Victory goes to the player with the most points at the game's end.

This is a simple game, but one that grows in complexity as you gain experience. Younger playtesters ages 12 and up took it on its most basic level, while older testers engaged in some fancy political double-crossing and double-dealing.

—JAMES DELSON

Oil Barons

HARDWARE REQUIREMENTS: IBM PC, 64K with advanced BASIC (disk). Also for Apple and Commodore 64.
MANUFACTURER: Epyx, Inc.
PRICE: Approx. \$40

If you've ever dreamed of wheeling and dealing in the marketplace, you'll enjoy this action-packed simulation of the petroleum industry. Buy land, survey your property, drill for black gold, and maybe even strike it rich, all in the comfort of your living room. The computer acts as your banker, secretary, and personal advisor while you struggle for supremacy in the world of big business.

Like other money and resource management games, such as *Cartels and Cutthroats* and *President Elect*, *Oil Barons* will take you several hours to learn. It requires careful reading of the lengthy instruction manual and several practice games. But once you get the hang of it, it's as easy, and as much fun as *Monopoly* or *Careers*, with all the features that computer games offer, as well. For instance, the computer helps keep track of resources and computations, and adds an element of surprise in such areas as political maneuverings and the size of each oil strike. Animated graphics depict the surveying and drilling process and enhance the game's appeal.

Play alone or against as many as seven other entrepreneurs, trying to accumulate money and land while outbidding and duping your rivals. Shady deals, powerful cartels, and high-risk business dealings are all allowed.

Playtesters over 12 found the game enjoyable, though some complained of it being too slow-moving. I can't recommend *Oil Barons* for all players. Though arcade fans and quick-thrill seekers will be disappointed, it'll appeal to those who enjoy involved buying and selling strategies and offers insights into the business as well as years of challenging play.

—JAMES DELSON

Submarine Commander

HARDWARE REQUIREMENTS: Commodore VIC-20, 5K (cartridge). Also for Apple and Atari.

MANUFACTURER: Thorn EMI
PRICE: \$19.95 (VIC-20), \$29.95 (Apple), \$44.95 (Atari)

I've always liked those World War II submarine movies, like *The Enemy Below* and *Run Silent, Run Deep*. Like the lone air aces during the Battle of Britain, sub crews were a rare breed. This thrilling, sophisticated simulation puts you inside a sub on patrol in the Mediterranean Sea during the Second World War. You track and follow enemy convoys on a master map, locate ships using sonar and hydrophone displays (on a second screen), and engage and sink ships by spotting them through your periscope (a third screen).

The enemy fires back, with deck guns and depth charges, inflicting damage on your controls, instruments, hull, and engines. If you're daring, you can dodge in amongst a convoy, sink a few ships, then crash dive to escape destruction. The more strategic-minded can follow a convoy and pick off ships on its periphery. Regardless of your approach, this is an exciting game, with tense moments as you approach battle, scan the water for targets, and watch your torpedoes speed off to hit (or miss) their targets.

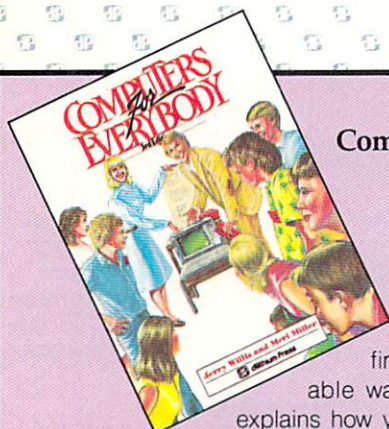


By far the best-received game of the month, *Submarine Commander* is fast-paced and requires only moderate hand-eye coordination. It was popular among all playtesters over 10, including two groups who operated as teams—one player acting as navigator, another as "crew," steering the ship, diving, and submerging it, and a third who decided when to fire the torpedoes. The VIC-20 game was much faster than the Atari version, though a little hard to fine-tune.

—JAMES DELSON

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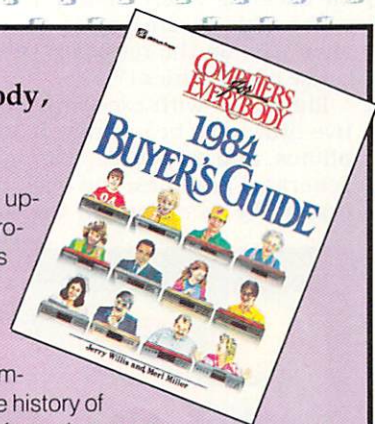
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WHAT'S IN STORE BOOK REVIEWS

The Joy of Computers

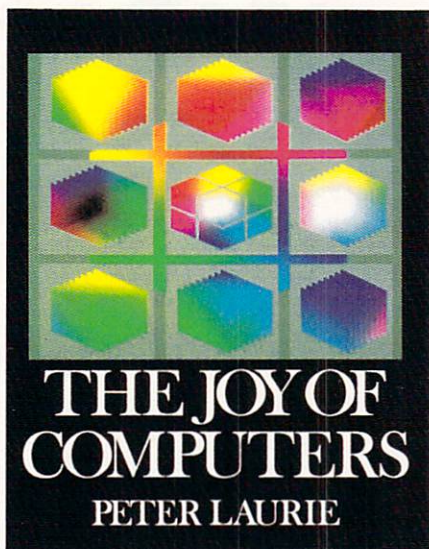
Peter Laurie

Little, Brown & Co., 1983

191 pp., hardcover, \$19.95

The Joy of Computers is a joy of a book, although you might have trouble deciding where to keep it. On the coffee table because of its appearance? Or, on the reference shelf because of its content?

Illustrated with excellent, informative drawings, beautifully detailed photos, and, of course, computer-generated graphics, the book covers practically everything in the comput-



er field—from the manufacturing of the microchip to the design of an android, from the revolutionary changes in mathematics at the turn of the century to the recent developments in artificial intelligence.

There is a lot of solid information here: You can learn the difference between a data base and a spreadsheet or a printer and a plotter, how different computer languages developed, and what the practical applications of computers are for today's homes and businesses.

Especially fascinating is the book's coverage of mind-stretching topics such as the logical limits to computer technology advances. Just how much faster, smarter, or bigger can computers get?

By no means strictly for beginners, *The Joy of Computers* may be hard going in some parts for someone unfamiliar with the field of com-

puters and/or mathematics. Still, it has something—a lot of things—for everyone. My copy already has a waiting list for circulation among friends—but I'm not sure I want to let it out of my hands!

—SHARON ZARDETTO AKER

Moonlighting With Your Personal Computer

Robert J. Waxman

A World Almanac Publication, 1984

160 pp., softcover, \$7.95

The secret's out: Your personal computer can make you money. It may not make you a millionaire, but Robert Waxman has realistic advice about how to make money with your personal computer in your spare time. The guide profiles six major haunts of the moonlighting computerist. It describes the ins and outs of increasing your computer's returns—how to break into freelance writing, how to operate a "Service Bureau" and use your computer to provide services such as tax preparation, accounting, and word processing, how to establish yourself as a consultant by advising clients on what kind of computer systems would work best for their needs, and how to develop and market your own commercial software. Waxman offers a reasonably complete overview of each field—clues about marketing, a sampling of fee schedules, a list of equipment you'll need, and some sound warnings about moonlight competition and potential pitfalls.

Waxman touches on a lot of important issues: How to negotiate contracts with a client, how to advertise, how to copyright your software, etc. There's a bit too much chitchat about moonlighting (discussion of responsibility to the primary employer, and taking on too much work). Better had he treated it as simply an additional source of income. Waxman also fails to look into some important freelancing fields, omitting chapters on education, training, and the part-time sales of hardware and software. Ironically, Waxman is a teacher—of computer programming as well as moonlighting. It seems rather strange that he would neglect to mention this area of work. In addition, he misrepresents other fields, such as consulting,

which is not limited entirely to experts advising clients on important and complicated problems. It frequently uses less-experienced individuals to perform short-term, data-processing chores. For many companies, this is more cost efficient than hiring full-time, full-benefit employees.

For all its shortcomings, however, Waxman's book sheds light on a topic of increasing interest to many of us. If he touches upon one aspect of moonlighting that sets your imagination whirring and fires up your aggressive go-get-'em attitude, there's a chance your home computer might pay for itself after all. Happy moonlighting!

—ROBIN RASKIN

The User's Guide to Commodore 64 and VIC-20 Computers, Software, & Peripherals

The Editors of Consumer Guide
Beckman/Crown Publishers, Inc.,
1983

80 pp., softcover, \$4.98

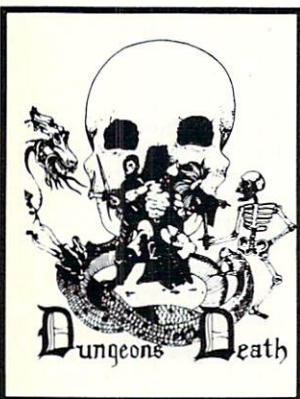
New and experienced Commodore users alike will welcome this new release. It's easy to read and stuffed with useful information. It covers just about the full range of information that a computer user (as opposed to a programmer) needs to know to operate and get the most out of a Commodore computer. You'll meet the keyboard and all its editing functions. You'll get help on everything from how to unpack and set up your computer to how to make wise software purchases—which products are a good buy and which aren't worth the material they are recorded on.

Softcovered, spiral-bound, and slickly done, the *User's Guide* is heavily illustrated and packed with information. Six well-organized chapters take the newcomer from a basic overview of personal computers and their uses in the home to directions for hooking up with bulletin boards and information networks. The full-color, close-up photos of each cable, connector, and port are perfectly suited to anyone who feels the least bit queasy around all this electronic gear. It's almost as if a friend were showing you how to get started.

—BETSY BYRNE

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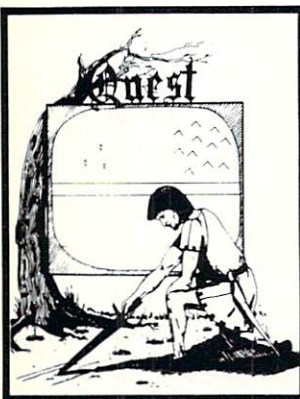
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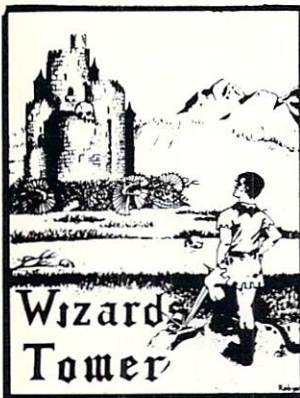
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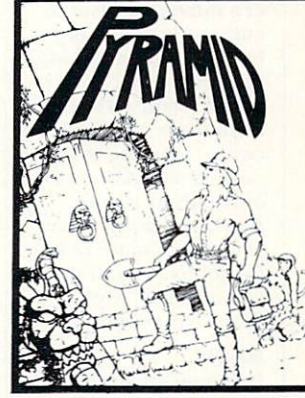
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THE PRIMER / THE WORDS

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

Access

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

Address

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

Bank-switching

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

BASIC

Beginner's All-purpose Symbolic Instruction Code. A popular, easy-to-learn *programming language* widely used with microcomputers.

Baud

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

Bit

The smallest unit of information a computer uses. A bit is either the

digit "0" or "1." An "eight bit" processor manipulates *data* in clusters of eight 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 applied 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 resultant "echo" effect allows you to see on your video



Boot up a brainstorm.

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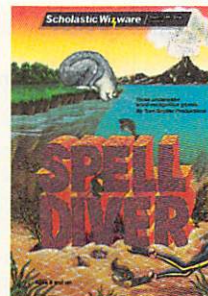
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Agent U.S.A., Bannercatch, Spelldiver designed and developed by Tom Snyder Productions, Inc. Available for Atari and Commodore 64 computers. Apple and IBM versions available soon.

THE PRIMER

THE WORDS

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*.

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 x 342 is much sharper than 320 x 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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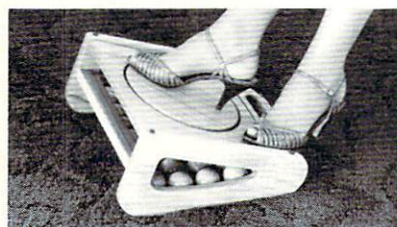


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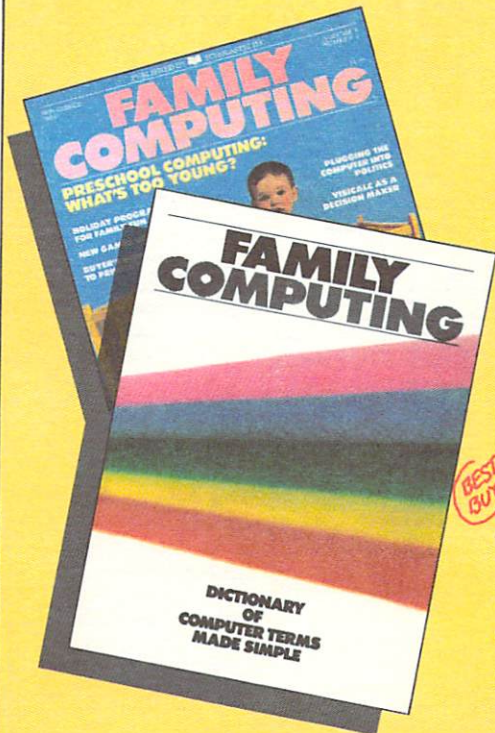
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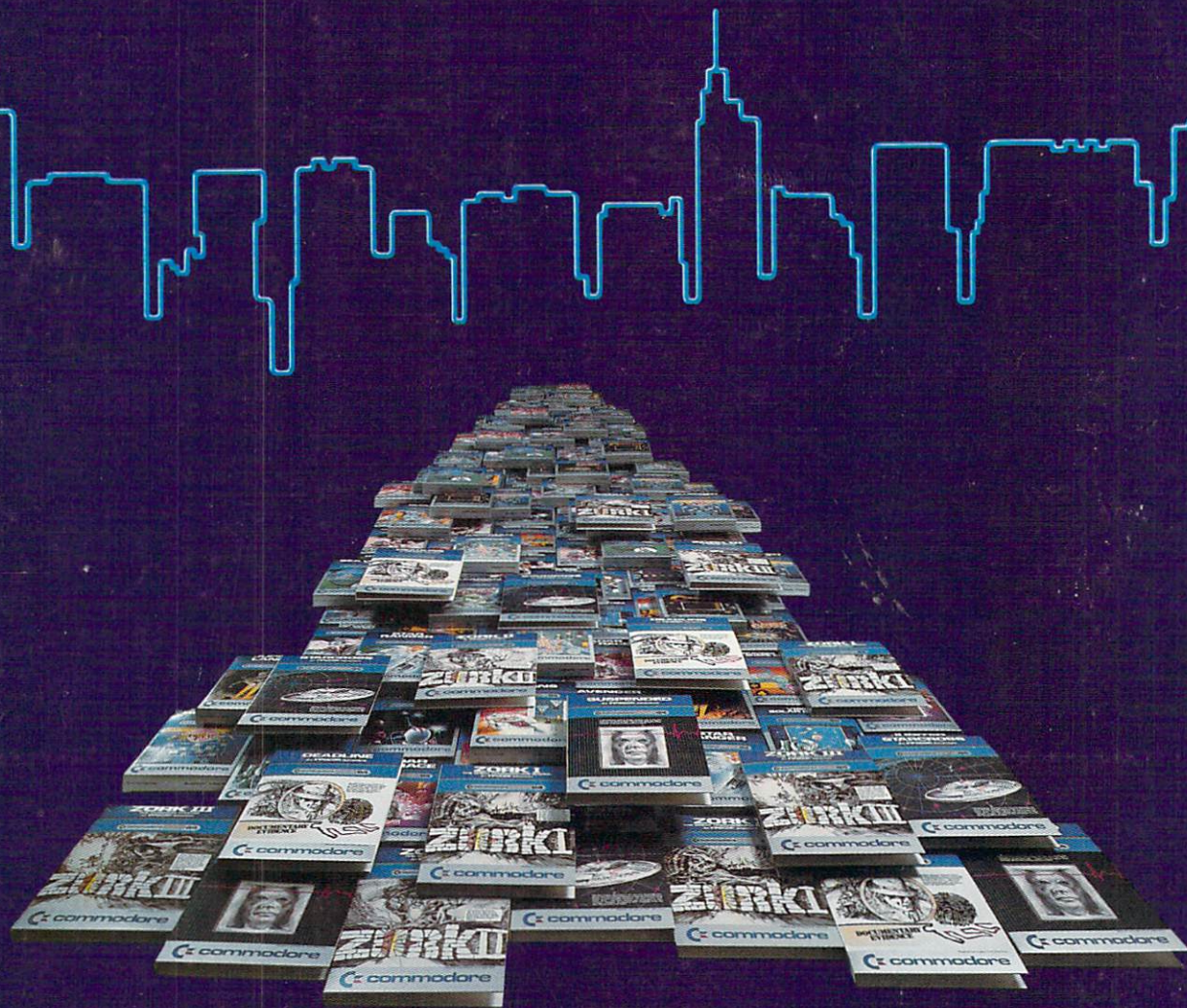
And the unique way we pack our oxide particles and bind them together means quality for the long run.

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