

**THE NEW  
ATARI 520 ST  
PREVIEW**

# FAMILY COMPUTING

## Business at Home

Your Guide to Buying  
Computer Systems

Integrated Software

Setting Up a  
Word-Processing  
Business

Maintenance  
Tips

24 At-a-Glance  
Software  
Reviews



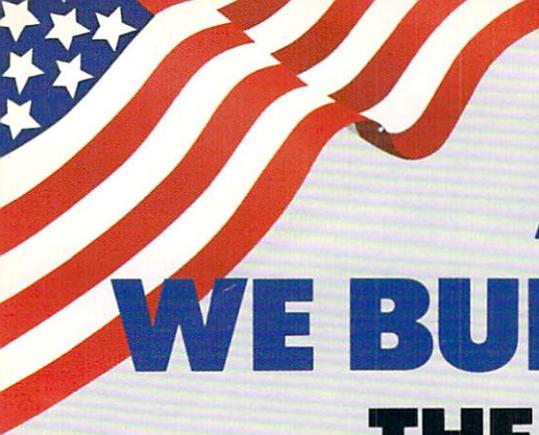
Psychologist Lee Salk  
on Raising Kids  
With Computers

Save Money  
on Computers  
Through Co-ops

**K-POWER:**  
Game Strategies,  
Music Programs,  
Contest,  
and More

INSIDE: ORIGINAL PROGRAMS  
FOR ADAM, APPLE II SERIES,  
ATARI, C 64/ C 128 & VIC-20, IBM PC &  
PCjr, TRS-80 COCO & MODEL III  
SPECIAL BONUS PROGRAM:  
HALLOWEEN CLASSIC





# AMERICA

## WE BUILT IT FOR YOU

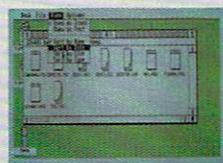
### THE ATARI 520ST

"We promised. We delivered. With pride, determination, and good old ATARI know how." *Sam Tramiel, President, ATARI CORP.*

No other computer we know of has been awaited with such anticipation, has received so much national and trade press, and has been so unanimously acclaimed — as the remarkable 520ST.

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Graphic symbols quickly identify available functions. Menus appear just by aiming



the mouse. Point to a specific operation, click the mouse and instantly you are able to develop full color charts, recall files from within folders, and so much more.

And when you combine 524,288 bytes of RAM with ATARI's custom circuits and the horsepower of a 68000 microprocessor, you own a powerful computer that delivers crisp, high resolution images with incredible speed.

With a monochrome monitor your 520ST displays 640 x 400 pixels of extremely high resolution clarity. Select a color monitor and you are able to create beautiful graphs and diagrams from a palette of 512 vivid colors.

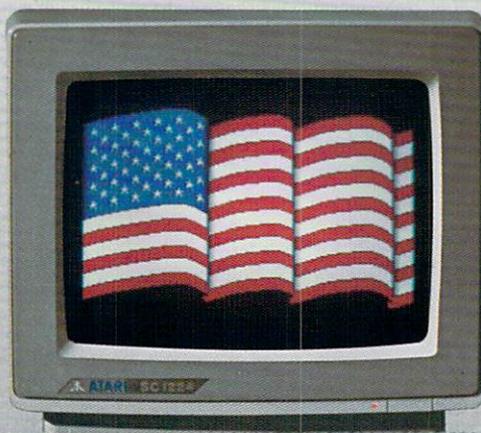


Power to grow. An array of expansion ports allow you to easily customize your 520ST. There are standard serial and parallel interface ports for connecting printers and telecommunications equipment, MIDI connectors to interface with music synthesizers and keyboards, and 3.5 inch floppy disk, cartridge and joystick ports. There is also a hard disk port with the lightning communications speed of 1.33 Megabytes per second. ATARI 520ST systems are available now.



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*Power Without the Price*

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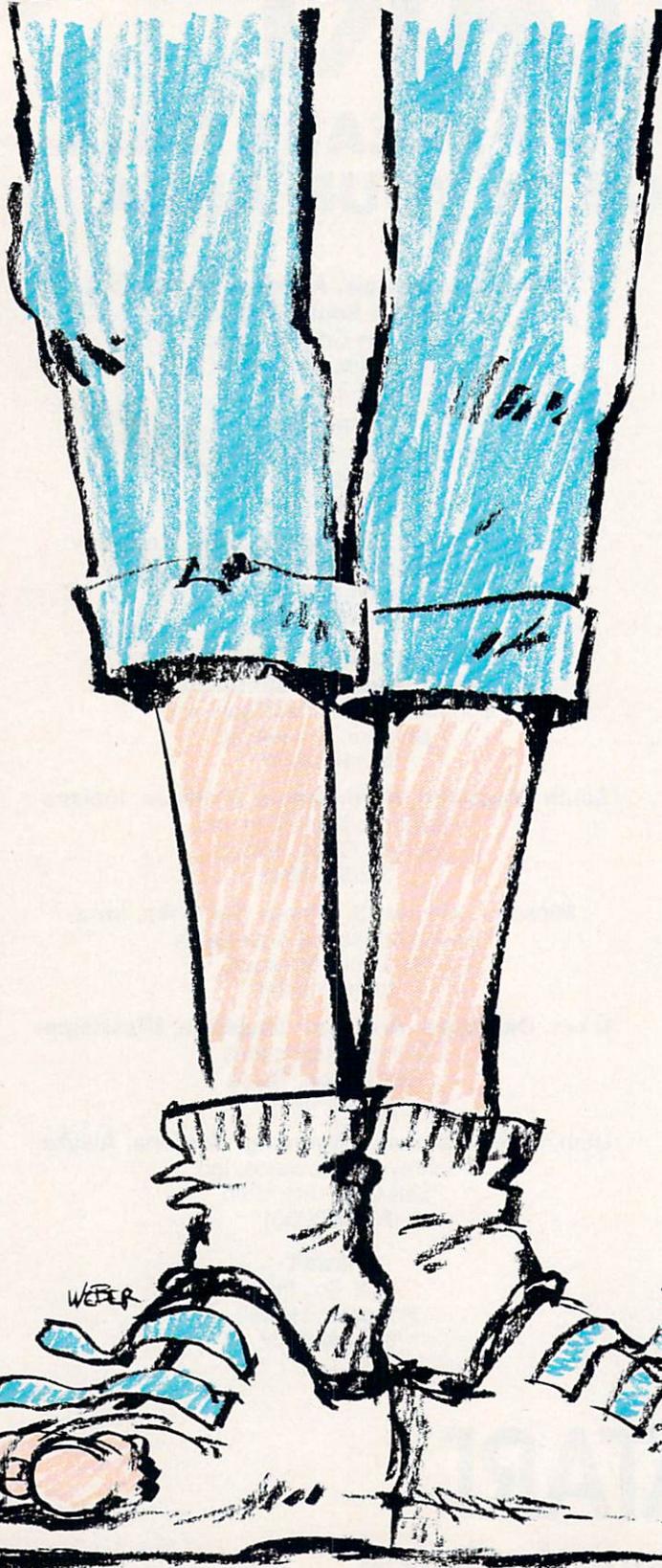
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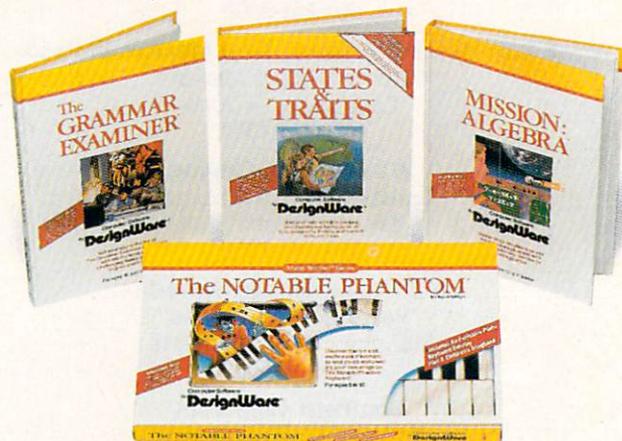
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# FAMILY COMPUTING®

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*Halloween Classic* will put "spirits" into your spooky night! For ADAM, Apple, Atari, Commodore 64/128, TI-99/4A and TRS-80 CoCo.

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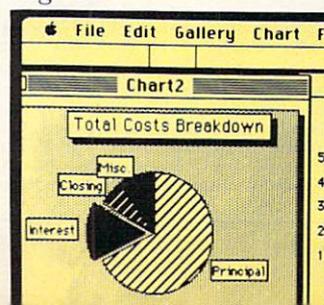
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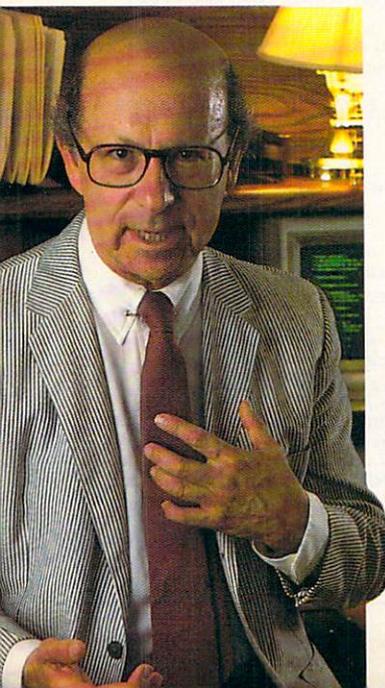
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**ISTANBUL**  
Monday, 9 a.m.

Athens  
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Hide connections  
Depart by plane  
Investigate  
Visit Intercol

Istanbul, once called Constantinople, is the largest city in Turkey, with a population of 2.7 million.



# EDITOR'S NOTE

## AT FIRST THE KIDS WERE A COVER-UP

It's been interesting to me that right from our earliest research—long before FAMILY COMPUTING was actually published—many parents who thought they might use a computer at home for business or to do work from the office were reluctant to discuss their own motives behind buying the computer. The usual dialog went:

**FAMILY COMPUTING:** Why do you want to (or did you) buy a computer?

**PARENT:** Oh, for our children, of course. They're going to grow up in a computerized world, and they need to know how to use these things.

**FC:** How about you? Do you use a computer at work?

**PARENT:** They're in the office, but I don't use one.

**FC:** Why's that?

**PARENT:** Well, to tell the truth, because I don't know how. I do get data off a CRT, but the guy next to me uses a computer to help make plans for his clients and does much better than I do. I guess that's one of the things having a computer at home could do. I could learn to use it. And everyone at work wouldn't see how dumb I am.

Well, you parents have come a long way. Most of you are out of the closet about wanting to use a computer yourselves. No more hiding behind the kids.

That's why so many people are buying powerful computers for home

use. That's why we're including more business-related (especially business-at-home-related) articles in FAMILY COMPUTING. And that's why this month's cover features business at home.

So as to not lose sight of some non-business articles, I'll let our three business-related stories—the guides to business systems (page 25) and integrated software (page 30), plus tips for setting up a word-processing business at home (page 10)—speak for themselves.

We've got a couple of special experts to speak to you about other things this month. You might want to get back to the kids by reading what psychologist Lee Salk has to say about raising children in the age of computers (page 35).

If you're interested in learning how to handle your own minor computer repairs, take a look at master tinkerer Henry Beechhold's hands-on maintenance tips (page 37), the first of a six-part series.

And if you're longing to be a kid again yourself, give our Halloween bonus program (page 52) a try. We know you won't let our programmers spook you.

Above all, it's good to know that every day there are fewer of us scared off by the "bugaboos" of computing.



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# LETTERS

## A BIT PUZZLED

I received the August issue of the magazine, and I'm a bit puzzled about the August Programmer. On page 51, you indicated that "Apple and Commodore 64 owners can get organized with *Home Information Manager*, an easy-to-use data-base program." You carefully explain and list the program for the C 64, but no Apple [version]!

I have been a subscriber to your magazine and enjoy it very much, but I would really like to try this program. What happened?

JEANETTE R. DEERSON  
Santa Barbara, California

**EDITOR'S NOTE:** Originally, we had planned to run both an Apple and a Commodore version of *Home Information Manager*. However, the program and accompanying text ran longer than we had planned, so we had to eliminate one version. We inadvertently forgot to change the contents of *The Programmer*. The program was extremely popular with our readers so we'll be publishing Apple and IBM versions of *Home Information Manager* in the November issue.

## A NEW MACHINE

I read your review on the new Commodore 128 in your July issue, and I really enjoyed it. In fact, I'm going to buy that particular computer as soon as it comes to the stores. I was wondering if you are planning to publish any programs for it?

DALE A. RUMSEY  
Ontario, Canada

**EDITOR'S NOTE:** You'll be happy to know we're already publishing programs that will run on the Commodore 128. Check out this month's *Programmer*.

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.

## CORRECTION

In the August issue's *New Hardware* column, we listed the incorrect price for the X-10 Powerhouse home-control device from X-10 USA. The modules cost \$20. The software and cables together cost \$25.

The illustrations for the July cover story, "A Parent's Guide to Learning at Home With Computers," were created by Brad Hamman.

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Monitor is not available. See footnote.\*

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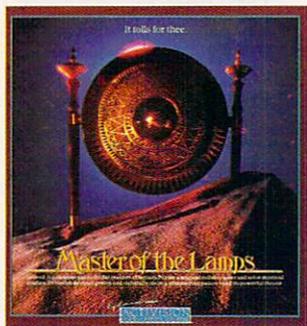
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# "Most Exciting Fall Lineup...Activision."

-Dennis Lynch  
Computer Games

*"A spectacular combination of sight and sound...you'll love this game."*

-Charles Ardai/Computer Entertainment



A spectacular journey through space and time. The king is dead and you must help the young prince prove his mental and physical worth. Reassemble the magic lamps and return the mischievous genies to their rightful place and the prince to the throne. Designed by Russell Lieblich and Peter Kaminski.

Created for the Commodore 64/128, the Apple II series and Atari 800, XE, XL and compatible computer systems.

*"...no limit to the complexity..."*

-Marc Randolph/USA Today



Enter Alcazar. The crown jewel of castles in a mysterious moorish landscape. To reach the coveted fortress, you must venture through a broad countryside of ancient castles. But beware, each is filled to the turrets with fantasy, magic and danger. Designed by Tom Loughry.

Created for the Commodore 64/128 and the Apple II series.

*"The unknown surprises lurking behind closed doors keep you playing...on and on."*

-Computer Entertainer Newsletter

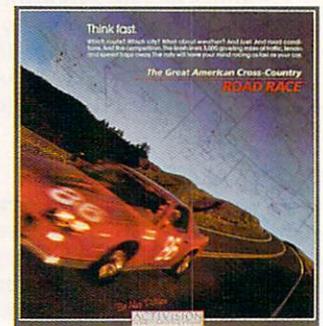


An underground energy plant powers all of North America. But, somewhere deep within its core, a tiny glitch threatens a transcontinental blackout. You must assemble a force of skilled robot commandos, investigate the problem and repair it before the shutdown activator counts down to zero. Designed by Creative Sparks.

Created for the Commodore 64/128 and the Apple II series.

*"...Road Race is now the best racing game on the market."*

-Edward Semrad/Milwaukee Journal



Strap yourself in! You're about to start the race of a lifetime. A high speed, coast-to-coast rally up, down and across three thousand grueling miles of changing weather, changing terrain and traffic, traffic, traffic. Monitor changing road conditions, speed, fuel, RPM's, destination times and, of course...your police radar detector. You just may drive yourself into the top ten finisher board at the end of the race. Designed by Alex DeMeo.

Created for the Commodore 64/128, the Apple II series and Atari 800, XE, XL and compatible computer systems.



The Next Generation.

# The Excitement Starts Here:

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Egghead Software  
Kurz Photo  
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Discount Video  
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Games N' Gadgets  
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Rainbow Computer  
Software City  
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Software City  
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IOWA  
Child World/Children's Palace  
Zayre

ILLINOIS  
Child World/Children's Palace  
Complete Computing  
Computer Outlet  
C.R. Technologies  
Family Software Inc.  
Protecto  
Software Plus  
Toys R' Us  
Zayre

INDIANA  
Child World/Children's Palace  
Computer Corner  
The Computer Statement  
Toys R' Us  
Zayre

KANSAS  
Child World/Children's Palace  
Wichita Software Center

KENTUCKY  
Child World/Children's Palace  
Toys R' Us  
Video Visions  
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LOUISIANA  
Toys R' Us

MASSACHUSETTS  
Barnes & Noble  
Caldor  
Child World/Children's Palace  
Computer Concepts  
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Nichol's Electronics  
The Whiz Computer Store  
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Tycorn Inc.  
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Caldor  
Compuvision  
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KSI Program Store  
The Software Store  
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Games N' Gadgets  
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Boffin Ltd.  
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Computer Exercise World  
Computer Food  
Computer of Woodbury  
Computer Plus  
Computer Satisfaction  
First Tech  
Labelle's  
North Woods Computer  
Saylor's Software First  
Shopco  
Software Centre  
Wizard Works

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Computers Today  
E&S Video  
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MONTANA  
Child World/Children's Palace  
Labelle's

MISSOURI  
Child World/Children's Palace  
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MISSISSIPPI  
Zayre

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Brendle's  
Electronic Boutique/  
Games N' Gadgets  
Selective Software  
Zayre

NORTH DAKOTA  
Labelle's

NEBRASKA  
Computers Plus  
Software City

NEVADA  
Toys R' Us  
Wherehouse

NEW HAMPSHIRE  
Caldor  
Child World/Children's Palace  
Electronic Boutique/  
Games N' Gadgets  
Toys R' Us  
Zayre

NEW JERSEY  
Bayonne Computer Center  
Caldor  
Child World/Children's Palace  
Computer Discount of N.J.  
Computer Pros  
Computer Sales Company

Computer Software Plus  
Electronic Boutique/  
Games N' Gadgets  
Family Computer Center  
Gemini Enterprises  
Igor Records  
Ippy's  
Kearny Electronics  
Little Computer Store  
Prince Range  
Softec  
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Software City  
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OKLAHOMA  
Toys R' Us

OREGON  
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Toys R' Us  
Zayre

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Caldor  
Child World/Children's Palace  
Electronic Boutique/  
Games N' Gadgets

Tennessee  
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CIRCLE READER SERVICE 1

# HOME-SCHOOL CONNECTION

## CHEAPER BY THE DOZEN

You Can Get a Good Deal on Computers by Setting Up a Co-op Through Your School

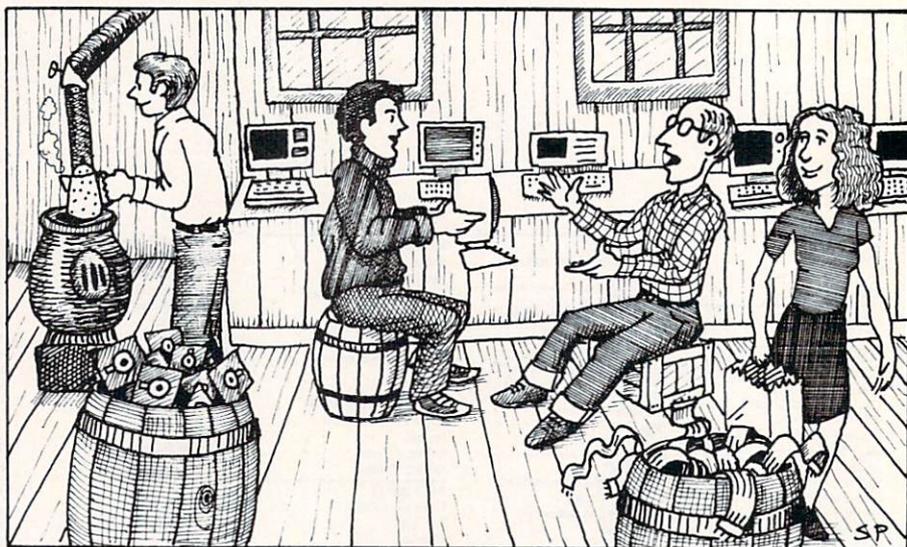
BY LORENE HANLEY DUQUIN

The Summers were no ordinary customers at the Modern Tek computer store in Amherst, New York. Had they been, their computer system—an Apple IIe with extended 128K memory, Apple monochrome monitor, two Apple disk drives, Imagewriter printer, RF Modulator, and Apple joystick—would have cost them \$2,578. Instead, their entire purchase came to only \$1,857—a savings of \$721!

Why the special deal? The Summers are members of the Sweet Home Computer Co-op, which entitles them to discounts of at least 30 percent on computer equipment, software, and supplies. The co-op also organizes meetings at which speakers teach members the basics of computing before they buy, reviews software, and demonstrates aspects of computing in schools. Once they purchase a computer, members can join a co-op users' group. And none of this costs a cent.

Sound too good to be true? It's not. The Sweet Home Computer Co-op began three years ago as the brainchild of Ron Young, a teacher and federal funds coordinator for the Sweet Home Central School District in a suburb of Buffalo, New York. "The district had computer training programs for teachers, who were encouraged to take school computers home over weekends," Young recalls. "But I was convinced that the best way for teachers to become involved in computing would be for them to own computers."

There was one problem: What kind of incentive could the school district offer to make a teacher spend \$1,000 or more for a computer? Young had an idea: His wife belonged to a food co-op in which neighborhood families bought large



quantities of food at wholesale prices. If 30 percent could be saved buying cheese cooperatively, why couldn't teachers save money buying computers the same way?

### ORGANIZING A CO-OP

District officials agreed to give the co-op idea a try. In October 1982, Young posted notices in the Sweet Home district schools announcing the first co-op meeting. "We were using Apples in our school district, so it was in our interest to have our teachers own Apples," Young says. "I wasn't interested in promoting Apple ownership among the general public, however, so I didn't put anything about the co-op in the newspapers."

News spread anyway by word-of-mouth, and soon parents and others in the community were asking if they could join. They wanted more than just discount rates on equipment, however. They wanted to learn how to use the computers they were about to buy. Once school officials agreed to let them join, Young set about arranging for experts to demonstrate computer equipment and discuss related topics.

When the group was finally ready to buy, the members decided how their co-op would work:

- Decisions would be made at meetings by a vote of those present.
- Members of the Co-op Price

Committee would contact each local dealer in person to explain about the co-op and ask for bids. Dealers would be asked to submit their bids—in writing—to Ron Young by a certain date.

- Bids would be discussed at a co-op meeting and members would select the dealer with the lowest bid and the best service.

- The co-op would place one large order for the computer systems.

- Members would pick up their computers at the store so there would be no delivery or setup costs.

- The co-op would not handle any money. Members would pay the dealer directly in cash or by check. Credit cards were ruled out because they increase the dealer's cost.

### THE PRICE IS RIGHT

In January 1983, the list price for the Apple IIe was \$1,995. But in the Sweet Home Computer Co-op's order, the 135 Apple IIe starter systems (with monochrome monitor and one disk drive) cost just \$1,360 each.

The following October, Young organized a second co-op. Membership swelled to over 130 families, who were able to purchase the Apple IIe starter system for only \$1,125. This time, more than 20 optional items were added to the buying list, including color monitors, modems, software, joysticks, printers, and

LORENE HANLEY DUQUIN bought her Apple computer through the Sweet Home Computer Co-op. She wrote "The Back-to-School Game" for the August Home-School Connection.

ribbons. Five different local dealers were selected to fill the orders.

"I think the co-op is a great idea," says member Dave Hope. "Before we heard about the co-op, my wife and I tried to shop around ourselves. It was very confusing. Every dealer had different package deals and it was like trying to compare apples and oranges."

#### A MEASURE OF SUCCESS

"In the high school, 14 out of 15 science teachers now own a computer," Young says, "and that has a big impact

on what happens in the classroom." Students at all grade levels have formed users' groups. The teachers, too, have formed a users' group, which often discusses not only what the children are learning in school, but how teachers as parents can encourage their own kids.

In three years, more than 400 parents and teachers have purchased computers through the co-op. Educationally and financially, the Sweet Home Computer Co-op has been a success, benefitting both the school and the entire community. ☐

### STARTING A COMPUTER CO-OP

The Sweet Home Computer Co-op gets good prices on computers and supplies because it orders computers in bulk on a cash basis, and requires no delivery or setup costs for the dealer. Because the co-op is an organized group sponsored by a school district, it can provide support and educational services for its members. Here are some tips on how to start a computer co-op:

1. Discuss the idea with school officials. Point out that the co-op has educational benefits in addition to providing the means to obtain low prices on computers. In the Sweet Home Computer Co-op, the school district picks up administrative costs, including stationery, postage, and photocopying. The school district also pays for the time that Young and his assistant, Lillian Wojnar, spend planning meetings, handling the paperwork for dealer bids and members' orders, and solving problems. If your school district isn't interested, try setting up a co-op through the school's parent-teacher organization using volunteers to coordinate it instead of the school district staff. You might have to charge a small membership fee to cover the co-op's expenses.

2. Get members involved. Delegate responsibility. Encourage people to attend meetings and serve on committees. The more people become involved in the co-op, the more successful it will be. It's important to structure the co-op so that it meets the needs of your members. Vote on decisions and put them into writing. Give everyone a copy.

3. Get organized. Develop a co-op order form containing the list of each item and the co-op price. The Sweet Home Computer Co-op used a computer and *pfs:File* to keep track of its members and their orders. Members are instructed to send

their completed forms to Young by a specific date. Wojnar enters the order onto the data-base filing system and then sends the co-op dealers a printout showing what each member has ordered. (For copies of the co-op order forms, and other material used by the Sweet Home Computer Co-op, send a stamped, self-addressed envelope to Ron Young, Sweet Home Computer Co-op, 1901 Sweet Home Road, Amherst, NY 14221.)

4. Be fair. Give the dealers a cut-off date for submitting bids. Open bids in front of the group and encourage members to discuss them. When considering bids, remember that price is not the only factor. Also important are the dealers' reputations, locations, and what kind of service they are willing to provide. After one or more suppliers have been selected, don't solicit lower bids from other dealers.

5. Make arrangements for distributing merchandise. The Sweet Home Computer Co-op members went to the dealer's store to pick up and pay for their computers. Another dealer, who won the bid on disks, ribbons, and computer paper, agreed that it would be easier for everyone if he brought the merchandise to the school cafeteria, where members could pick up and pay for their orders on a Tuesday afternoon.

6. Anticipate problems. Work out important details with the suppliers, such as who should be contacted if merchandise is defective or if it breaks down under warranty.

7. Stay on good terms with the dealers. If you cultivate a good business relationship, even with those who lose the bidding, it can benefit you in the long run. For example, in order to generate goodwill (and additional sales) several dealers offered co-op members year-long discounts on software.

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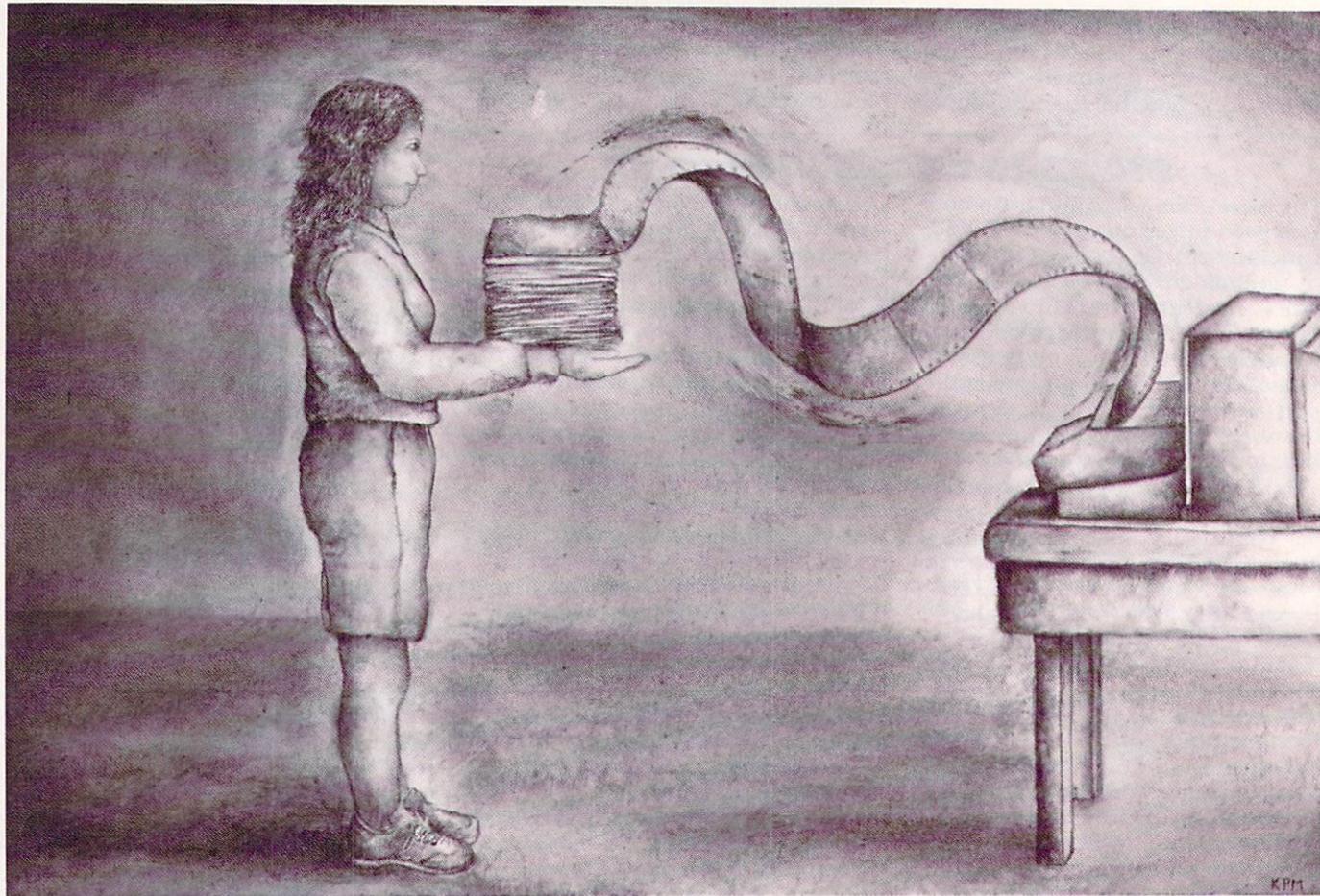
Educational Software that Works



# WORKING AT HOME

## SETTING UP A WORD-PROCESSING BUSINESS A Step-by-Step Guide to Get You Up and Running

BY BARBARA STEIN



Two years ago I joined the growing ranks of those who work at home full time. To add more income to my writing career, I founded "Wordsmith," a word-processing business. Today I rake in an extra \$100 to \$300 per week, working strictly part time. And judging by the amount of work I turn down, I could easily double or triple that figure.

So if you've considered jumping into the field, but don't know how to go about it, from my experience here's what it takes to succeed.

### GETTING STARTED

The start-up costs may seem high.

BARBARA STEIN, a freelance writer from San Diego, California, has written for *Family Circle* and *Games* magazines. This is her first article for FAMILY COMPUTING.

but once you've made the initial investment, the cost of running your business will be relatively low. What do you need? Start with the basics: a computer, a word-processing program, a letter-quality printer, and a place to work uninterrupted.

Of course, if you have money to burn, you can spend a bundle on advertising, office furnishings and supplies, and additional software. But if you're like me—tied to a family budget—start by setting an investment limit, and upgrade your system gradually. Decide how much money you're willing (and able) to risk. Then get down to business: Set up shop, polish your skills, and spread the word.

Here's what I did: For about \$2,000 I bought a Morrow computer bundled with *WordStar*, a word-pro-

cessing program, and *Correct-It*, a spelling checker. The Brother HR-15 XL, a letter-quality printer, added another \$600 to my start-up costs.

Next, I moved our computer equipment out of the kitchen. Fortunately, we had a spare room where I could set up a separate office. It proved to be a wise decision. No longer in the path of family traffic, I'm less "available." Besides, I'm more organized with everything in one place: Paper supplies, extra disks, and ribbons are stashed in a nearby closet. Though there's nothing fancy about my setup, by establishing a permanent workplace, I've developed a professional attitude toward my business. And that attitude, along with error-free copy, is what brings customers to my door.

With the "office" squared away, I

set out to polish my skills. *WordStar* and *Correct-It* were already old friends. But since I planned to generate mailing lists (lists for customers as well as my own) and maintain accounts and tax records, I needed to learn some new programs. Happily, the hours I struggled with *dBASE II* (a data base), *MailMerge*, and *LogiCalc* (a financial modeler/planner) paid off handsomely.

Finally, one week before the "grand opening," I added two extra touches. First, to double my output, I bought a buffer. This indispensable add-on (priced from \$50 up, or built into some printers) interprets and stores material sent from the computer to the printer. So while the buffer feeds, say, Ms. Smith's mailing list into the printer, my system is free to tackle a new job.

When you're chasing tight deadlines, the buffer will save your neck.

Second, after naming the business, I designed a business card and matching letterhead (for billing and correspondence), and dropped them off for printing. Three days later, cards and stationery in hand, I started spreading the word. Incidentally, some cities require home-business licensing. Phone your city's administrative offices to find out local regulations.

### WHERE TO FIND CUSTOMERS

During my search for customers, I learned to think like one. Who, I asked myself, needs a typist? After examining that question from every angle, I made a list: business owners, doctors, attorneys, college students (especially graduate students

with theses and dissertations), architects, writers, consultants, psychologists . . . plus that indefinable group who can't type, much less operate a computer.

As my list grew, I agonized over how to reach these people. Newspaper advertising seemed a logical starting place. Unfortunately, I wasn't overjoyed with the results. The classified, which set me back \$45, brought a \$10 customer and an obscene phone call. (Maybe you'll have better luck.) Undaunted, I narrowed my sights. Browsing the yellow pages, I circled every business, professional group, and college within a 5- to 10-mile radius. Then I went after neighborhood customers.

Armed with cards, I called on several businesses within walking distance. There I pitched my services to owners, secretaries (offering to type overflow work), and a host of employees. I didn't get work immediately, but then I wasn't expecting instant results. Instead, I was laying groundwork for the follow-up—a mail-merged, "personal" letter indicating "what I can do for you" and for how much. I wrote similar letters to those I hadn't visited personally. And, at my husband's suggestion, I mailed fliers to his competitors, other architects.

To reach students, I phoned college graduate offices, asking to be placed on their typist list. In each case, I was invited to sign up in person. During the visit, I also tacked business cards to campus bulletin boards (with students the word spreads fast).

In just two weeks I'd covered all the bases but one—"walk-in" business. One evening it occurred to me that people who frequent copy and print shops lack typing support. Testing my theory, I approached shop owners like a customer. "Can you recommend a typist?" I asked. As I'd hoped, 90 percent said, "No, but if you find someone, let me know."

Uncrossing my fingers, I whipped out my business cards—stacked in a \$2 holder so they'd be placed on the desk, not behind it—and offered my services. Today, I work with six copy shops (replacing cards every few months). One, in fact, supplied my biggest repeat customer.

Altogether, it took five months to build a steady clientele. Now, in an attempt to stay small, I rely entirely on repeat customers (the backbone of any business), copy shop walk-ins, and referrals from clients. →

## HOW TO STAY IN BUSINESS

**1. Always make backup copies of your data.** In the early months, I failed to back up a 65-page dissertation. Predictably, the customer returned a few days later; her professor had suggested extensive revisions. Could I "fix them in two days?" "No problem," I said. But my heart sank when I loaded the disk: DATA ERROR—DRIVE B blazed across the screen.

After two hours of panic, a programmer friend saved my life, talking me through the glitches until I retrieved most of the data intact. Retyping would have been a nightmare!

**2. Keep a petty cash box.** Walk-in customers (with small jobs) always pay cash—with \$20 bills. Eliminate the hassle and embarrassment of sending your customer (or yourself) out for change.

**3. Show customers how to correct roughs.** One "helpful" client cut and pasted a rough! She meant well, but finding the rearranged text on screen was no picnic. Ask customers to number and write insertions on a separate sheet, marking corresponding numbers on roughs. Use numbers for paragraph deletions (e.g. pg. 3, para. 3). Single-word and line deletions or corrections can be marked directly on roughs in contrasting ink.

**4. Print a "completion" statement on your bill.** Some customers fail to notice when the job is complete; they use final prints for last-minute changes or return days later with "just a few extra words

here and there." That's fine, except "extras" are billed accordingly. To avoid confusion, I print the following message on my bill: "When signed above, customer accepts job as complete. Additional input and copies are billed at regular rates."

**5. Index your disks.** As your business grows, so will the number of your disks. Disk labels help, but finding the right file takes time. There are a number of public domain index programs. Check your users' group.

**6. Where to put your customer.** A sticky issue I hadn't considered. Today, I conduct business at the dining room table, where clients are also invited to proofread short copy (while I hang around in the kitchen). Since my office is upstairs, I'm uncomfortable leaving clients alone.

**7. Wait one year before erasing a file.** Wait, even if you don't think the customer will ever return. I erased a lengthy resume after the client landed an out-of-town job. Six months later he returned for an update. I rekeyed from his copy—at my own expense!

**8. Invaluable references.** If you've never typed for a living, check local bookstores for references that will help you learn special formats and styles. Personally, I prefer: *Resumes For Better Jobs* (Monarch Press, \$5.95), *Webster's Legal Secretaries Handbook* (Merriam-Webster Inc., \$12.95), and *The Chicago Manual of Style* (University of Chicago Press, \$30).

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CIRCLE READER SERVICE 34

[ SEE PREVIOUS PAGE ]

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#### ORDER FORM

To receive your free program, this form must be filled out completely. Please print.

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Computer/Model \_\_\_\_\_

MAKE SURE THE PRODUCT YOU CHOOSE IS AVAILABLE ON THE COMPUTER SYSTEM YOU HAVE SELECTED.

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Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

#### TITLES PURCHASED

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

#### BRANDS

#### DATE OF PURCHASE

1. \_\_\_\_\_ 1. \_\_\_\_\_

2. \_\_\_\_\_ 2. \_\_\_\_\_

3. \_\_\_\_\_ 3. \_\_\_\_\_

Allow 6-8 weeks for delivery of your free software program. Note: All receipts and envelope postmark must be dated prior to January 31, 1987. Offer good in the US and Canada only. Void where taxed, restricted or prohibited by law.

CIRCLE READER SERVICE 35

## WORKING AT HOME

### WHAT CUSTOMERS EXPECT

What satisfies a client? Perfect copy and instant turnaround. Everybody wants it yesterday. On top of that, customers expect you to design page layouts, correct their spelling, decipher illegible handwriting, rephrase wording, and print a hard copy while they wait. As one typical customer put it, "You know what to do. Just make me look and sound good." Smile and ring up another sale.

A word of caution, however, about customers who say they'd "just as soon wait," then settle into your favorite easy chair, or worse, those who intend to "drop it off after work." Snowed under or not, ask customers to return later the same day (for short items) and the next day or later for large jobs. Stand firm and don't worry about losing business. I don't know anyone who accepts "while-you-wait" typing. Besides, the trick is to juggle as much work as possible within a reasonable time frame—meeting *your* needs as well as customers'.

As for clients who want to drop work off at night (or any inconvenient time), insist that they label materials with name, address, and clear directions. Then, offer your mailbox as a "drop." I learned this the hard way. One nervy woman arrived at 10:30 p.m.

When the work piles up, you'll undoubtedly learn which shortcuts work best for you. My routine goes something like this: Set priorities according to deadline, input material, run spelling checker, and print rough on cheap paper. (Save expensive bond for final prints. Revisions are inevitable.) While the first file prints, input the next. After printing several files, take a break to proof-read and red-pencil hard copies.

Finally, when customers return (always later than the appointed time or date), hand them their rough and a red pencil, and show them how to correct and revise. (See *box for details*.) With the customer's OK, input changes immediately for short items and fill in a skeleton bill while the final prints. (Term papers and large reports, however, are usually ready later in the day.) At the close of each job, I log charges to the clients' accounts. Which brings us to the matter of money.

### WHAT TO CHARGE

Since I had no idea how to set prices, I phoned several commercial word-processing concerns and asked

for rates on all types of work—mailing lists, term papers, resumes, etc. Then, taking an average, I established my rates at 20 percent less—still competitive, but within a more attractive price range. Also, I adopted their practice of giving each customer one rough and one final. Here's how I charge:

- Single-spaced pages—\$4 each. Double-spaced pages go for \$2 each.
- Resumes (which require considerable format time) claim \$12 for the first page and \$3 per additional page.
- Mail-merged letters are billed at a one-time input fee (\$4 per page), plus printing costs: one to 25 pages, \$1 each; 26 to 99 pages, 75 cents each; 100 to 200 pages, 50 cents each, and so on. I don't discount print fees because some customers think printers are copy machines.
- Data-base input is billed at 5 cents a line. Clients also receive a master hard copy. Subsequent additions and changes go for regular rates.
- Mailing labels on envelopes cost 10 cents each, while labels alone are 5 cents. Rates will vary depending on your location, so do some of your own research.

### WHAT TO KNOW

Of course, there's more to running a business than ringing up the cash register. To make your business truly successful, you'll need to keep accurate records of your income and expenses and effectively use deductions and depreciation to cut your income tax.

In general, under the current tax law, you can write off up to \$5,000 worth of business expenses from your income the first year. Of course, if your income during the first year is small (which is often the case with a new business), it might make more sense to take a smaller depreciation allowance the first year so that you can depreciate more later. In addition, if you own your home, you can depreciate a portion of your mortgage and property taxes. You also can deduct a percentage of the household utility bill.

The tax calculations are not quite as simple as they sound, according to Bob Shapiro, a New Jersey tax lawyer. He suggests that the self-employed consult a tax attorney or an accountant for advice. Remember, the cost of tax advice is deductible.

As a final reminder: Keep good records, get up-to-date tax advice, and be prepared to become successful. **FC**

# A SIGHT FOR SORE EYES

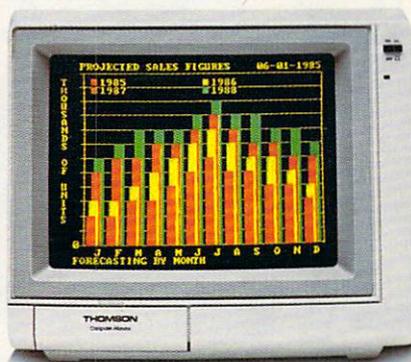
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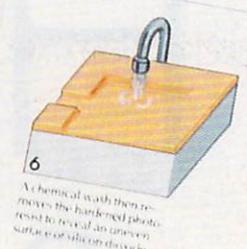
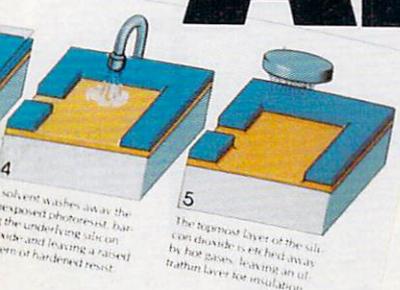
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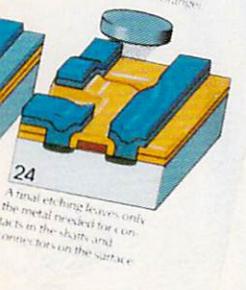
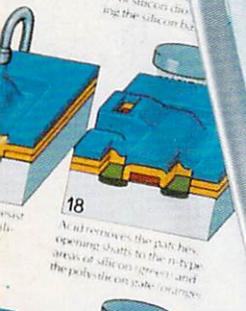
Model CM 3131SI. 12" diagonal, 31mm dot pitch RGBI color monitor with text switch and non-glare tinted screen.

# THOMSON

# HOW NOT AN ENDANG



## The Creation of a Transistor



2 The wafer is then the device on the wafer.



Computer Basics

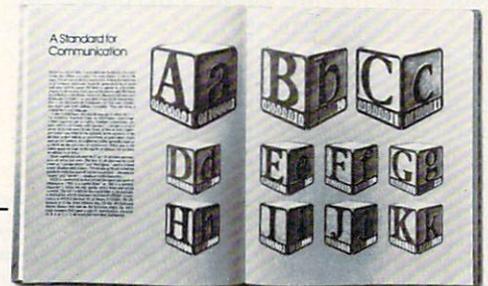
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# UNDERSTANDING COMPUTERS

# TELECOMPUTING

## THE ART OF DOWNLOADING

### Use Your Modem To Get Files From Other Computers

BY CHARLES BOWEN

The last time anyone counted, there were about 30,000 pieces of public-domain software out in the computer networking community.

Once you've hooked up a modem to your computer, you can download many of these free programs to a disk by using a few simple tools—a communications program, a word processor, and the BASIC interpreter that probably came with your machine.

Many computer enthusiasts are intimidated by the idea of downloading, partly because of the confusing jargon. To "download" simply means to receive a file sent by another computer. The two basic methods of downloading—a straight "capture" method or an "error-checking protocol transfer"—are described in this article.

Once you learn the ropes, you'd be surprised how quickly your library of free public programs can grow. In addition, the ability to download will allow you to save important e-mail messages, stock quotes, research papers, etc. Here are a few places to look.

#### TAP A NETWORK . . .

On CompuServe, public-domain software is available in its PUBLIC ACCESS feature (enter GO ACCESS or GO COM-80 at any prompt). In addition, the data libraries of many of CompuServe's discussion forums are full of free programs. To find them, type FIND (plus the name of the topic). Alternatively, enter GO INDEX and search for TOPICS OF INTEREST. For instance, if you search for IBM, you would find the IBM PC Pro Forum and the IBM Novice Forum.

On The Source, public-domain software is advertised on the POST bulletin board. A good way to find these programs is to enter this command string at command level: POST S K PUBLIC. That scans POST for all messages that contain the keyword PUBLIC. Most messages give you specific instructions for reaching the SHAREFILES area, such as ENTER PUB-

CHARLES BOWEN co-authored the book *How to Get the Most Out of CompuServe*.

```
DOWNLD.HLP      06-Dec-84 6310
Accesses: 66
```

```
Keywords: DATA BASE
DATABASE DOWNLOAD HELP
CAPTURING PROGRAMS FILES
```

```
A guide to downloading the
program and text files
found in the various
data bases in the FAMILY
COMPUTING Forum.
```

```
Enter command, N for next file
or <CR> for disposition menu: download
```

```
Transfer protocols available -
```

```
1 XMODEM (MODEM7) protocol
2 CompuServe 'B' protocol
3 CompuServe 'A' protocol
4 DC2/DC4 CAPTURE protocol
```

```
0 Abort transfer request
```

**To download a file from the FAMILY COMPUTING Forum on CompuServe you: 1. Read a description of the file you want; 2. Give the DOWNLOAD command; and 3. Choose the type of file-transfer protocol your communications software uses.**

```
FILE BBZ824 AT THE COMMAND LEVEL
PROMPT.
```

Also on The Source are many member publishing newsletters that contain software. Enter PUBLIC 1 at the command level prompt of the system for details. One member publication of particular interest is TELE-RESOURCE, which focuses on the downloading of free, or inexpensive, commercial programs. To reach it, enter PUBLIC 174 at the command prompt.

#### . . . OR A LOCAL BBS

The richest vein of public-domain programs may be in your own backyard—on your neighborhood bulletin board systems (BBSs). They also may be the least expensive places for novices to look for free software.

Many bulletin boards are computer-specific (Apple, Atari, IBM, etc.), and offer free programs for a particular computer. You usually can find BBSs in your area by checking with local computer clubs and computer retail stores. In addition, there are some excellent BBS directories around. One of the best is P.A.M.S. (Public Access Message Systems), compiled by Bill Blue of Santee, California. His own BBS ((619) 444-7099) has the list available.

The Source has a searchable version of P.A.M.S. Type PUBLIC 112 at

the command prompt and you'll be able to search the list by area code.

#### CAPTURING A FILE

Most communications programs let you "capture" material received by modem and save it in a file on a disk. This method often is used for saving "text" files—those stored in ASCII format. These include articles and electronic mail (e-mail), but also some BASIC programs. Here's how to download the latter:

**1.** Dial up the BBS, locate the program, and capture it on a disk. (Some communications programs have you capture files in a "buffer" in RAM, and then save the buffer contents; others let you save to the disk automatically.)

**2.** After you've saved the program, log off, run your word-processing program, and load the file. You might have to convert the file from ASCII format to a format your word processor uses.

**3.** Edit the file to take out all non-BASIC lines. For instance, the file often contains system prompts and messages (such as "—MORE—") along with program lines. Save the file again, making sure it's in ASCII format.

**4.** Finally, load your BASIC interpreter and then the file. You should be able to run the program with only a few modifications, depending upon your particular system. For instance, in Applesoft BASIC you'd first EXEC the file to turn it into BASIC program format. On a Commodore, you must run a special program that converts a text file into BASIC program format.

The first limitation of this capture method of downloading is that generally you can pick up only those programs that will fit in your word processor for editing.

Also, sometimes my downloaded program crashes with an error message such as UNDEFINED LINE. That usually means I wasn't a diligent enough editor—I overlooked some non-BASIC material. Watch out particularly for carriage returns. The file may have them right in the middle of program lines. Most BASIC in-

interpreters require each line to begin with a line number, and won't run if they find lines without them. When editing, remove carriage returns that don't precede new line numbers.

A bigger problem with running the ASCII capture method is that your telephone line may have "gremlins." Your communications program has agreed to faithfully save on a disk whatever comes over the modem. So, if the line burps, that static ends up in the file, too. It might cause dropped characters (PRINT might turn into PINT), or mutated lines (PRINT becomes POSZNT).

If it's something obvious like that, you can catch it when you're editing. However, if the "line hit" occurs just as the modem is receiving a particularly obscure bit of programming, you're sunk.

You can try again and hope for an error-free download. But there's a better way to deal with phone lines that play fast and loose with your file: It's called "protocol file transfer."

## THE PROTOCOL FILE TRANSFER

Some time ago, telecomputing wizards tackled the problem of phone-line funniness by developing what are called "error-checking file-transfer utilities." Instead of just blasting the receiving computer with data, these programs let your computer and the host (sending computer) carry on an electronic dialog. Because both computers must use the same program, or agree on the same set of rules, for the process to work, it's also referred to as a "protocol" transfer.

Protocol transfers allow you to send and receive files saved in either ASCII or binary form. Since it will be very difficult or impossible for you to pick out transmission errors from a binary file, using an error-checking protocol is an ideal way to retrieve these machine-language programs. Here's how it works:

1. The host sends a block of data, then "asks" the other computer what it received.
2. If the receiver produces the correct answer, the host computer sends the next block of data.
3. If the wrong response is given, the host re-sends the data and checks again.
4. The receiving computer periodically saves the blocks to disk until a happy message, such as "FILE TRANSFER COMPLETE," pops up on the screen.

The good news: As the operator, you don't have to do much after you get the host and your machine "talk-

ing." They'll handle the questions and answers and let you know when the transfer is complete.

The bad news: There are different kinds of error-free protocols in use, and it's up to you to make sure your computer and the host are using the exact same protocol.

Your communications program may incorporate one of the following.

- XMODEM or MODEM7: a protocol created by Ward Christensen of Chicago (also called the "Christensen Protocol").

XMODEM is particularly popular with BBSs. One problem with a public-domain program such as this: So many people have "improved" it that some new versions won't "talk" with the original.

- "B" Protocol: routinely part of CompuServe Information Service's own *Vidtex* and *Professional Connection* software, and used primarily to send files to, or receive them from, CompuServe data libraries.

- Kermit (like the frog): an up-and-coming utility developed in the early '80s at Columbia University. I learned about this one last year and have enjoyed using it. So far "improved" versions haven't shown up—so a Kermit will usually work with another Kermit.

## DOWNLOAD A PUBLIC-DOMAIN PROTOCOL PROGRAM

If you don't have a protocol file-transfer program in your software library, are you out of luck? Nope.

Many BBSs have versions of XMODEM available in their data bases. Usually, it's a BASIC program (in ASCII format) that will construct a machine-language version of XMODEM by "poking" in the necessary machine code. When I located a BBS that had a BASIC version of XMODEM written for my machine, I downloaded it with an ASCII capture, edited the file, and thus built a machine-language XMODEM.

I then turned to CompuServe. In the data bases of some of the discussion forums, I found public-domain programs that incorporated the CompuServe B Protocol. They were machine-language, so I used my new XMODEM protocol programs to retrieve them.

By the end of the week, I had a great collection of file-transfer utilities, which I can use to download any other public-domain gold I find. ☐

*The FAMILY COMPUTING Forum on CompuServe (GO FAM 200) is run with modems supplied by Hayes Microcomputer Products Inc.*



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> CODE for COMPUTER TYPE <

AP2	ATD	C64	IBM	Name of Program or Item:
\$26	\$23	\$23	\$26	Hitchhiker's Guide- Galaxy
\$26	...	...	\$26	Gato
\$35	\$35	\$35	\$33	Flight Simulator II
\$32	...	\$32	\$32	Sargon III
\$23	...	\$23	...	F-15 Strike Eagle
\$23	...	\$23	...	Karateka
\$29	...	...	\$29	King's Quest 2 (Ap2 Soon)
\$26	\$26	\$26	\$26	Zork 1 (32k)
\$23	\$23	\$23	\$23	Lode Runner
\$38	\$38	\$38	\$38	Ultima II, III (each)
\$26	\$26	\$26	...	Summer Games
...	...	\$26	...	Summer Games II
\$24	\$24	\$24	\$24	Bruce Lee
...	...	...	\$29	Ancient Art of War
...	...	\$9	...	1985: The Day After
...	...	\$9	...	Kikstart-OffRoad Simulator
...	...	\$9	...	Quest for the Holy Grail
...	...	\$9	...	B M X Racers
...	...	\$9	...	Black Crystal
\$25	\$19	\$19	\$25	Archon (Electronic Arts)
\$28	\$25	\$25	...	Archon II: Adept (E.Arts)
\$25	\$19	\$19	\$25	Murder on the Zinderneuf
\$28	\$19	\$19	\$28	Music Construction Set
\$28	\$25	\$25	\$28	1-on-1: Dr.J & Larry Bird
\$25	\$19	\$19	\$25	Pinball Construction Set
\$28	\$25	\$25	\$28	Seven Cities of Gold
\$28	...	\$25	...	Sky Fox (Electronic Arts)
\$51	...	\$51	\$53	Muppet Keys + Disk (No PC)
\$32	\$30	\$30	...	Print Shop (Broderbund)
\$33	...	...	\$33	Newsroom (C64 soon)
...	...	...	\$36	Sidekick (128k) protected
...	...	...	\$55	Sidekick(non-copy protect)
\$26	...	...	\$26	Micro Cookbook (48k)
\$26	\$26	\$26	\$26	Mastertype (New, Improved)
\$33	\$35	\$33	\$33	Math Blaster (Davidson)
\$33	\$35	\$33	\$33	Spell It (Davidson)
\$33	\$35	\$33	\$33	Word Attack (Davidson)
\$44	...	\$44	\$44	Speedreader II (Davidson)
\$26	...	\$26	\$26	Reader Rabbit (Lrng Co.)
\$29	...	\$29	\$29	Mission Algebra
\$31	...	...	\$31	JOYSTICK: MACH 2 (Hayes)
\$38	...	...	\$38	JOYSTICK: MACH 3 (Hayes)
...	\$24	\$24	...	JOYSTICK: Wico 3-Way Deluxe
...	...	...	...	To backup Protected Disks:
\$69	...	...	\$56	Locksmith 5 by Alpha Logic
\$26	...	\$26	\$26	Copy II by Central Point

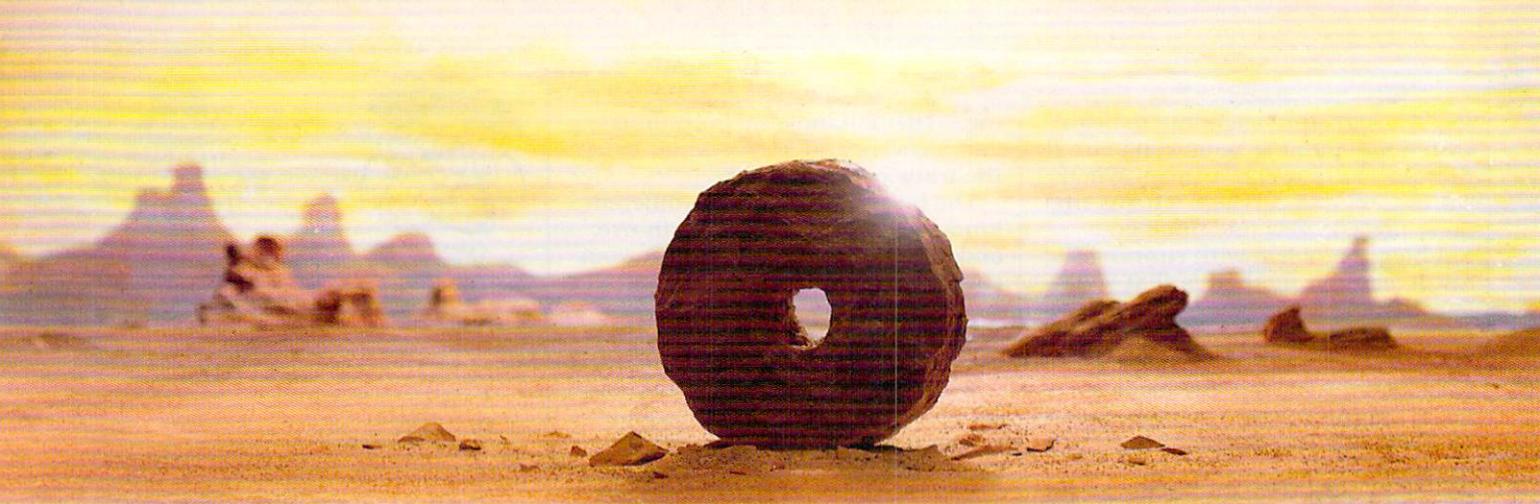
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CIRCLE READER SERVICE 13



# SOME HISTORIC BREAKTHROUGHS DON'T TAKE AS MUCH EXPLAINING AS COMPU SERVE.

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Experts can skip the menus and just type in "GO" followed by the abbreviation for whatever topic they're after.

In case you ever get lost or confused, just type in "H" for help, and we'll immediately cut in with instructions that should save the day.

Besides, you can either ask questions online through our Feedback service or phone our Customer Service Department.

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# COMPUTING CLINIC

APPLEWORKS FOR THE II PLUS • OUTLINING PROGRAMS • IBM PCjr  
CONVERSION • COMMODORE 64 PRINTING • ADAM SHAPE TABLES

BY JEFFREY BAIRSTOW

**I have an Apple II plus with 48K, and want to use the AppleWorks program. Is it possible?**

STEPHEN ABRAHAM  
Teaneck, New Jersey

Yes, you can, but you'll have to make a few adjustments. First of all, *AppleWorks* requires 64K; 128K is preferable. You can use the 16K RAM card from Apple to bring the II plus up to 64K. Or, if you want to handle bigger files, try one of the 64K or 128K memory expansion cards from companies such as Titan Technologies, Inc. or Legend Industries, Ltd (\$200-\$360).

Second, you'll have to make a wiring modification to make the SHIFT key work on the II plus. Third, you'll need a display card made by Videx—either the Videoterm, which gives you an 80-column display, or UltraTerm, which gives you a 128-column display (about \$300). Then, you'll need *Appleworks Modifier* (\$59), a program that

changes the keyboard commands to accommodate the differences between the Apple II plus and Apple IIe and IIc (Videx, Inc., 1105 NE Circle Blvd., Corvallis, OR 97330; [503] 758-0521).

Finally, of course, you'll need *AppleWorks*, the \$250 integrated program (with spreadsheet, word-processing, and data base) that is outselling *Lotus 1-2-3*.

**As a parish pastor, I would like to find a program that will allow me to compose sermons and speeches so they can be printed and saved on disk. However, when I speak I don't need all the text—just selected words and phrases reorganized into an outline format. Do you know of a program that can convert a speech text into a brief outline?**

ROBERT G. MCCRIEGHT  
Toledo, Ohio

I think the answer to your prayer is an "outline processor" that will enable

you to outline a speech and then fill in the text as you wish. Outline processors, sometimes called "thought processors," allow you to develop an outline at several levels—such as I., I.A., I.A.1., etc.—so you can write both the outline and the selected phrases. When the speech is complete, you can then print the entire text, or just the outline, or an outline in some parts and full text in others.

You don't mention the computer you are using, but *ThinkTank*, published by Living Videotext, is widely available for the Apple II series (\$150), IBM PC/PCjr (\$195), and the Macintosh (\$145-\$245) through retailers and mail-order houses.

**Are there any manufacturers who make a conversion kit to turn the IBM PCjr into a PC XT?**

DAVID RYDELL  
Penfield, New York

I am not aware of anyone who makes a conversion kit to turn the

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*siren interrupts...you get a sinking feeling as the state trooper pulls you over for driving too fast...*

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IBM PCjr into a PC XT. You can add extra memory and a hard disk drive to the PCjr to give it the major functions of an XT, but there are still differences in the motherboard architecture, speed, and system calls of the two computers. Thus, you can't be sure that all XT software will run on your souped-up PCjr, which I assume is what you're looking for. My advice would be to take the software you want to use to a knowledgeable dealer, and see it run on an expanded PCjr before you go to the trouble of upgrading.

**How can I get my Commodore 64 to print on my printer without using my Easy-Script 64 word processor?**

MICHAEL G. BAIRD  
Guin, Alabama

I assume you wish either to print from a BASIC program or to print data displayed on the screen. If you want to print from your BASIC programs, you must first OPEN a channel to the printer.

Don't forget to CLOSE it before the end of your program. You can then use a PRINT# statement anywhere in your program after the OPEN statement to output text. For example:

```
100 OPEN 1,4
200 PRINT#1, "HELLO, MICHAEL"
999 CLOSE 1
```

This will print HELLO, MICHAEL on your printer.

Alternatively, you can use a CMD statement at the beginning of your program. This will cause every PRINT statement to send its text to the printer automatically. For example:

```
100 OPEN 1,4
110 CMD 1
120 PRINT "EXAMPLE: THIS TEXT GOES TO THE PRINTER."
130 ...
```

(Your program)

```
900 ...
999 PRINT#1: CLOSE 1
```

The last statement makes sure your C 64 doesn't continue to output to the printer after the program ends.

**How do I use the "shape tables" for the Coleco ADAM?**

PAUL McCLAUGHLIN  
Stephenville, Newfoundland,  
Canada

The shape table is a powerful way of creating your own animation for the ADAM. You can create a shape, place it at a certain spot on the screen, and then move it to another spot. Instructions on using the shape ta-

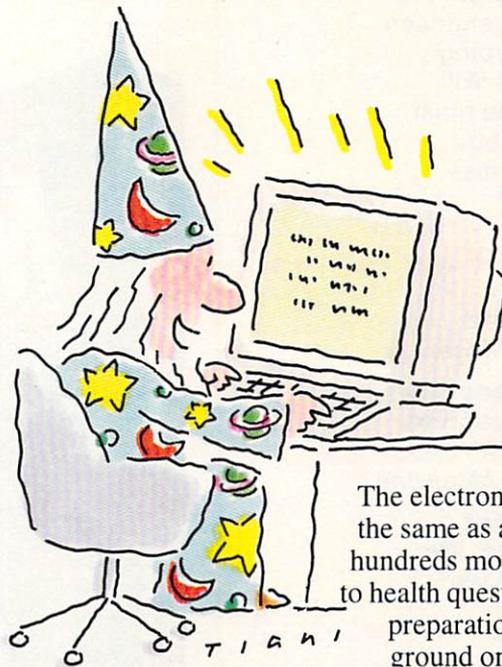
bles can be found in the ADAM *SmartBASIC Programming Manual* (Revised Edition), on page C-17. You'll need to know how the ADAM memory is structured in order to store your shape tables, how to convert binary numbers to decimal numbers to code your shape table, and how to use low-order and high-order bytes. In other words, there are no BASIC commands that let you design the shapes.

If all this sounds like Greek to you, I suggest you get a copy of *The Coleco Adam Entertainer*, by Brian Sawyer (Osborne/McGraw-Hill,

Berkeley, California; \$19.95). Sawyer has a SmartBASIC program called *Shape Maker*, that lets you use the joystick to draw shapes on the screen. You do not have to know how to write your own tables. And, once you have designed your shapes, you can use them in your own programs with the DRAW command (and erase them with the XDRAW command) in the hi-res graphics (HGR) mode.

Sawyer's book also has a six-page appendix with a good explanation of the tables and how to build your own shapes. ☐

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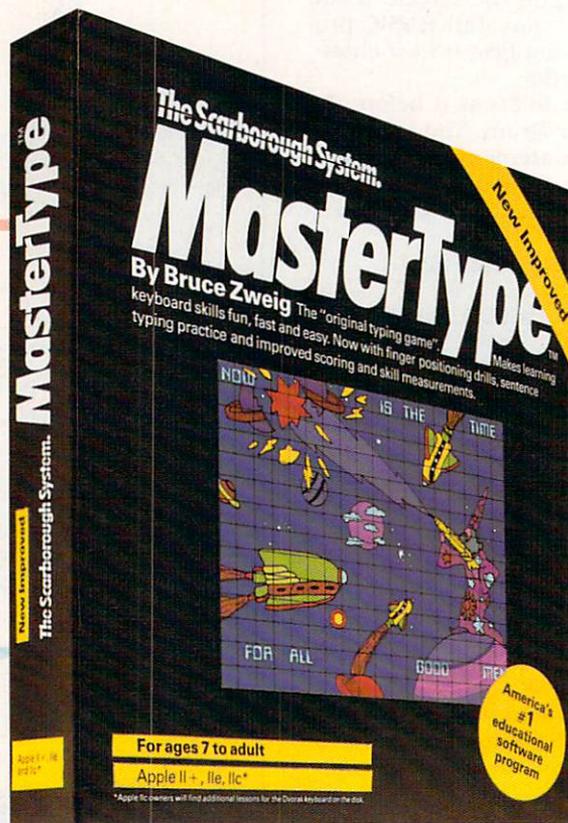
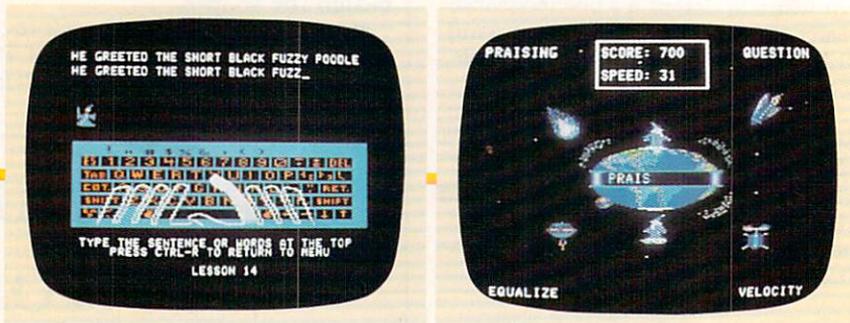
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# The Scarborough System.

# BUYER'S GUIDE TO BUSINESS COMPUTER SYSTEMS



PHOTOGRAPH BY JOEL WHITE

BY PHIL WISWELL

The reasons for setting up a business computer system at home range from running a full-fledged small business, to bringing evening or weekend work home from the office. For strict business use, people usually want a computer to solve one specific task—and solve it perfectly. Thus, you must determine your exact needs and let *them* determine the software and equipment you buy.

The way you plan to use the computer is also an important factor. If you use a computer at the office, and bring work home, it makes a lot of sense to buy the same computer, or a compatible model, for home. You'll be able to use the same software, and transport disks between home and the office. If, for example, you use an Apple II or Macintosh at work, don't look at anything else. However, if you use an IBM computer at work, there's a wide range of IBM-compatible computers to choose from.

Of course, if you're setting up your own business from home, you don't usually have to worry as much about compatibility. You can go directly to step two: choosing the software to do the job. Start by making a list of all the kinds of work you want the system to perform—such as bulk mailings, financial analysis, business charts, correspondence, electronic mail, filing, etc.

## NARROWING YOUR CHOICES

Once you choose your software, you will be able to answer several follow-up questions to help determine your choice of computer:

1. Which **computers** does the software run on?
2. How much **memory** do I need to run the program and leave enough space for files?
3. What kind of **monitor** do I need? Is color important to the software and/or the type of work I do?

PHIL WISWELL, a freelance writer who specializes in computer topics, runs his business from home.

4. How many **disk drives** do I need? (Some programs require two.) Do I collect enough data to merit use of a hard disk drive?

5. Do I need a letter-quality **printer**, or am I more concerned with speed (dot-matrix) than print quality? Do I need a **plotter** to print out graphs and charts for presentation graphics?

With these minimum requirements in mind, you can go to the chart and begin narrowing your choices. If you find several systems in your price range that fulfill your requirements, you can then begin to compare them on a strict feature-by-feature basis.

Consider processor speed, disk storage space, and the number of expansion slots. In all three cases, the more the better.

**Processor speed** indicates how fast instructions are executed by the computer, measured in megahertz (MHz). For example, the Tandy 2000 (8 MHz) will run at almost twice the speed of the IBM PC and other Tandy machines (4.77 MHz). **Floppy disk storage** is an important consideration. The more storage space, the larger the program that can be stored on a disk, and the less disk-switching you'll have to do. The number of **expansion slots** may not make an immediate difference to you, but too few can haunt you in the future. The slots allow you to add equipment and features such as an internal modem and extra RAM. If you want maximum flexibility, there is no such thing as too many slots.

## HARD DISKS

The type of work you do may also spell the need for a hard disk. The disk is usually a 5¼-inch circular platter sealed inside the drive. Unlike a floppy disk, most hard disks cannot be removed from the drive—they are "fixed." (With a hard disk drive, you also need a backup system of some sort—either tape, removeable cartridge, or disk.)



Quark QC10

Omega Bernoulli Box

Hard disks come with different storage capacities, ranging from the common 10- and 20-megabyte models all the way to 100 megabytes and up. To put these figures into perspective, the contents of about 28 IBM floppy disks would fit on one 10-megabyte hard disk.

A hard disk is invaluable if you need to store a lot of data that is regularly updated. An insurance agent with 200 accounts should be able to keep all the information on one readily accessible hard disk. Finally, because you can store all your regularly used programs on a hard disk, switching between programs is much faster than with a floppy disk drive.

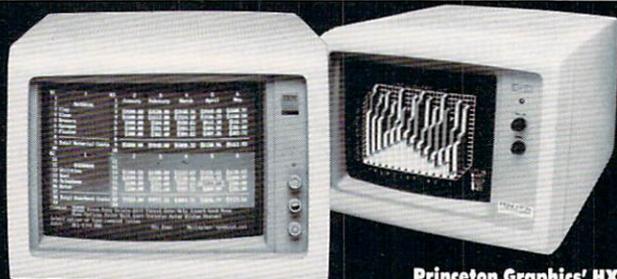
Hard disks are either mounted in place of a floppy disk drive within the system unit or housed in an external box.

### CHOOSING A MONITOR

All the computers in the chart display 80 characters of text on the screen, which is necessary for most business applications. Thus, you have to buy a monitor, as a TV set will not legibly display 80 characters across the screen.

You have three choices in monitors: monochrome, composite color, and RGB (Red-Green-Blue) color. Your first decision is whether or not you need color. The answer would be "Yes" if you want to print out color charts. **Monochrome** is fine for standard word processing, spreadsheets, data bases, and telecommunications.

If you need color, by all means get an **RGB monitor**. The quality of its color is significantly better than a composite color monitor, and it can display 80 characters of text, which a composite color monitor cannot.



IBM Enhanced Color Display

Princeton Graphics' HX-12

When looking at monitors, consider the **maximum resolution** of the computer, and buy a monitor to support it. There isn't much sense in buying a monitor with 320 x 200 graphic resolution (the number of "pixels," or dots, horizontally and vertically), if your computer's top resolution is 640 x 200.

### PRINTOUTS

The type of printer or plotter (a device that draws graphs and charts) you buy, or whether you buy one at all, depends on the type of business you conduct. If you are taking work into an office, perhaps you can use the printers and plotters there.

If you're buying one, what kind do you get? Dot-matrix, letter-quality, or laser? A thermal or ink-jet color printer? If you need to make the best impression with your business correspondence, look to the **letter-quality** printers,

whose output equals that of a good typewriter. If you plan to do a lot of printing, such as mass mailings, you'll need the speed of a **dot-matrix**. If you want to print out bar graphs and charts, or make color acetates for overhead projectors, you'll obviously need a **color printer**.

If you do much work with spreadsheets and data-base management software, you should consider getting a printer with a **wide carriage** that can print 132 or more characters per line.

In any case, you'll probably want to equip your printer with a **tractor-feed** mechanism to use perforated "computer" paper, freeing you from having to feed in single sheets. If you want to use single sheets so you can use your own customized paper, consider a **cut-sheet feeder**. These mechanisms, which attach to the printer, cost about \$200 and automatically feed paper to the printer one sheet at a time.

If you'll be printing out a lot of envelopes, consider the relatively new IBM Proprinter, which represents a breakthrough in printer design. It has a slot in the front to feed in envelopes or single sheets.

**Plotters** can be considered special-interest equipment, as most people don't need them. A plotter is only necessary if you want to create high-quality color business charts on paper. A bar or pie chart produced by a plotter is cleaner and more professional-looking than that produced by most printers.



Sharp CE-515P Printer/Plotter

Silver-Reed EXP 770

Okidata Pacemark 2410

### MODEMS

Not every business needs a modem, though there are other good reasons to equip your computer with one. You may need to send and receive documents and **electronic mail** on a regular basis; or you may live in a remote area and need to conduct research from your home; or you may want access to your employer's mainframe computer.

Choosing a modem includes two major decisions: 1. Should it be an external device, an internal one, or a telephone with a modem built in; and 2. What "baud rates" do you need?

Most **external modems** have red lights that show the status of your call, so you can always tell when you are online (CONNECTed) and whether you are sending and/or receiving. Early **internal modems** gave no such indications, but were helpful in saving space on a crowded desk. Now many internal modems come with software that lets you know what's happening right on the screen, in plain English. With the tough competition in the internal modem market, this may soon become standard.

**Baud rates** are a measure of the speed with which the modem can send and receive information. The higher the baud rate, the less time (and money) it takes to transmit files. Common baud rates are 300, 1200, and 2400, and you should determine which speed you need before buying a modem. For example, if you will use the modem only



Hayes Smartmodem 2400

Novation Professional 2400

occasionally for small files, 300 baud will suffice. But to download large files or for long-distance transmissions, 1200- or 2400-baud will save you money in the long run. However, since both modems must operate at the same speed to communicate, a 2400-baud modem won't do you much good if the majority of modems you "talk to" operate at 300 baud.

## REVIEWS OF BUSINESS SYSTEMS

For a high-powered business system, you really want a computer with a 16- or 32-bit microprocessor. These computers (IBM, IBM-compatible, and Macintosh) are faster and have more potential RAM than the 8-bit computers in our chart (Apple IIe, C 128, and Kaypro). Although it's possible to accomplish business tasks on an 8-bit computer, it's not as efficient, and doesn't leave you as much room for expansion. Following are reviews of proven computer systems from major manufacturers that are in the \$2,000-\$3,500 price range.

### IBM PC AND PC/XT

The IBM PC was designed for the small to medium business requiring a serious, flexible tool. It is a durable, reliable work horse that IBM is reportedly ready to put out to pasture in favor of sleeker thoroughbreds such as the PC AT, and possibly the "PC2." That's probably why you're seeing so many good deals these days.

The XT is an upgraded version of the PC with a hard disk drive built in. The best reason to buy the XT is to take advantage of the hard disk. If you only need a floppy disk system, stick with the PC.

The PC and XT are used widely in the business community, which means an enormous selection of powerful business programs have been written specifically for IBM. These programs often run on the "compatible" computers, but you can never be 100 percent sure that one will until you've tried it.

One of the major strengths of the PC and XT computers is their "open-ended architecture," or the number of available expansion slots inside the computers. Dozens of manufacturers sell plug-in circuit boards for everything from extra memory to voice synthesis.

These computers aren't without their weak spots—the keyboard is idiosyncratic, usually only four colors can be on-screen at one time, and sound is limited. However, the latter two drawbacks are not likely to affect any standard business applications.

### TANDY 1000, 1000HD, 1200HD, AND 2000

Most software for IBM machines will run on the Tandy 1000 and 1200HD. The 1000 compares directly with the PC, and the 1200HD, with its hard disk, compares with the XT. The Tandy 2000 is faster and has more disk storage than these two (and the IBM PC), but won't run as much IBM software.

The Tandy 1000 comes bundled with *DeskMate*, an integrated package for word processing, spreadsheets, filing, and communications. However, *DeskMate* is more of a handy learning tool for the novice than a full-fledged business program.

With the 1000, Tandy includes a few goodies that are missing from the basic IBM PC package: a monochrome/color graphics interface, a parallel printer interface and joystick, and light pen interfaces. There is no denying the attraction of this system, especially because its good color and sound make it adaptable for general entertainment and educational uses as well as business.

The Tandy 1000HD (\$1,999) is a version of the 1000 that comes with 256K RAM and a hard disk drive built in.

The 1000, however, has two shortcomings. First, the keyboard, like the keyboard on the 1200 and 2000, is not the same as the one on the PC. While this is not bad *per se*, it does mean that documentation for IBM software may refer to different keys. More serious is the problem with the three expansion slots—some IBM expansion boards won't fit. But Tandy offers plug-in boards, such as the internal 1200-baud modem (\$299). An internal 2400-baud modem is in the works.

The Tandy 1200HD doesn't have this problem, and is the most IBM-compatible machine Tandy has designed. Those familiar with an XT will have no trouble finding their way around the 1200. The major difference between this machine and the XT is that the 1200HD has only five expansion slots (compared to eight on the XT).

The 1200HD was designed for the serious professional who is familiar with the IBM XT. If you want a Tandy with a hard disk, however, the 1000HD might be a better bet, as it is a more versatile machine than either the XT or the 1200.

### COMPAQ DESKPRO

Compaq, whose sales revenues have ballooned rapidly, earned its money and fine reputation with transportable machines. The Deskpro, however, is a true desktop computer with a lot of strong features. Virtually all IBM software and hardware works on the Compaq; I have seen no program or board that will not work with both systems.

The Deskpro comes equipped with a color graphics board and a parallel port that are wanting on the PC and XT. This means you can just plug in a color monitor and turn it on. If you buy the Compaq monochrome monitor (\$255), you can display both text and graphics without an additional expansion board.

There are four basic models of the Deskpro. The most common configurations are two floppy drives, or one flop-

## HARDWARE COMPANIES

ANCHOR AUTOMATION,  
(818) 997-7758.

APPLE COMPUTER, INC.,  
(800) 538-9696.

AT&T,  
(800) 247-1212.

COMMODORE BUSINESS MACHINES,  
(215) 431-9100.

COMPAQ COMPUTER CORP.,  
(713) 370-7040.

EPSON AMERICA, INC.,  
(800) 421-5426.

HAYES MICROCOMPUTER PRODUCTS,  
(404) 449-8791.

HEWLETT-PACKARD CORP.,  
(408) 293-2444.

HOUSTON INSTRUMENTS,  
(800) 531-5205.

IBM,  
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(800) IBM-3333.

IOMEGA CORP.,  
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JUKI INDUSTRIES OF AMERICA,  
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NEC HOME ELECTRONICS, INC.,  
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NOVATION, INC.,  
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PRINCETON GRAPHICS SYSTEMS,  
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PROMETHEUS PRODUCTS,  
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QUARK,  
(303) 934-2211.

SHARP ELECTRONICS CORP.,  
(201) 265-5600.

SILVER-REED AMERICA, INC.,  
(213) 516-7008.

STAR MICRONICS, INC.,  
(212) 986-6770.

TANDY CORP.,  
(817) 338-2335.

TAXAN CORP.,  
(818) 810-1291.

py and one hard disk drive. Compaq uses half-height floppy and hard disk drives, leaving room in the front of the system unit for two more drives or a tape backup system.

The Deskpro is one of the best alternatives to IBM's machines, designed for the professional or businessperson with a need for speed and raw processing power.

### AT&T 6300

The AT&T PC 6300 comes with 256K RAM and two disk drives, like the PC, but includes the graphics board, and serial and parallel ports. Thus, it's attractive to the professional who doesn't want to decide on, or pay for, the "extras" that IBM leaves out.

The 6300 is a stylish computer with a smaller "footprint" (the desk area required) than the IBM machines, and its monochrome green-phosphor display has a tiltable base for ease of viewing from any position. However, you can't use any other monochrome monitor—you have to buy AT&T's.

The keyboard is identical in layout to that of the PC. The major software packages for the IBM—*Lotus 1-2-3*, *dBase III*, *WordStar*, etc.—run well on the AT&T. These and the majority of IBM programs run about 50 percent faster than on the PC. So, if you're planning lots of complicated "number-crunching" or data base record-sorting, this is a better machine than the IBM PC. And you can equip the 6300 with a 10-megabyte hard disk drive for a system that is faster than IBM's XT.

### PERIPHERALS FOR IBM PCS AND COMPATIBLES

**Hard Disk Drives.** If 10 megabytes of mass storage is enough for you, look first at the computers that can be equipped with a hard disk drive by the dealer. These built-in hard disks take up less space than their external counterparts, and reduce cable tangle. Another alternative is the new Hardcard (\$1,095) from Plus Development Corp., a 10-megabyte hard disk on a plug-in circuit board for IBM PC and compatibles.

If you want to add an external "sub-system," Iomega's Bernoulli Box (\$2,695) comes with the highest recommendation, not to mention price tag. (Tandy has a version of the Bernoulli Box that costs considerably less.) It's a special 10-megabyte drive that employs a "removeable cartridge." You can purchase cartridges that plug in and out

of the device, each holding 10 megabytes. It's like having a super-duper disk drive that can record about 30 times as much as the regular floppy disk.

**Monitors.** IBM makes a decent monochrome monitor (\$255), but there are reliable alternatives. One is Amdek's Video 310A (\$230), a 12-inch amber screen; another is Taxan's 12-inch green screen (\$189). If you want color graphics, IBM's RGB Color Display (\$680) is pretty tough to top, though many people find Princeton Graphics' HX-12 RGB (\$695) just as good, if not better. Both produce



crisp, clean, high-resolution color graphics. Tandy has good prices on both monochrome (\$159) and RGB monitors (\$459).

**Printers/Plotters.** For high-speed dot-matrix printing, Epson, Okidata, Panasonic, and Star Micronics all offer

## SOME LEADING BUSINESS COMPUTER SYSTEMS

Model	List Price	Runs IBM Software	Software Included	Hardware Included	Exp. Slots	Serial/Parallel Ports
Apple IIe Professional System	\$1,795	No	ProDos, BASIC, tutorial	2 disk drives, monitor	7	None
Apple Macintosh	\$2,195	No	Finder, MacWrite, MacPaint	3½" disk drive, monitor, mouse	0	2 serial
AT&T PC 6300	\$2,810	Some	MS-DOS, BASIC	2 disk drives, monitor	7	Serial, parallel
Commodore 128	\$300	No	Commodore DOS, CP/M, BASIC, tutorial	None	1	Nonstandard serial
Compaq Deskpro	\$2,240	Most	MS-DOS, BASIC	Disk drive	6	Parallel
Epson QX-16	\$2,695	Some	MS-DOS, CP/M, BASIC, Valdocs 2	2 disk drives, monitor	3	Serial, parallel
IBM PC	\$2,295	All	BASIC, tutorial, hardware diagnostics	2 disk drives	5	None
IBM PC XT	\$3,895	All	BASIC, tutorial, hardware diagnostics	Disk drive, 10 MB hard disk	8	Serial
Kaypro 2X	\$1,595	No	CP/M 2.2, BASIC, WordStar, The Word Plus, ReportStar, CalcStar, Microplan, Mte	2 disk drives, monitor, modem, clock/calendar	0	2 serial, parallel
Tandy 1000	\$999	Most	MS-DOS, BASIC, DeskMate	Disk drive	3	Parallel
Tandy 1000HD	\$1,999	Most	MS-DOS, BASIC, DeskMate	Disk drive, 10 MB hard disk	1	Parallel
Tandy 1200HD	\$2,089	Most	MS-DOS, BASIC	Disk drive, 10 MB hard disk	5	Parallel
Tandy 2000	\$1,599	Some	MS-DOS, BASIC	2 disk drives	4	Serial, parallel

**FOOTNOTES:** 1. Storage for Commodore 1571 Disk Drive; Not included with computer. 2. Maximum RAM indicates memory chips available from manufacturer.

good values. And, of course, the \$549 IBM Proprinter (see *August New Hardware*), which can print at 200 cps and feed envelopes and single sheets from the front, is one of the great new products of the year.

If you're more concerned with speed and reliability than with price, look at the Okidata 2410 (\$1,995). This rugged, wide-carriage dot-matrix clips along at 350 cps in draft mode and 87 cps in correspondence mode. Star Micronics' new SR-15 wide-carriage yields very nice print at 200 cps (\$799), and Panasonic's wide-carriage KX-P1093 (\$699) delivers at 160 cps. (For rugged, reliable printers under \$400, see "Buyer's Guide to Low-Cost Printers" in the September issue.)

In the letter-quality field, the NEC Spinwriter series is a proven line of high-speed printers, priced over \$1,000. If you're more concerned about price than speed, check the wide-carriage Juki 6100 letter-quality printer (\$599). It's slow (18 cps), but yields a printout rivaling that of an expensive IBM typewriter. Silver-Reed also makes an excellent letter-quality printer, the EXP 770 (\$995), which prints at 36 cps.

In the color field, IBM's new Jetprinter (\$745), Epson's JX-80 (\$699), and C. Itoh's 8510/SCP (\$650) are comparable high-quality printers. Less expensive and slower, but trustworthy, is the Okimate 20 (\$269).

Houston Instruments and Hewlett-Packard make the best plotters for IBM and compatible computers, with prices ranging from \$700 to \$4,000. Amdek's Amplot II six-pen plotter (\$1,095) and the Sweet-P Personal Plotter from Enter Computer, Inc. (\$795) are good deals. But perhaps the best buy is the Sharp CE 515 P (\$399).

**Modems.** You can't go wrong with the Hayes Smartmodem 1200 (\$599) or the Hayes Smartmodem 300 (\$239) with *Smartcom* software. Less expensive are modems in the Anchor Automation line. If you really want 2400 baud, you won't believe the power and ease of use of the new Novation 2400 Professional. It features an LCD (liquid crystal display) readout with full English words that monitors the status of your call. If you buy an AT&T computer, go with their AT&T Modem 4000 (\$499.95) and *Softcall* software (\$79.95)—a very nice package.

## APPLE MACINTOSH

The Apple Macintosh is different from all other computers in the chart. If you've never had a demonstration of

Macintosh's capabilities, you owe it to yourself.

The Mac comes with nearly all the hardware you need to get started, plus built-in ports for a printer, modem, and an external disk drive. The latter should be added immediately; it will cut down on annoying disk-switching. In addition, several useful pieces of software come with the system: the *Finder* operating system—which gives the Macintosh its characteristic icons, pull-down menus, and windows—and *MacWrite* and *MacPaint*.

But is it a business machine? Yes and no. The superbly simple mouse interface—which allows you to point at an icon and click to start a function—means that you don't have to learn volumes of commands to use complicated software. So, for those without the collegiate zeal (or time) to study and master software, the Mac may be the only option.

However, the mouse also has its drawbacks. For some tasks (making small changes in a word-processing or spreadsheet file, for instance), the lack of cursor keys is a liability. Also, the keyboard doesn't include a numeric keypad. Without one (\$99, from Apple), it's safe to say that the Macintosh is a weak "numbers" machine.

The super high-resolution monochrome monitor, built into the CPU case above the disk drive, is superb. While this means you won't see the Macintosh's rich graphics in color—for most business uses you'll never need to—Macintosh provides incredible detail that makes up for the lack of color. And if you have the right printer, you can print out what you see on the screen. Going one step further, with a typesetting program and a laser printer, you could legitimately open a typesetting operation.

While business software is now available in some quantity for the Macintosh—Apple lists 600 packages overall—there is still not nearly the variety of programs as for the IBM machines. The Macintosh's operating system makes it incompatible with every other computer on the market. Still, if you can find the software you need, and you like the Macintosh "environment," it's a capable business machine that can actually make work fun.

## MAC PERIPHERALS

Most expansion to the Macintosh, including the second disk drive from Apple (\$495), is external. The best way to beef up a Macintosh, however, is with a hard disk, such as the Quark QC10 (\$1,295). It connects to the external disk drive port and gives the machine what it's dying for: storage space for data, and fast access to it.

The Macintosh was designed to work with Apple's ImageWriter dot-matrix printer (\$595). There isn't much reason to choose another (unless you can afford Apple's \$6,995 laser printer), because most other printers can't support the full range of Macintosh capabilities. The Imagewriter, however, is not a letter-quality printer; if you need one, you'll have to get a special cable to hook it up.

Apple sells two modems, a 300-baud (\$225) and a 1200-baud (\$495). Prometheus's ProModem 1200M (\$549), which comes with ProCom-M software and a Mac-to-modem cable, is a good value, as is the Hayes Smartmodem 1200 with Smartcom.

## NEW COMPUTERS/UPGRADES

Several new computers just making their way onto store shelves are also worth consideration for business applications, and will be reviewed in upcoming issues. These include Amiga (\$1,295, 256K, disk drive, from Commodore), Atari 520ST (see *preview in this issue*), and the Leading Edge Model D, \$1,495, 256K, 2 disk drives (see *New Hardware in September 1985 issue*).

Also, to the many users who are looking to upgrade existing computers into powerful business machines, don't despair! We will cover the topic in a future issue. ☐

Text Display/ Top Resolution	Floppy Disk Storage	RAM: Stand./Max. <sup>2</sup>	Processor Speed
80×24, 560×192	140K	128K	1.02 MHz
Varies, 512×342	400K	128K/512K	7.83 MHz
80×25, 640×400	360K	128K/640K	8 MHz
80×25, 640×200	350K, CP/M-410K <sup>1</sup>	128K	2 MHz
80×25, 720×350	360K	128K/640K	4.77 MHz
80×25, 640×400	720K	512K	5.33 MHz
80×25, 640×200	360K	256K/640K	4.77 MHz
80×25, 640×200	360K	256K/640K	4.77 MHz
80×25, 100×160	392K	64K	4 MHz
80×25, 640×200	360K	128K/640K	4.77 MHz
80×25, 640×200	360K	256K/640K	4.77 MHz
80×25, 640×200	360K	256K/640K	4.7 MHz
80×25, 640×400	720K	256K/768K	8 MHz

# MULTIFUNCTION INTEGRATED SOFTWARE

BY CHARLES H. GAJEWAY

## CRUNCH NUMBERS, DRAW GRAPHS, FILE ADDRESSES, WRITE REPORTS, TELECOMPUTE—WITH ONE PROGRAM!

Integrated, or multifunction, software has become a popular item among corporate personal-computer users. While the prices and descriptions of these programs could lead the novice or general user to believe they are difficult, quite the opposite is true. The concept: One program performs several different computing tasks well enough to handle nearly all your work. Ideally, you buy and learn one program and never have to worry about getting several single-purpose programs to work smoothly together.

For people who use computers to do many different jobs, it's not hard to see how combining features of the five major types of application software—spreadsheet, word-processing, data base, graphing, and communications—can make life easier and more productive. And, while integrated programs are significantly more expensive than single-purpose programs, they can take the place of three to five programs, making them a good value for the serious home user.

### WHO CAN USE INTEGRATION

Good integrated programs have become a hot ticket in the business world because they can be immediately useful on a wide variety of tasks, even for a beginner. That can be true for the home user as well, especially for someone who wants to take work home from the office. You don't need complex tasks to benefit from using integrated software. It shines on a variety of different jobs, especially if they use the same information.

Here are a few examples of how you might use integrated software:

1. Using the communications part of a program, you could download information from a time-sharing service (like Grolier's *Academic American Encyclopedia* on CompuServe) and incorporate quotes into a written report with the word-processing part of the program.

2. You could do a spreadsheet analysis of spending habits and graph (and print out) the results over a 12-month period.

3. You could keep a data base with names and addresses of business clients or club members, and print labels to send letters to those with overdue payments or special interests.

Of course, if you need only one application (word processing or spreadsheet, say), or very rarely want to use the same data with different programs, then integrated pro-

grams are not for you. Someone with a primary use for a computer is better off choosing the single-purpose software designed to do the job best.

### THREE TYPES OF PROGRAMS

For a variety of reasons, integrated programs can be very difficult to create. Many computers have a limited amount of memory. The five basic types of application programs have different and conflicting needs. Programming software that is easy to use yet powerful enough to compete successfully against single-purpose packages is difficult and expensive. As a result, most integrated software does not include all five functions.

The programs we reviewed fell into three categories: numbers- and data-base-oriented, and full-function.

A **numbers-oriented** program typically is based on a large and powerful spreadsheet. It also has graphing capabilities, and can organize simple sets of data, especially if they include lots of numbers. Word-processing, forms-type data-base, and communications capabilities are limited or not present.

A **data-base-oriented** program has powerful and flexible filing, arranging, and sorting features, and a good word processor. Text-handling is emphasized at the expense of number-crunching. Graphing and communications abilities are likely to be limited or absent.

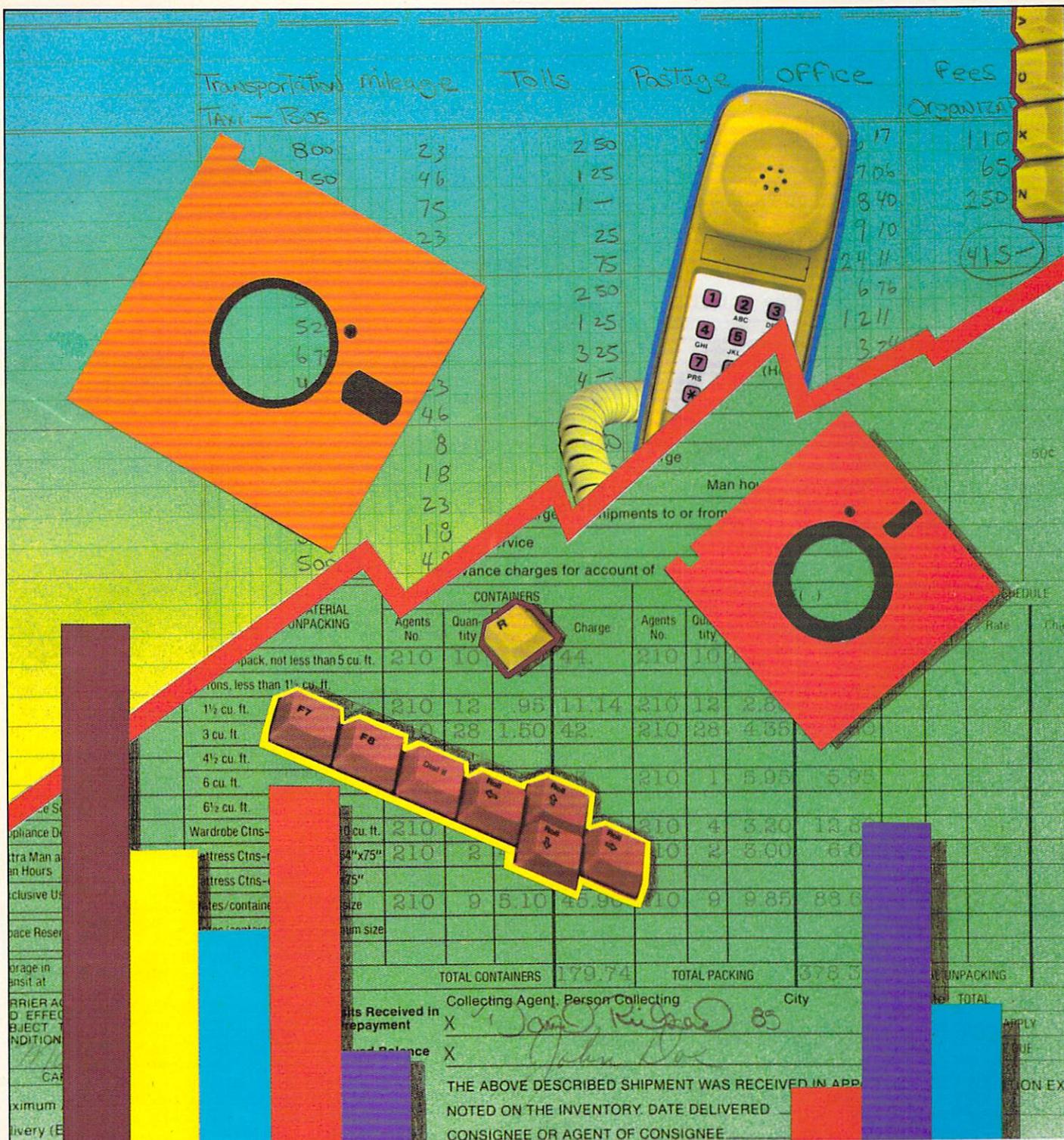
**Full-function** programs provide at least moderately sophisticated capabilities in all five general areas. While these programs are ideal in concept, they tend to be more complicated to learn and use, require more sophisticated and expensive computers, and leave less memory for the user. Besides, relatively few people need complete functionality; most users will naturally lean toward number-oriented or data-oriented programs, depending on their primary need.

### REVIEWS OF TOP PROGRAMS

Reviews of integrated software aimed at corporate users are typically involved and technical (and frequently misunderstood and misinterpreted) because corporate use tends to involve large amounts of data and complex relationships and computations. For the home user—even one with a professional application—the feel and style of the program are more significant.

Our hands-on reviews, therefore, will concentrate more on what it is like to learn and use the program than on long lists of functions and features. Significant extra features, or lack of normal ones, will, of course, be noted. All

CHARLES H. GAJEWAY, a contributing editor for FAMILY COMPUTING, wrote about the Macintosh—"Information Appliance for the '80s?"—in the September issue.



these programs require or work best with two disk drives and a printer. (See "Buyer's Guide to Business Computer Systems" in this issue.)

We have reviewed the major integrated programs for computers with 128K or more. Two noteworthy integrated programs not considered here are *HomePak* (Commodore 64 and Atari 800XL, from Batteries Included, \$49, reviewed in December '84 FAMILY COMPUTING), and *Team-Mate* (Commodore, from Tri Micro, \$49, reviewed in the August '85 issue). Since they are written for 64K machines, it would be unfair to compare them with programs written for machines with 128K or more. *Jane* (Arktronics, \$39), designed for the 128K Commodore 128, is expected on the market this fall, as are versions of *HomePak* for the IBM PC/PCjr, Atari STs, Macintosh, and Commodore 128.

### NUMBERS-ORIENTED PROGRAMS

**Excel**, from Microsoft Corp., 10700 Northrup Way, Box 97200, Bellevue, WA 98009; (800) 426-9400; for Apple Macintosh, 512K; \$395; preview copy reviewed.

*Excel* has the distinction of offering one of the largest spreadsheets currently available for any computer—16,384 rows by 256 columns. Of course, there isn't enough free memory, even on a 512K Macintosh, to get the spreadsheet anywhere near full, but there's certainly plenty of room to spread out!

I tested a prerelease version of the program with a draft manual, so it's hard to say exactly how the product will finally be offered. It will definitely have an excellent on-screen help facility. The draft manual, like most of Microsoft's recent efforts, is reasonably clear, but occasionally

too "techy" in its presentation of the material.

*Excel* exploits the built-in features and capabilities of the Macintosh very well. The screen displays are attractive and easy on the eye, and the graphics function creates some spectacular results. The program operates very quickly, rarely holding the user back.

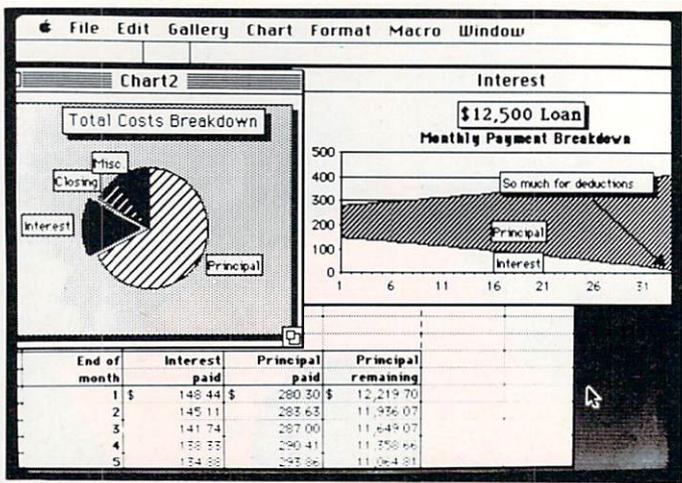
Microsoft's stated goal for *Excel* was to create the most sophisticated and powerful spreadsheet-oriented program on the market. I believe it has succeeded. A list, with brief descriptions of *Excel*'s advanced functions and special features, would occupy most of this magazine! Among other things, *Excel* is the first spreadsheet to utilize "matrix math," a capability that will appeal strongly to financial and scientific users.

*Excel* is a product aimed at the technical and corporate user. If you have a need for advanced math capabilities coupled with graphing, data base, and macros, *Excel* could be just what the doctor ordered.

**Framework**, from Ashton-Tate, Inc., 10150 W. Jefferson Blvd., Culver City, CA 90320; (213) 204-5570; for IBM PC and compatibles, 2 disk drives, 384K; \$695.

*Framework* is a complex and powerful program that is not easy to learn, but rewards the user richly. It is designed much like a Macintosh program, but is somewhat clumsier because it runs on the IBM PC. Nothing in the program is really difficult, but even an experienced user will be starting from scratch. That's why the very good reference and tutorial manuals, the tutorial disk, and the extensive on-screen help facility are a big boost as the user gains familiarity with the program's three-disk system.

*Framework* is not really based on a spreadsheet or a data base, though it has both. Underlying most of its functions is a language called FRED, which is used to interface the telecommunications package *MITE* with the rest of the program's parts. Because of this common basis of operation, *Framework* really shines at organizing many small windows into a single large project. For example, you could incorporate a checkbook register into a tax calculation, a client's expense statement, or an itemized summa-



**MICROSOFT'S EXCEL:** You can create different kinds of charts from one spreadsheet, display them on-screen at the same time, and edit them.

ry of personal or business expenditures.

As a whole, *Framework* is a high-performance product aimed primarily at corporate users. The major drawback is its unusual operating style, which requires a relatively lengthy learning period.

**1-2-3**, from Lotus Development Corp., 245 First St., Cambridge, MA 02142; (617) 494-1192; for IBM PC, XT, IBM Portable, PCjr with installation kit, and compatibles, 192K; \$495.

*Lotus 1-2-3* is an extremely powerful and workable program. By designing data-management and graphics functions into a large and powerful spreadsheet that runs from an intelligent menu/command system, *1-2-3* is an attractive tool for people whose jobs are primarily number-oriented.

The *1-2-3* system consists of the main spreadsheet, plus utilities for printing graphs, and managing data files. Explicit instructions in the manual lead the novice *1-2-3*

## INTEGRATED SOFTWARE RATING CHART

The chart summarizes the overall performance of the software, which is ranked by a score of one to five in each of 10 categories. (A perfect score would be 50.) While I have tried to be objective by comparing programs feature-for-feature, you should use the chart subjectively, considering your individual needs and preferences. For example, programs receive more points for including more functions. But if you don't need a function, or already have a program you like (communications, for instance), then a program with fewer functions but higher scores in specific areas would be a better choice.

**5 Excellent**—Represents the state of the art, fully equal to any other program on the market.

**4 Very Good**—Represents exceptional features and ease of use in a program good enough to replace all but the most advanced single-purpose software.

**3 Good**—Represents solid, reliable performance suited to most routine uses.

**2 Fair**—Indicates some software limitations that occasionally may inconvenience the user.

**1 Poor**—Indicates several limitations, or one severe limitation, that may constantly annoy the user.

0 Feature/function not present or unusable.

**Ease of use** indicates the time it takes to gain confidence in using the software. Convenience of switching between functions, protection from inadvertent data loss, etc., also has been considered.

**Integration** represents the degree to which the various functions operate together. A program where all functions are available at the same time is very integrated. One in which switching functions requires a screen change, disk access, and/or an intermediate menu, is moderately integrated.

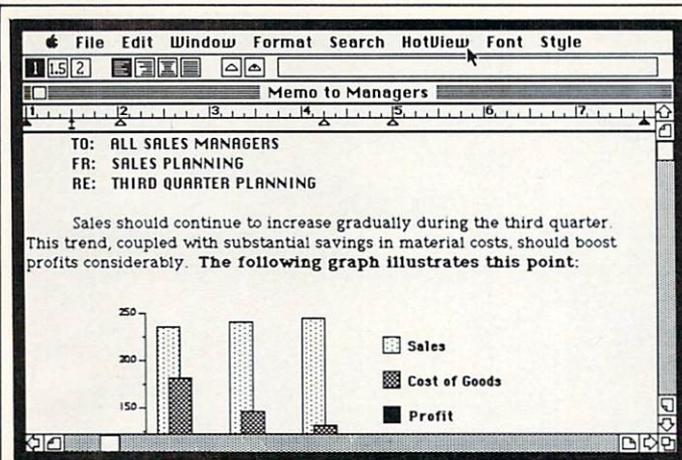
**Compatibility** refers to a program's ability to produce files that can be read by other software, such as an advanced word-processing or communications program, and to accept their data.

**Speed** indicates the program's responsiveness to accepting data input and changes.

**Value** represents how good a deal the software is compared to other integrated programs.

**Ratings by Function** indicates the type of single-purpose software this function of the program is equivalent to: 1 (Poor); 2 (Fair); 3 (Good); 4 (Very Good); and 5 (Excellent).

	Ease of Use	Integration	Compatibility	Speed	Value	Spreadsheet	Graphing	Data Base	Word Processing	Communications	Total Score
APPLEWORKS	3	3	4	2	3	2	0	4	4	0	25
ENSEMBLE	4	4	3	3	4	1	3	4	2	0	28
EXCEL	4	4	4	4	3	5	4	3	0	0	31
FRAMEWORK	3	5	5	3	4	3	3	4	4	4	38
JAZZ	5	5	4	4	4	4	5	4	4	5	44
1-2-3	5	5	4	5	4	4	3	3	1	0	34
SYMPHONY	3	5	4	4	3	4	4	4	4	5	40
SUPERCALC 3 (AP)	3	4	5	4	5	3	4	3	0	0	31
SUPERCALC 3 (IBM)	3	5	5	5	4	3	4	3	0	0	32



**LOTUS' JAZZ:** You can insert graphs, worksheet figures, and data-base information directly into word-processing documents.

user through a fairly short setup procedure. An excellent tutorial with hands-on practice introduces the actual program. Finally, there's a very good on-screen HELP system.

Once the user is familiar with the program, 1-2-3 rapidly becomes effortless. The program runs quickly, and commands and functions operate consistently. The manual is clear and full of examples and illustrations. Even for the more advanced user, 1-2-3 can seem endlessly capable, encouraging him or her to try ever bigger and harder tasks, as long as they center on numbers. Repetitive sets of commands can be automated using "macros" (a string of command strokes kept in a file that can be activated by a keystroke).

The program is not perfect. Word-processing features are primitive, suitable only for occasional quick memos or short reports. Text-handling is almost nonexistent, consistent with the overall emphasis on numeric functions. Setting up queries (such as, "How much did I spend on printer ribbons last year?") on a data base can be frustrating, and other parts are a bit hard to learn.

Lotus 1-2-3 is a best-seller and a classic—deservedly so. For the IBM user who deals constantly with numbers and has little need for word processing or communications, 1-2-3 is clearly a leading choice.

**SuperCalc 3**, from Computer Assoc. Micro Products Division, 2195 Fortune Drive, San Jose, CA 95131; (408) 942-1727; *SuperCalc 3 Release 2* for IBM PC, XT, AT, and compatibles, 96K, DOS 2.0 or higher; \$395; *SuperCalc 3a* for Apple IIc and 128K IIe with 65C02 enhancement kit; \$195; reviewed on Apple IIc.

*SuperCalc*, like 1-2-3, is spreadsheet-based, has graphics capabilities, and can handle row-oriented data bases. The program is supplied on two disks that can be copied (three cheers for Computer Assoc. Micro Products Division), and the Apple version is ProDOS-based, so it can be installed on a hard disk. The program will not work on the earlier Apple II and II plus models.

The manual is good—clear and reasonably well-illustrated. There's also a separate introductory book, *The 10-Minute Guide*. While 10 minutes is somewhat optimistic, the guide is a good confidence-builder, and highly recommended. HELP screens that explain various commands are better in the IBM than the Apple version.

The program operates well, but will take a little longer to learn than 1-2-3. The range of features and functions is wide, and the workspace adequate for most home users and many professionals (especially on the IBM version with 128K or more of RAM). *SuperCalc's* graphing capabilities are quite good, with enough variety in graph styles and labels to satisfy all but the most critical users.

Three utility programs are included with the package: A

file-conversion program allows most files produced by other programs to be converted to *SuperCalc* format, and *SuperCalc* files to be converted to standard text (ASCII) files; a mini-communications program assists in sending and receiving *SuperCalc* files produced by another computer; and a third utility allows large spreadsheets to be printed sideways across the length of several pages on many dot-matrix printers. These utilities are very useful in helping a user cope with a computing world populated by many different kinds of machines and software.

My reactions to *SuperCalc* were a bit mixed. The Apple version is far superior to even the best straight spreadsheet program available for the Apple II series. An owner of an "unenhanced" IIe might well consider the moderate cost of the Apple IIe Enhancement Kit (\$70) to enable him or her to run this program. However, in most respects, the IBM version falls short of 1-2-3 in overall convenience and power.

## DATA-BASE-ORIENTED SOFTWARE

**AppleWorks**, from Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; (800) 538-9696; Apple IIe and IIc, 128K; II plus, 64K with *Appleworks Modifier* (see *Computing Clinic* in this issue); \$250.

For a while *AppleWorks* was a puzzle to me. It's not as integrated as many of the other programs reviewed here. It doesn't offer scads of gee-whiz features, and it's occasionally slow and clumsy. So why is it the top-selling software in the country? Because *AppleWorks* is a nice program for the home user—one who is not interested in doing fancy footwork with large quantities of numbers.

It's easy to learn (if somewhat slow to use) and has a much more complete word processor than the number-oriented programs discussed above, a decent spreadsheet, and a slick little data base that handles moderate amounts of data nicely. It also happens to be rock-reliable, and has the Apple seal of approval, which is important to many Apple II owners.

*AppleWorks* responds best to a relatively relaxed and deliberate approach, which is refreshing. Even the manual reflects that attitude: It's a rich and informative document that is very well-written, though not designed for lightning-fast references. There is, in addition to the manual, an easy to follow tutorial for first-time users. The novice user will feel comforted by *AppleWorks* because the program blossoms gradually as he or she learns it, while an experienced user will feel a bit frustrated until falling into the more relaxed tempo of the program.

The data-base part of *AppleWorks* is probably its nicest feature—simple and clear, yet flexible and complete. It's not on a par with the very best single-purpose data-base software, but it will handle most normal situations with aplomb.

The word processing is quite good, too, although somewhat old-fashioned in its approach to text-formatting. It's clear and easy to use, with lots of user prompting, and plenty of features. This is easily the fastest segment of the program; even a speedy typist would be hard pressed to get ahead of the screen. The only obvious shortcoming is that information from the data-base program cannot automatically be included in word-processing documents—names and addresses, for example, must be merged into a form letter one at a time.

The spreadsheet is the weakest part of *AppleWorks*. The features are very basic, recalculation (when a new number is added and the arithmetic formulas are computed) is on the slow side, and there are no macros or graphing. This part of *AppleWorks* reminded me of *VisiCalc*—a reliable performer, and adequate for many uses, but outclassed by more recent products.

Overall, *AppleWorks* is not as slick and capable as many

of the other programs I reviewed. It's not big, or feature-laden, or blindingly fast. Its mix of features, however, is unique, and probably appealing to the home user (or the professional) who is more concerned with organizing and communicating information than crunching scads of numbers. In many ways, however, I feel that a user might be better off with a good set of single-purpose programs (like *FlashCalc*, *Format II*, and *QuickFile*) than *AppleWorks*. Its limits could get annoying as the user becomes more proficient and demanding.

**Ensemble**, from Hayden Software Company, Inc., 600 Suffolk St., Lowell, MA 01854; (800) 343-1218; for Apple Macintosh, 128K; \$299.

*Ensemble* is an interesting package. It's a very flexible data base with graphing capabilities, and uses the Macintosh to store data as pictures, numbers, or text. *Ensemble* comes with a well-written and illustrated manual, an "examples" disk and booklet, and a demonstration disk.

Learning *Ensemble* is very easy once you figure out what the icons mean and understand their relationship to the pull-down menus. The program operates quickly and smoothly, and user confidence builds rapidly. Most of *Ensemble* is data-base-oriented—you use fields, titles, and descriptions to organize, enter, and label information. There is a wide range of calculations available, so a mini-spreadsheet can be created using data fields as a substitute for spreadsheet cells. This method of numeric analysis tends to be slow and clumsy to create, so *Ensemble* is not well-suited to complex numeric tasks.

Word processing in *Ensemble* is unique. You simply create a "fixed-text" field in the data base and make it as big as you need. The field can then be changed in size, and the text rewraps to fit inside the field. If a field is made too small, text can't be seen, but the program holds it intact; resize the field and your words reappear. This is neat and flexible with small amounts of text, but awkward and slow with longer documents. In fact, the manual recommends against creating more than two-page documents.

Graphing is easy, too. Data is entered, the desired type of graph selected, and—presto!—the graph appears on the screen. The graph is then ready to be put into a data field, included in a report, or printed by itself.

In addition, *Ensemble* features a number of handy features, including mail-merging, label printing, and custom reporting.

*Ensemble* is aimed at the user who must organize data, do simple analysis, and then create reports that communicate the meaning of the information. I found it a flexible and enjoyable program, hampered mainly by its limitations as a word processor. However, for the many people who never write anything over two pages, *Ensemble* is a data base that does more.

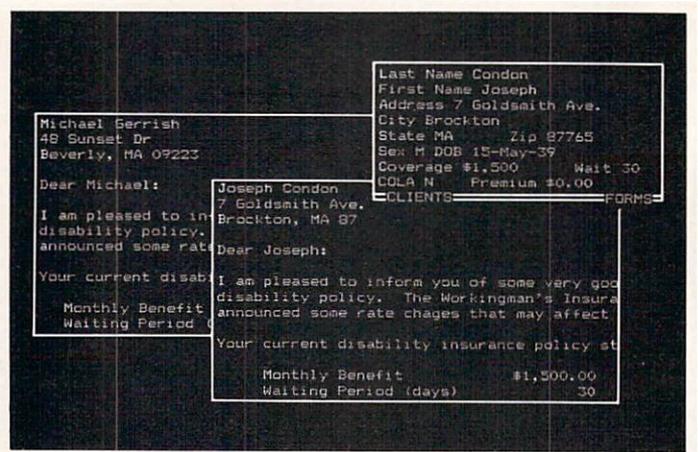
## FULL-FUNCTION PROGRAMS

**Jazz**, from Lotus Development Corp. (address above); for Apple Macintosh, 512K; \$595.

*Jazz* is, for me, the definition of integrated software. Like *Symphony*, it does everything a user could ask (except be a relational data base). Unlike *Symphony*, it's easy to learn and use. Lotus has used every capability of the Macintosh to support the user and make life easier. Lotus' marvelous command-specific help screens aren't included in order to conserve disk space (the Macintosh's "Achilles heel"), and because they almost aren't necessary.

The manuals (tutorial, reference, and quick guide) are simply superb—clear, well-illustrated, nicely organized. They lead the user into an understanding of the product more quickly than I had thought possible.

The program operates effortlessly and fast. The fact that *Jazz* operating windows are separate and distinct—rather than overlapping—means you are freer to create your ap-



**LOTUS' SYMPHONY:** To send the same letter to different people, you can merge names and addresses from records in your data base onto a letter written with the word processor.

plications, to build them without fear that one window will interfere with another. That can happen in *Symphony* with disastrous results.

Despite the excellent performance of the program, there are some flaws. For one, Lotus left macros out of *Jazz* for much the same reasons it left out HELP screens. I miss them very much, even on the "user-friendly" Macintosh. Second, the program is big and memory gets used up quickly when several windows are open. Third, Lotus has done a few quirky things with the operating system that might interfere with other programs on a hard disk.

But overall, *Jazz* is the best performer of any integrated software I have used to date—in terms of overall functionality, ease of use, and value. The only reason not to choose *Jazz* for the Macintosh is if you need the raw math power (and macros) in *Excel*.

**Symphony**, from Lotus Development Corp. (address above); for IBM PC, XT, Portable, and compatibles, 320K; 2 disk drives; \$695.

*Symphony* is a big, complex program that runs best with at least 512K and a hard disk. It comes in an impressive library case that holds three manuals, six disks (only three of which are used in normal operation), a reference guide, and a keyboard template and guide. Whew!

*Symphony* comes equipped to support an even more staggering array of peripherals than *1-2-3*. As a result, the set-up process is long and confusing, despite explicit instructions and generous screen prompting. But this process need be done only once, and then the user can concentrate on the program.

And quite a program it is. Based, like *1-2-3*, on a spreadsheet, *Symphony* has 8,192 rows and 256 columns. The various functions operate in windows that refer to a central spreadsheet. And all the functions—word processing, data base, communications, graphing, and spreadsheet—are quite complete and powerful. A user of *Symphony* truly needs no other software to do normal work.

*Symphony* has a reputation for being difficult. It isn't. It's just big and full of options, features, and functions. If *1-2-3* has two ways of doing everything, *Symphony* has three and four. So it's easy to get confused and lost in menus while you're learning the program.

Lotus aimed *Symphony* at what they call a "power user," someone who wrings every drop of capability from a PC, then asks for more. In my estimation, Lotus has succeeded. But this also means that *Symphony* is not for everyone. The program is expensive, and requires expensive equipment to run on. It takes more patience and dedication to learn than the other software reviewed here. But if you need to be able to do everything on an IBM PC, there is no substitute. ☐

# When Lee Salk Talks, Parents Listen

BY JANE WOLLMAN

THE CHILD PSYCHOLOGIST TALKS ABOUT THE ROLE OF COMPUTERS IN THE GROWING-UP PROCESS



PHOTOGRAPH BY JOSEPH BERGER

**W**hen world-renowned child psychologist Dr. Lee Salk, 58, speaks, the parents of the world listen. And for good reason: Dr. Salk has been helping parents understand their children for the past 30 years. As most parents know, that's no small feat.

His advice has been spread via his regular television and radio broadcasts, frequent lectures throughout the country, and his nine books (one, *What Every Child Would Like His Parents to Know*, has been translated into 16 languages). Since 1972, he has been writing columns for *McCall's* magazine, and his monthly newsletter, *The Salk Letter for Parents*, is in its 10th year of publication.

These days, the computer has become part of Dr. Salk's discussions on parent-child relationships. He views computers as tools that can help develop interpersonal skills. And he does more than give lip service to his theories—he practices them. In one area of his research, he uses software to teach infants the meaning of cause-and-effect.

Dr. Salk currently teaches psychology and pediatrics at Cornell University Medical College, and is an adjunct professor of child development at Brown University. He is an attending psychologist at the New York Hospital-Cornell Medical Center, and serves as a consulting psychologist at Lenox Hill Hospital.

He also maintains a consulting practice.

Recently, we asked Dr. Salk to tell *FAMILY COMPUTING* his thoughts on kids, parents, and computers—and how they relate.

**FC:** Why is it children take so easily to computers?

**Salk:** Children tend to trust computers. Also, computers give the child an immediate response. The computer hardly ever ignores you. When you can turn to this device to help you do a better job, it becomes a responsive friend.

**FC:** Can the computer, then, help increase a child's self-esteem?

**Salk:** Absolutely. Self-esteem comes from feeling important, and feeling important comes from having an impact on the environment. The computer is highly responsive and gives the child control; he or she does something, and something happens as a result. The child has an option, whereas in other aspects of life, often he or she doesn't.

The greatest stress [to a person] is constantly being told what to do. All options have been removed. You have no choices. You're in a state of helplessness. And then you just don't try. You lose your motivation, and you're depressed. Computers bypass these hazards.

Essentially, the computer provides children with an opportunity to master things and

JANE WOLLMAN is a New York-based freelance writer who writes regularly for *The New York Times*. Her latest book, *Computer Workplace: Ergonomic Design for Computing at Home*, was published in July by McGraw-Hill.

**"THE COMPUTER PROVIDES CHILDREN WITH AN OPPORTUNITY TO MASTER THINGS. IT GIVES THEM A FEELING OF ACHIEVEMENT."**

to say, "I've done that." It gives them a feeling of achievement. They can see it and feel it.

**FC:** Is it a good idea for parents to work with their kids at the computer?

**Salk:** Absolutely. Any opportunity for parents and children to interact with one another is wonderful. One of the major problems of modern life is that children complain their parents are too busy to listen and to spend time with them. The computer provides a great opportunity for a family experience.

**FC:** But can working together at a computer actually improve the parent-child relationship?

**Salk:** Yes, when it is a source of communication and interaction between the two, each one teaching the other.

The creative potential is enormous. Using the computer can be a cooperative venture between parent and child for the solution of problems. The parent may say, "Let's go to the computer together and see what we can do." Or, "Could you enter this information for me?" This gives the child an opportunity to do things for the parent—whether it is entering a shopping list or a party guest list.

**FC:** How likely is it that a child will become so involved with the computer that he or she will withdraw from people?

**Salk:** It's possible. But if there are other stimulating elements in a child's life, including responsive human beings, then the chances of withdrawal from the world are unlikely.

**FC:** Is it right to limit a child's use of the computer?

**Salk:** That's an issue parents have to decide individually. I'm not an advocate of setting rigid rules for watching television, for one, but you do have to teach children to do things in a reasonable way.

The computer is something that children are fascinated by and want to use and learn with—there's a lot of education that goes on in the course of playing computer games. And the fact that some people are frightened that children may want to use the computer too much and begin to limit their activity on it, or to see it as a potential hazard, doesn't make sense.

**FC:** Should parents make time on the computer a form of reward or punishment?

**Salk:** No. I don't like material rewards or punishments. The greatest reward for doing well in school is the intrinsic value of what you've learned. And children should be told that. "Aren't you proud of yourself? Doesn't it feel good to know as much as you do?" This helps kids to do well solely for the reward of feeling good about themselves.

**FC:** How can computers routinely be used to help with schoolwork?

**Salk:** One way is that when the child comes home from school, he or she can enter into the computer that day's class notes, save them as a file, and then print them out. Not only is this procedure good for later review, it provides a lot of effective learning at the time through sensory bombardment: You see it, you hear it, you feel it. It's not just a visual experience—it's a kinesthetic and tactile experience.

I believe we can teach human values, such as cooperation, friendship, and respect. These concepts have been built right into the games I've designed. Competition has been eliminated. In fact, there is no way you can compete with the other person because, for example, in one game, survival depends on cooperation. The game is over if neither player cooperates with the other. I think we can get a message across with this type of software.

**FC:** You've also created computer learning programs for infants about 1 year old. Isn't that a bit young for handling a computer?

**Salk:** At 1 year, infants have a certain degree of control; they're capable of pushing things and dropping things selectively. And they're always poking their fingers into all sorts of objects and are, in fact, fascinated by telephone dials and push buttons. The toys that engage babies the most at that age are the ones that allow them to make something happen. I tested my software with a special keyboard. The babies immediately recognized that when they pressed specific keys, they made certain things happen on the screen. And to look at that little smile and see the pride when they've done that is just delightful. What they're learning, of course, is cause-and-effect.

**FC:** Back to older kids. How important is it for a child to learn programming?

**Salk:** Knowing how to program is an advantage. It gives you an additional skill, but it is not absolutely essential to a child's enjoyment and benefit of a computer.

**FC:** How might the personal computer affect families in the future?

**Salk:** Computers will have tremendous impact on children and on family life. In some ways, they will bring the family closer together. For example, computers will enable more and more people, including mothers of young babies, to work at home. And men who might ordinarily go down to Wall Street [Stock Exchange] will now be able to do business at home. Granted, parents will be occupied with work. But even their physical presence and the occasional breaks they take to be with the child make him or her feel they're there rather than off someplace and uninvolved.

As I've said earlier, one of the problems kids have is that they don't see their parents enough. Computers will give children a greater opportunity to be with them. **FC**

# HANDS ON GETTING STARTED AS A COMPUTER TINKERER

BY HENRY F. BEECHHOLD

*Nothing is given so freely as advice.*  
—La Rochefoucauld

If you open up your computer—a task easily accomplished by removing a few screws—you'll quickly discover that the "mystery box" isn't such a mystery. Indeed, it turns out to be just another appliance—a hi-tech appliance, for sure, but nothing you need feel intimidated by. It takes neither an engineering degree nor a workbench full of fancy equipment to do basic repair and maintenance. You don't even have to wear your "Indiana Jones" hat!

Take note, though: Since all new equipment comes with some sort of warranty, and since most of these warranties contain "anti-tinkering" provisos, you should make *no* attempt to open the computer until the warranty period has expired (commonly, 90 days after date of purchase). Some long-term service contracts may be similarly voided by tinkering. Be aware, moreover, that some manufacturers will not service modified equipment, or will insist on returning equipment to "original specifications" as part of any repair or upgrade process. Review your machine's service history, the terms of warranty, and any service contracts you may have arranged before you touch a single screwdriver.

Once the warranty has become history, however, you can, in most cases, tinker merrily away. When you've torn aside the "plastic curtain" (so to speak), you can learn all kinds of things about computers, and not only will you be able to save yourself grief (through preventive maintenance) and money (through do-it-yourself repair work), but you'll also be prepared to make helpful modifications that will customize your computer system to your particular needs.

In the course of the "Hands On" series, I'll introduce you to all kinds

HENRY F. BEECHHOLD, professor of English and chairman of the Interdisciplinary Linguistics Program at Trenton State College, is a computer tinkerer and do-it-yourselfer par excellence. He is the author of *The Plain English Repair and Maintenance Guide for Home Computers*, and *The Plain English Maintenance and Repair Guide for IBM Personal Computers* (both published by Simon & Schuster, 1984/85).

of basics: basic tools and techniques; basic computer operations; basic maintenance, troubleshooting, and repair; basic interfacing and communications; and basic construction projects . . . but no BASIC!

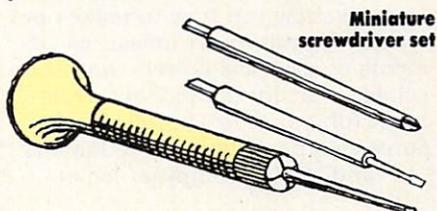
If you're convinced there's no reason why you shouldn't plunge in, you now need to spend a little money on tools and supplies. What follows is the tinkerer's basic kit. (And with this, perhaps we can put the word "basic" away for a while.)

## THE TINKERER'S TOOLKIT

In the storybook world where money grows on trees, you would, of course, buy the finest (and most expensive) equipment. In the real world, however, modestly priced tools and gadgets from Radio Shack or your local electronics supermarket will serve you well. The kit below can be assembled from such sources for between \$50 and \$75. It's likely that the first time you nurse your "sick" computer back to health, you will have paid for the whole shebang.

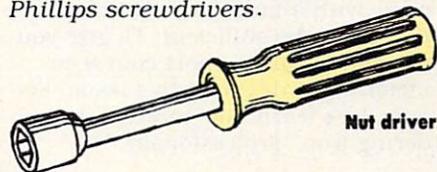
### Drivers, Pliers, Cutters

For taking things apart, putting them back together, and general clipping, snipping, and gripping, you'll need:



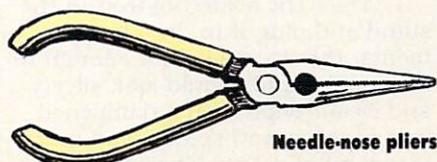
Miniature screwdriver set

- A small assortment of normal-size and miniature flat-bladed and Phillips screwdrivers.



Nut driver

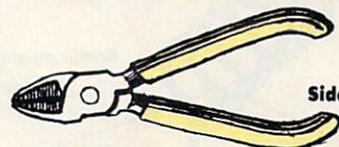
- A set of nut drivers.



Needle-nose pliers

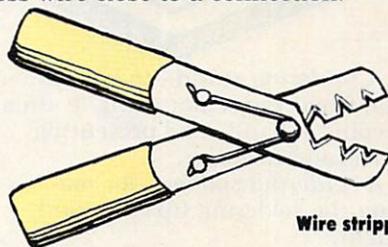
- Needle-nose pliers.
- A small utility knife—no cigar smoker, tinkerer, or gentleperson should be without one!

(Part One of a Six-Part Series)



Side cutters

- Side cutters (or flush cutters)—for, among other things, clipping excess wire close to a connection.



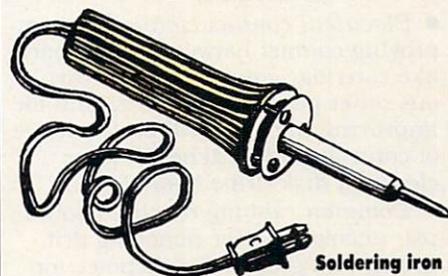
Wire stripper

- Wire stripper—for neatly removing a section of insulation from a wire before making a connection.
- A small, sharp, and sturdy pair of scissors—for miscellaneous snipping.

## Soldering Equipment

Solder is an alloy of tin and lead used to electrically unite electronic components. When an electrical joint is heated and solder applied, the solder flows over the joint, strengthening the connection and ensuring reliable electrical contact. Learning to solder (and de-solder) well is fundamental in the art of electronic tinkering. Heath, the largest maker of electronic kits, claims that most kit malfunctions can be traced to poor soldering.

Here's what you'll need to start your soldering career:



Soldering iron

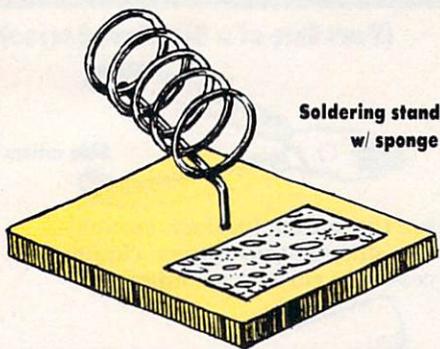
- A low-power (about 25-watt) soldering iron. Do not use a heavy-duty soldering gun, which is good only for reducing electronic components to smoking ruins.



De-soldering braid

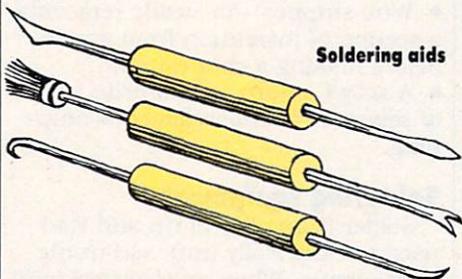
- De-soldering braid—for undoing mistakes, and for removing solder from connections you want to separate.

- *Fine-gauge electronic (rosin-core only) solder.* Never use acid-core (plumber's) solder on electrical or electronic equipment.



Soldering stand w/ sponge

- A *soldering stand*—to hold the iron when you're not using it, thus keeping it handy and preventing burns and mishaps.
- A *soldering sponge*—for making the soldering tip clean and bright.



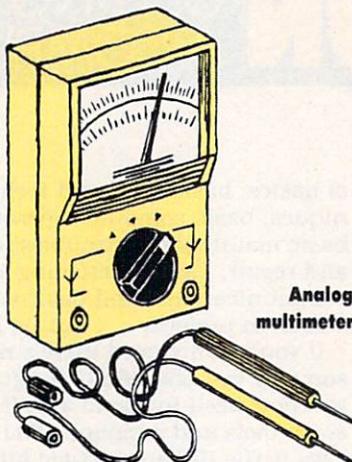
Soldering aids

- *Soldering aids*—handy little tools for poking, holding, scraping, etc. Useful, but not absolutely necessary.

### Miscellaneous Stuff

- A *small, portable vise*—acts as an extra hand.
- *Electrical tape*—for wrapping, and thus insulating, soldered wires.
- *Heat-shrink tubing*—for doing an especially neat job of insulating a soldered connection.
- *Electrical contact cleaner*—for improving contact between mated parts like cartridge connectors and various other plugs and sockets, and for improving the electrical performance of controls and switches. *Not for cleaning disk drive heads!*
- *Common rubbing alcohol* (isopropyl, uncolored)—for removing grit, grime, and grease. Good choice for disk drive head cleaning.
- *Eraser* (as in pencil)—for burnishing corroded electrical contacts.
- *High-quality lubricant* (preferably Teflon-based)—for oiling disk-drive and printer motors, and other electro-mechanical devices.
- *Canned compressed air*—for blowing dust bunnies out of your computer's many nooks and crannies.
- *Your household vacuum cleaner* (with a small, soft-bristled, utility brush).

### Test Equipment



Analog multimeter

- *Multimeter*—for making electrical measurements and tracing connections. You'll probably find that a meter with a numeric (digital) display is easier to use than one with a needle and various numbered scales. Either one, however, will do the job.



Digital multimeter

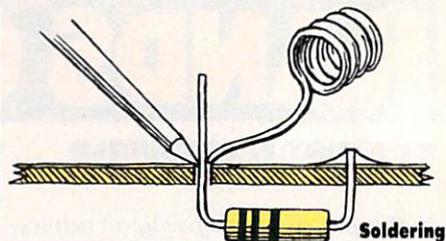
- *Logic probe*—for determining whether a circuit is producing the expected signals. Later in this series, I'll show you how to make one. *Note:* A multimeter measures elements of electrical power; that is, voltage, current (amps), and resistance (ohms). A logic probe measures electrical signals (the famous "1s" and "0s" of computer logic).

### SOLDERING AND DE-SOLDERING

Although the instructions that come with a multimeter and logic probe may be sufficient, I'll give you a "plain-English" short course in metering in next month's issue. For now, let's learn how to wield the soldering iron "professionally."

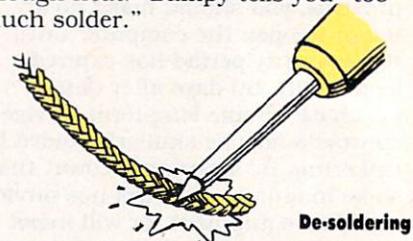
#### Techniques

1. Place the soldering iron in the stand and plug it in. In a few moments, the tip will be hot enough to melt solder and should look silvery and clean. Wipe it on a dampened (not soaking wet) sponge and touch it to a bit of solder. The solder should flow smoothly over the tip, "tinning" it with a bright coat. Wipe the newly tinned tip on the sponge. The iron is now ready to go to work.



Soldering

2. To solder a connection (as when you are attaching a resistor to a PC board), wipe the soldering tip on the sponge, then touch it to the juncture of the two parts being soldered. Allow the juncture to heat up to the count of "One-thousand-one, one-thousand-two, one-thousand-three." Touch the end of a piece of solder to the point where the two parts meet, and allow it to flow smoothly over the joint. Don't underheat the joint (or overheat it, for that matter) and don't overdo the solder. Remove the solder first, then the iron. You don't want the joint to look frosty, globular, or lumpy. Frosty and globular tells you "not enough heat." Lumpy tells you "too much solder."



De-soldering

3. To de-solder a connection, wipe the properly heated soldering-iron tip on the sponge, place a piece of copper de-soldering braid against the joint you are taking apart, and heat the braid until the solder melts and is "wicked up" by the braid. Use fresh braid as necessary, cutting off the used part with your scissors or wire cutter. Watch your fingers! The braid will be very hot.

### PEP TALK

Long ago, America developed a reputation for tinkering. Luminaries like Benjamin Franklin, Thomas Jefferson, the Wright brothers, and Thomas Edison, as well as uncounted "plain folks" (including, of course, the "Connecticut Yankee" in King Arthur's court), were dedicated tinkerers, providing the world with wonderful gadgets of all sorts. In our own time, we have tinkerers to thank for, among much else, the microcomputer itself. Anyway, welcome to a great American tradition!

Next month, we'll enter the "inner sanctum" of the computer, meeting the main participants in the rituals performed therein. While we're visiting, I'll show you how to use your multimeter and logic probe and, of course, how to clean house. ☐

# ATARI 520ST

## A MACINTOSH FOR THE MILLIONS?

With the impressive 520ST, Atari has delivered on its promise of "power without the price." This breakthrough system is as powerful and easy to use as Apple's Macintosh, has full-color capabilities . . . and costs less than \$1,000!

Yet the ST is like a wild stallion: beautiful to look at, but of little practical value until it's harnessed. The ST has more memory (512K), higher speed, greater graphics resolution, and more built-in interfaces than many microcomputers, but there's practically no software available to take advantage of all that power. At this writing, about all you can do with the ST is program in Logo. The computer's success will depend on how well—and how many—software companies translate its capabilities into programs that meet users' needs.

This review is based on a day spent at Atari headquarters in Sunnyvale, California; discussions with a software developer working on a pre-production model; and an evaluation of one of the first STs purchased from a computer store. Neither a color monitor nor BASIC—which is to be included with later machines—nor any other commercial software (besides Logo) was available when we wrote this review.

### THE \$799 PACKAGE

The computer is sold in two different price/equipment configurations: \$799 and \$999. The heart of the 520ST is the CPU/keyboard unit, which includes a full-function, calculator-style keypad for quick entry of numbers and mathematical formulas. Included in the \$799 list price are a two-button mouse, floppy disk drive, and 12-inch, hi-res black-and-white monitor.

The disk drive uses the new 3½-inch floppy disks (safely encased in hard plastic and fitting neatly into a shirt pocket) that are slowly replacing standard 5¼-inch disks.

The monitor is capable of displaying all dots in the computer's top resolution of 640×400. The monitor's screen image is very sharp, rivaling the Mac's, though the monitor we tested seemed misaligned and the picture quivered.



For \$999, you get the same system with an RGB instead of a monochrome monitor. The color modes are medium (640×200) or low (320×200) resolution, so the picture should be less sharp. Unlike earlier Atari computers, the ST cannot be used with a television.

A big selling point for the ST is the number of interfaces built into the back of the keyboard/CPU, many of which cost extra or aren't available on other systems. These include both "in" and "out" MIDI (Musical Instrument Digital Interface) ports for connecting to synthesizers and other electronic instruments; printer, modem, joystick/mouse, floppy disk and hard disk ports; and a cartridge slot.

While not as versatile as the card slots of the IBM or Apple, these interfaces provide options for future expansion and avoid a bulky system unit. Reportedly, the system can also produce excellent sound; however, since DR Logo contains no sound

commands, we weren't able to sample the ST's tones.

### A MOUSE TO CLICK

You operate the ST by rolling a mouse around on the desktop next to the computer. A cursor on the screen moves according to how you move the mouse. You use the cursor to point to the picture, or "icon," of the program or operation you wish to perform (a trash can, for example, lets you delete files). You then press one of the mouse's buttons to select that item. If you find operating a mouse awkward, you can use cursor keys.

When you turn on the ST, a "dialog box" (a framed section of screen containing a message) asks you to insert the system disk. Click the mouse on the OK box, and TOS (the operating system) loads in from a disk. This takes about 30 seconds.

Then the GEM (Graphics Environment Manager) "desktop" appears on screen. Similar to the Mac's *Finder* desktop environment, GEM uses drop-down menus and adjustable windows, as well as mouse control. Since most programs written for the Atari ST will use GEM, learning new programs will be relatively easy.

Included with GEM is a minicomunications program that lets you connect with other computers via modem, but does not let you send or receive files.

### A TURTLE TO MOVE

DR Logo, included with the ST, is a delight—both powerful and versatile. The Logo turtle and the figures it draws appear in one window, and your commands (e.g., FORWARD 50) show up in another. This makes it easy to experiment with Logo programs and procedures while viewing the results directly. A third window opens for editing, and a fourth lets you "watch" the execution of your program statement-by-statement—a valuable aid for debugging.

Drop-down menus let you set color, pattern, turtle position, and other features directly. They also allow you to choose edit commands by mouse, and load or save procedures or pictures. Since the Logo version that came with our ST occasionally locked up the computer with a LOGO SYSTEM

## 520ST FACTS

SUGGESTED RETAIL PRICE: \$799 w/monochrome monitor, \$999 w/RGB

MEMORY: 512K RAM; 16K ROM

VIDEO DISPLAY: Atari monochrome or RGB monitor

GRAPHICS: 3 display resolutions: 640×400, monochrome; 640×200, 4 colors; and 320×200, 16 colors (chosen from 512 available colors)

SOUND: 3 voices

KEYBOARD: 94 keys, including 18-key calculator-style numeric keypad, 10 function keys, plus HELP and UNDO keys

INTERFACES: MIDI (Musical Instrument Digital Interface) in & out; monitor; parallel (for printer) & serial (for modem); floppy and hard disks; cartridge; mouse/joystick ports

BUNDLED HARDWARE: 360K disk drive; monitor; two-button mouse

BUNDLED SOFTWARE: TOS, GEM (Graphics Environment Manager), and DR Logo on disk

ERROR, we recommend you save your work frequently.

You can program the turtle to write anywhere on the screen in different typefaces with 128 characters. This display of the computer's graphics ability bodes well for future software packages.

It's a shame no more software was available for our tests, though there's a crop on the way (see box). However, since the ST is incompatible with other computers, it will undoubtedly be some time before there's a full library of applications ready.

### 520ST VS. MACINTOSH

Comparisons of the ST to the Mac-

intosh are unavoidable; in fact, the ST has long been dubbed the "Jackintosh" after Jack Tramiel, who heads Atari.

Both are driven by Motorola's 68000 microprocessor, a 16/32 bit chip that's one of the most powerful used in personal computers today.

The ST takes up a lot more room on your desktop than the Mac because it has a separate disk drive, a larger monitor (12 inches vs. 9 inches), and a larger keyboard. On the other hand, many people find the Mac's keyboard too small. The ST's includes cursor and function keys, and a numeric keypad, while the separate Mac keypad costs extra.

## 520ST SOFTWARE

While the Atari 520ST was born with less software than most computers, several developers are writing new applications software or are "porting" existing programs for it. Many of these are planned for release before the end of the year. Here's a list of software we've tracked down.

**Atari** is finishing a version of BASIC to be included on the language disk with Logo at purchase. Those who buy STs before the BASIC is ready can add it to their language disks later at no additional cost.

**Batteries Included.** (416) 881-9816, is rewriting its popular integrated package, *HomePak* (\$69), which includes communications, word processing, and filing, to run on the 520ST. Russ Wetmore, the developer, says it will be the best version of *HomePak* available.

**Digital Research Inc.**, (408) 649-3896, the company that developed the CPM operating system and wrote the GEM software packed with the 520ST, is coming out with *GEM Write* (\$99) and *GEM Paint* (\$49), which Atari will market.

**The Dragon Group.** (304) 965-5517, says it is now shipping *4 x FORTH Level 1* (\$99), a version of the Forth programming language, and *FORTH Accelerator* (\$75). Coming are *4 x FORTH Level 2* (\$149) and *Developer System* (\$500).

**Infocom.** (617) 492-6000, maker of *Zork*, *Deadline* and a host of other text-adventure games and mysteries, has readied 16 of its games for the 520ST (\$39-\$49).

**Philon.** (212) 807-0303, has six programming languages on the way: *Philon FAST/BASIC-M* (\$99); *FAST/BASIC-C* (\$99); *FAST/COBOL* (\$249); *FAST/C* (\$149); *FAST/Pascal* (\$129); and *FAST/FORTRAN* (\$129).

**Rising Star.** (213) 373-9112, which wrote the *Valdocs* software bundled with Epson QX-10 and QX-16 computers, is converting that software for the 520ST. In addition to *Valdocs 2*, which includes writing and communications functions, the company will release *Valdraw* and *Valpaint* for the ST.

**Spinnaker.** (617) 494-1200, says it

will have several programs ready by December: *Perry Mason*, *Homework Helper Reading*, and *Homework Helper Math*. Next year, Spinnaker will release ST versions of *The Wizard of Oz* and *Treasure Island* from its Windham Classics line; and *Amazon*, *Dragon World*, and *Nine Princes in Amber* from its Telarium line.

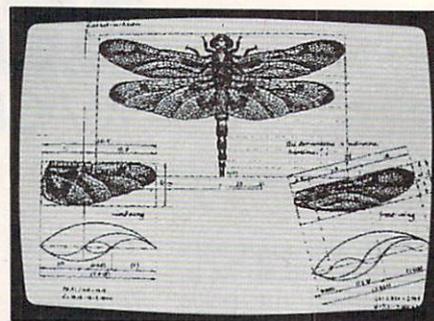
**Stoneware, Inc.**, (415) 454-6500, is working on *DB Master*, a data-base management program.

**VIP Technologies.** (805) 968-4364, is developing a spreadsheet, *VIP Professional* (\$99 introductory offer, \$149 after this month). The company calls it a "Lotus 1-2-3 clone." After this release, the company will follow with *VIP Freelance* (a word processor), *VIP Analysis* (a data base), *VIP Consultant* (a product management tool), and *VIP Forethought* (an outline processor).

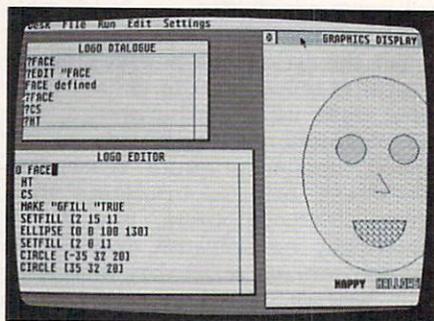
Finally, **Academy Software**, **American Educational Software**, and **The Learning Company** are all working on educational software, according to Sig Hartmann, president of Atari's software division.

How much of this software will make it to market, how many additional projects will be undertaken—and when they will be completed—depends on a few factors:

1. The 520ST will have to be sold in large enough quantities to spur developers to finish products and encourage retailers to stock them.
2. Developers will need support from Atari. At presstime, the system documentation was spotty and some developers were having trouble getting answers to their questions.
3. The GEM user interface, which makes the Atari 520ST operate like a Macintosh, also runs on the IBM PC. If software is written to work with GEM on the IBM, it's likely that much of it will then be easily convertible to the Atari. It's improbable, however, that much will be written for the Atari first.
4. The ease of transferring Macintosh programs to the Atari 520ST is also a factor. Some developers say it's difficult and time-consuming, while others (including Atari) say it's relatively easy.



A display of hi-res graphics.



Three of Logo's four windows: each can be expanded, moved, or closed.

In monochrome, the ST has higher graphics resolution than the Mac (640x400 vs 542x342). The ST also has color (the Mac is black-and-white only); is more expandable (with built-in hard disk, MIDI, parallel, and serial interfaces, among others); and has a tremendous price advantage (\$799 vs. \$2,795 for a 512K Mac).

On the other hand, there's a substantial and growing library of Mac programs in all fields, compared to almost none for the ST. When you buy a Mac, you get *MacWrite* and *MacPaint*, which make the computer immediately useful. The Mac's disk drive stores slightly more than the ST's (400K vs. 360K). And the Mac's reliability is proven. It remains to be seen whether the ST will be as dependable.

### WHO SHOULD BUY IT?

The 520ST is potentially powerful enough to perform almost any business task currently handled by an IBM PC. With full color and Logo included, the ST could fill the bill for kids. And, with the right software, it could suit just about any home need—serious enough to do business with, yet including color, joysticks, and sound for the greatest gaming.

It's a good rule never to buy a computer unless it does what you want and need . . . now. So, we're eagerly waiting for programmers to channel its power in creative new ways. It has the potential to be a super-useful computer. ☐

# If being clubbed by trolls, shot by gangsters, stranded in space and trapped in pyramids doesn't make you happy, we'll give your \$7.95 back.

With Infocom's interactive fiction, you become the main character in a challenging story of fantasy, mystery, adventure or science fiction the

very minute you slip the disk in your computer. You communicate—and the story responds—in plain conversational English. And your every decision determines the story's outcome.

It's almost too fun to be healthy. And to show you just how ridiculously enjoyable Infocom interactive fiction can be, we've put together a Sampler disk with portions of four different stories. ZORK® I, the all time best selling fantasy, sends you in search of fabulous treasure. PLANETFALL™ teleports you forward in time to a mysterious planet where your only ally is a mischievous robot. The WITNESS™ puts you at the scene of a crime in a hardboiled 1930's whodunit. INFIDEL™ transforms you into a soldier of fortune seeking high adventure in the land of pyramids.

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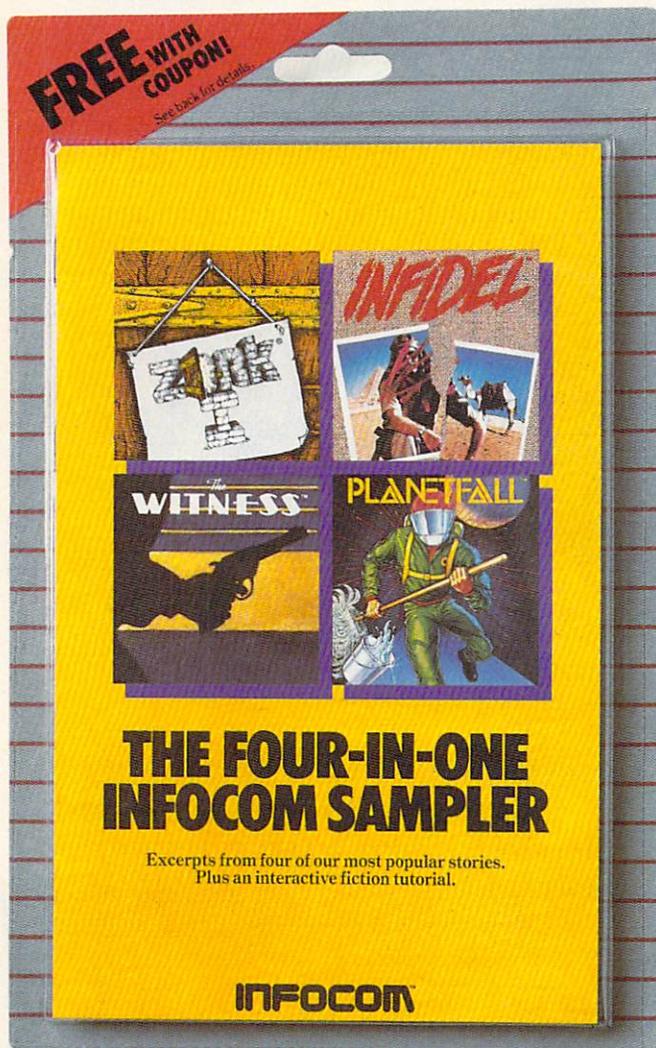
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CIRCLE READER SERVICE 17



If you like it, just fill out the coupon on the back of the package and we'll apply your purchase price toward any Infocom story. If you don't, we'll refund your money. You can't lose.

# Earth will be destroyed in 12 minutes to make way for a hyperspace bypass. Should you hitchhike into the next galaxy? Or stay and drink beer?

Simply slip the disk in your computer and suddenly you are Arthur Dent, the dubious hero of *THE HITCHHIKER'S GUIDE TO THE GALAXY™* a side-splitting masterwork of interactive fiction by novelist Douglas Adams and Infocom's Steve Meretzky. And every decision you make will shape the story's outcome. Suppose for instance you decide to linger in the pub. You simply type, in plain English:

>DRINK THE BEER

And the story responds:

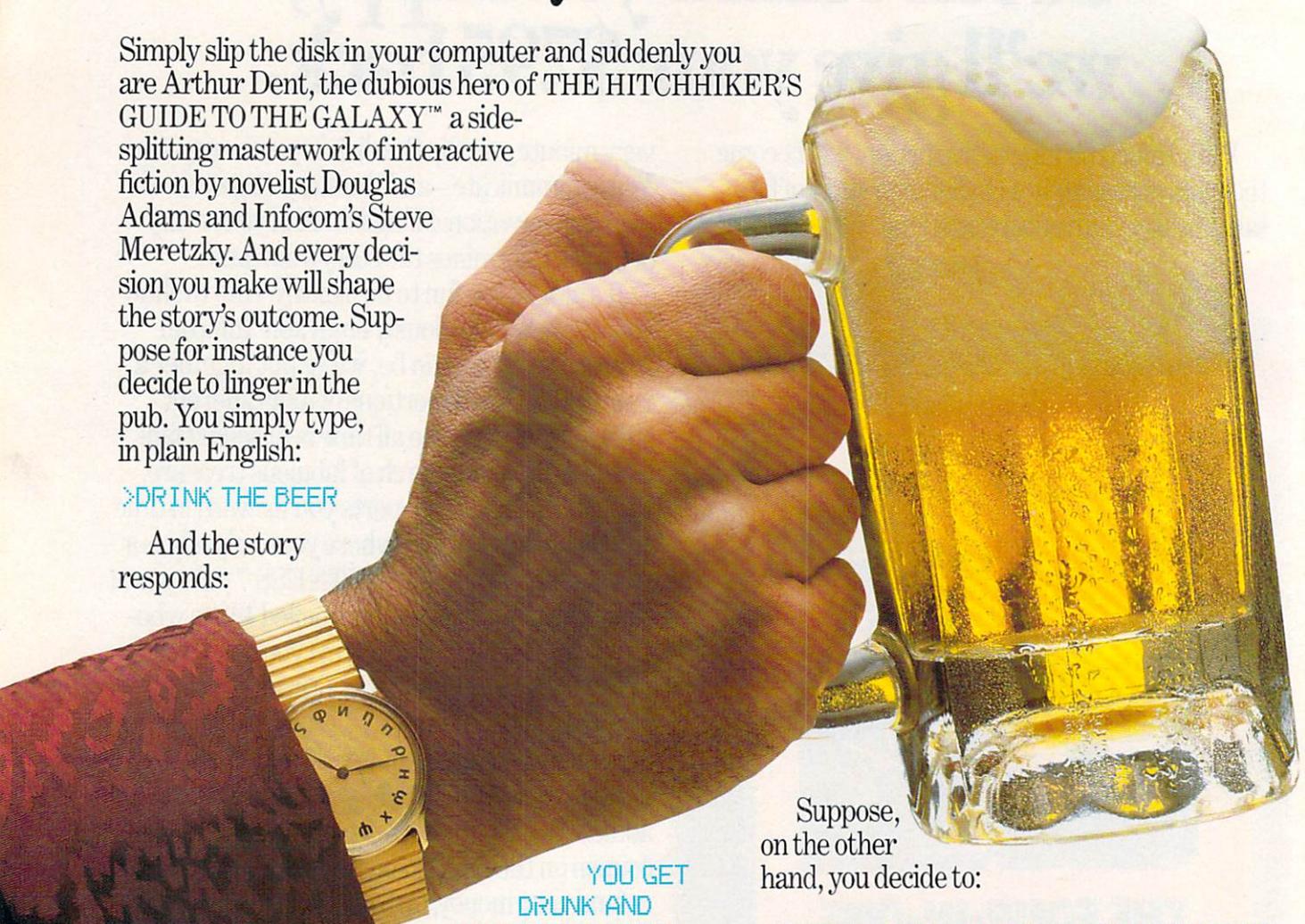
YOU GET DRUNK AND HAVE A TERRIFIC TIME FOR TWELVE MINUTES, ARE THE LIFE AND SOUL OF THE PUB, TELL SOME REALLY TERRIFIC STORIES, MAKE EVERYONE LAUGH A LOT, AND THEY ALL CLAP YOU ON THE BACK AND TELL YOU WHAT A GREAT CHAP YOU ARE AND THEN THE EARTH GETS UNEXPECTEDLY DEMOLISHED, YOU WAKE UP WITH A HANGOVER THAT LASTS FOR ALL ETERNITY, YOU HAVE DIED.

Suppose, on the other hand, you decide to:

>EXIT THE VILLAGE PUB THEN GO NORTH

In that case you'll be off on the most mind-bogglingly hilarious adventure any earthling ever had.

The Hitchhiker's Guide to the Galaxy comes complete with Peril Sensitive Sunglasses, a Microscopic Space Fleet, a DON'T PANIC Button, a package of Multipurpose Fluff and orders for the destruction of your home and planet.



You communicate—and the story responds—in full sentences. Which means that at every turn, you have literally thousands of alternatives. So if you decide it might be wise, for instance, to wrap a towel around your head, you just say so:



>WRAP THE TOWEL AROUND MY HEAD

And the story responds:

THE RAVENOUS BUGBLATTER BEAST OF TRAAAL IS COMPLETELY BEWILDERED. IT IS SO DIM IT THINKS IF YOU CAN'T SEE IT, IT CAN'T SEE YOU.

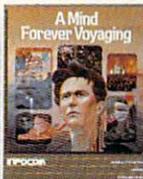
But be careful about what you say. Or one moment you might be strapped down, forced to endure a reading of the third worst poetry in the galaxy; the next you could be hurtling through space with Marvin the Paranoid Android aboard a stolen spaceship.

And simply staying alive from one zany situation to the next will require every proton of puzzle solving prowess your mere mortal mind can muster. Even simple tasks can put you at wit's end:

>OPEN THE DOOR

And the story responds:

THE DOOR EXPLAINS, IN A HAUGHTY TONE, THAT THE ROOM IS OCCUPIED BY A SUPER-INTELLIGENT ROBOT AND THAT LESSER BEINGS (BY WHICH IT MEANS YOU) ARE NOT TO BE ADMITTED. "SHOW ME SOME TINY EXAMPLE OF YOUR INTELLIGENCE," IT SAYS, "AND MAYBE, JUST MAYBE I MIGHT RECONSIDER."



Other interactive science fiction stories from Infocom include *PLANETFALL*,™ in which you're stranded on a mysterious deserted world. *STARCROSS*,™ a puzzling challenge issued eons ago and light-years away. *SUSPENDED*,™ the race to stabilize an entire planet's life support systems. And *A MIND FOREVER VOYAGING*,™ a radically new work of serious science fiction in which you explore the future of mankind.

But don't panic. You'll be accompanied every light-year of the way by your trusty Hitchhiker's Guide, which you can always depend on for up-to-the-nanosecond information. Well, almost always:

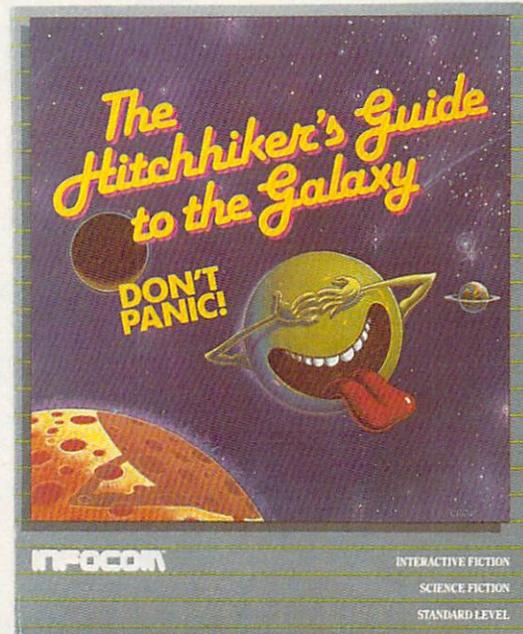
>CONSULT THE HITCHHIKER'S GUIDE ABOUT THE MOLECULAR HYPERWAVE PINGER

And the story responds:

SORRY, THAT PORTION OF OUR SUB-ETHA DATABASE WAS ACCIDENTALLY DELETED LAST NIGHT DURING A WILD OFFICE PARTY.

So put down that beer, take that towel off your head, open the door, hitchhike down to your local software store today and pick up *THE HITCHHIKER'S GUIDE TO THE GALAXY*. Before they put that bypass in.

Still not convinced? Try our Sampler Disk which includes portions of four different types of stories for a paltry \$7.95. If it doesn't get you hooked on the addictive pleasures of Infocom, return it for a full refund. If it does, you can apply the price toward any Infocom story. You can't lose!



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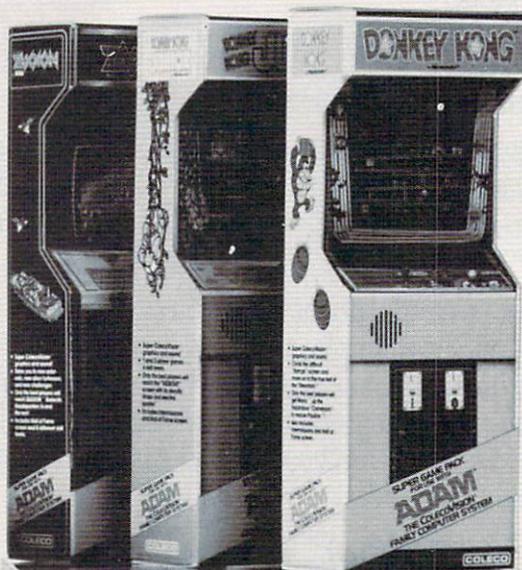
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Just call us toll free and we'll send you a brochure.

Then select the game cartridges, peripherals or software programs that you've been looking for.\*

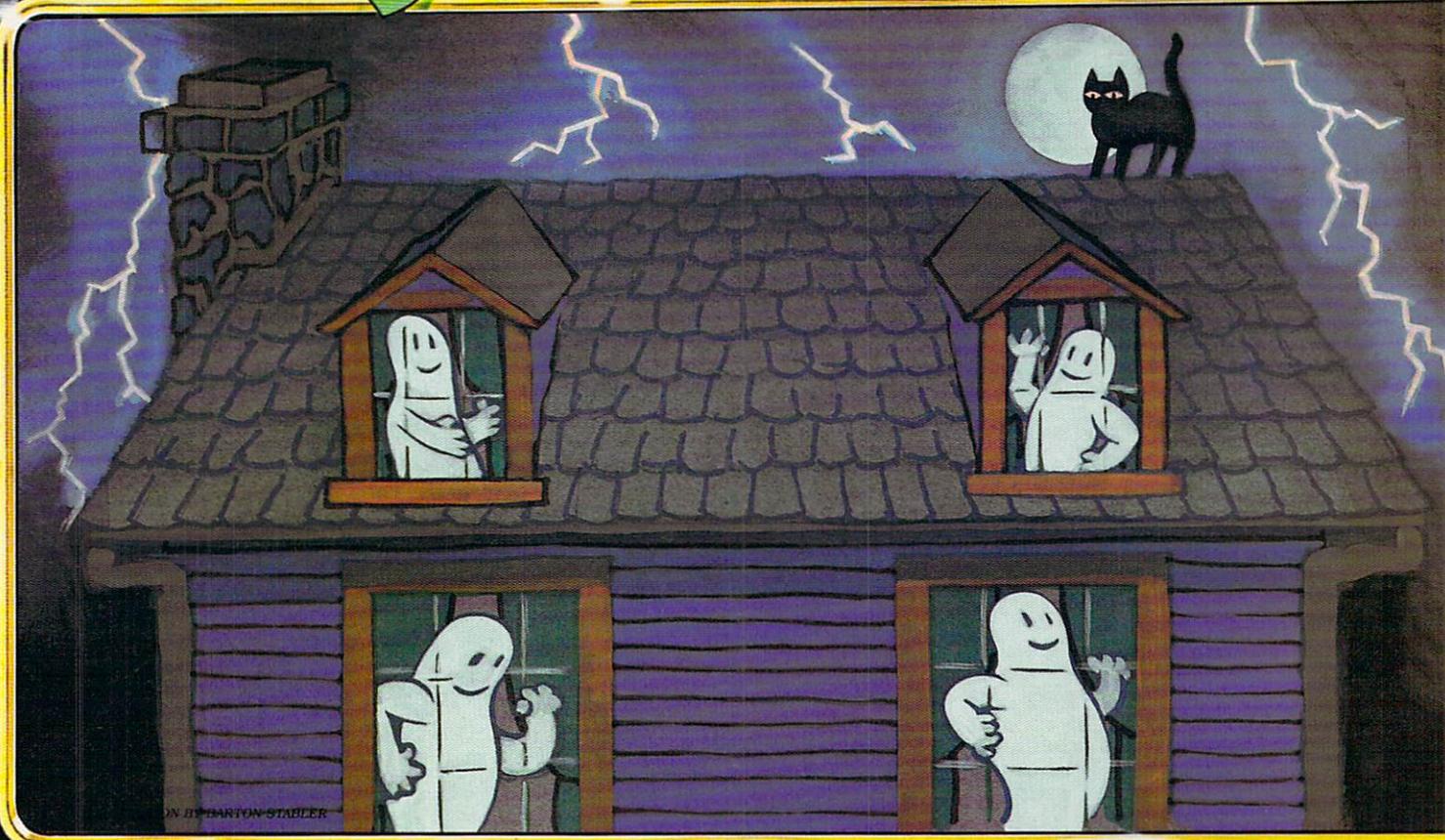
So call today. Our lines are open from 8:30AM to 5:00PM EST. And to save time order by phone.

**ADAM™**  
**COLECO VISION®**



\*Availability of some software programs subject to change.

# the PROGRAMMER



★ O C T O B E R ★

**TIPS TO THE TYPIST**

Page 46

How to type in FAMILY COMPUTING'S programs, and what to do if a program doesn't work.

**BEGINNER PROGRAM**

Page 47

... And they're off! Pick a winner in the *Character Race*, and learn how your computer picks random numbers.

**HALLOWEEN PROGRAM**

Page 52

BOO! Let *Halloween Classic* put some "spirits" into your spooky holiday!

**PUZZLE**

Page 60

Can you read the message in the noodles before you're really in the soup?

**PROGRAMMING P.S.** Page 71 Corrections to previous months' programs.

ILLUSTRATION BY JIM CHERRY III

Cherry

# TIPS TO THE TYPIST

Typing in FAMILY COMPUTING'S programs is a great way to become familiar with your computer and get some free software "to boot." But it's frustrating to type in a long program only to find it doesn't work as it should. When this happens, simple typing errors are most often the cause. So to help you gain greatest value from the time you spend computing with us, we've put together some tips on how to avoid typing errors—and what to do if a program doesn't run right. Read them carefully and you'll be up and running in no time!

## SOME GENERAL RULES

**1. Do** read instructions and program headings carefully. Make sure your computer has enough memory, the right version of BASIC, and the appropriate peripherals (joysticks, printers, disk drives, etc.) for a program.

**2. Don't** let fatigue and boredom contribute to inaccuracy. If you're new to programming, try typing in shorter programs first. Type in a longer program in easy stages, **SAVE**ing each installment as you go.

**3.** Until you are fairly familiar with BASIC, **do** assume that every word, number, letter, space, and punctuation mark in a program listing must be copied accurately if the program is to function as intended.

**4. Do** watch out for potential trouble spots. About 90 percent of all typing errors occur in **DATA** statements: long lines filled with numbers or incomprehensible secret codes. If possible, have someone else read **DATA** to you as you type, and help you proofread it if you have trouble later on. Proofreading from a printout is best.

**5. Do** be aware that program listings printed in FAMILY COMPUTING sometimes differ from what you will see on your computer's screen or in printouts you produce at home. Our program listings are printed 54 characters wide. Thus, a single BASIC program "line" (sometimes called a "logical line") may appear as several lines in our listing. If you are typing along and reach the right margin of the printed listing, don't press **RETURN** or **ENTER** until you've checked to see if the program "line" you're typing really ends there. The way to tell is to check if the line following begins with a multiple of 10 that follows in sequence from the previous logical line. **REM** statements are the exception and typing them in is optional.

Several computers (ADAM, Apple, Atari, and TI) format BASIC programs according to unique rules of their own. Don't let this throw you—just type in the listing exactly as printed in the the magazine and your computer is guaranteed to accept it, even though it may end up looking a little different on your screen.

**6.** One foolproof way to correct an error in a BASIC program line is to type the line in again from the beginning, and press **RETURN** or **ENTER** to set it in place of the old one in your computer's memory.

## WHICH PROGRAMS WILL RUN ON MY COMPUTER?

Unless a program heading indicates otherwise, programs

will run on any version of the computer specified, with the following exceptions:

- Apple programs run under Applesoft (*not* Integer) BASIC on the Apple II (with language card), II plus, IIe, and IIc. The Macintosh is not supported as of this writing.
- IBM compatibility of BASIC programs is determined by both the hardware and the version of BASIC used. Our programs for IBM PC & compatibles are composed on IBM PC & PCjr's, and tested under most versions of BASIC available for these machines. They are then tested on a variety of IBM-compatible machines under the versions of BASIC supplied with them. Each "IBM PC & compatibles" program listing is supplemented by a rundown of the machines and versions of BASIC under which the program is guaranteed to work. Most programs will probably run on many other PC Compatibles and under other versions of BASIC.
- TI programs not marked "w/TI Extended BASIC" should be run under standard (console) TI BASIC.

## DEBUGGING HINTS

Sometimes even the most careful typist makes a mistake. Don't expect your program to run right off the bat. If you have problems, remain patient and follow these general instructions for a probable quick fix.

**LIST** the program in screen-size chunks (check your manual for instructions on how to **LIST** parts of a program). Even better, if you have a printer, get a printout. Compare what you've typed in—letter by letter—to the published program. Make sure that you haven't typed the numeral 0 (which is slashed in our listings) for the letter O (which isn't), swapped a small letter "l" for the numeral one, dropped or mixed up some punctuation, switched uppercase text for lowercase or vice versa (particularly in **DATA** statements or within quotes), or miscounted the characters (and/or spaces) between a pair of quotes. Get someone to help you if possible.

Check your **DATA** statements—then check them again. Mistakes in **DATA** statements are the single most common cause of program failures. Bad **DATA** can cause a program to malfunction at any point, which can be misleading.

## WHAT TO DO WHEN YOU'VE DONE IT ALL

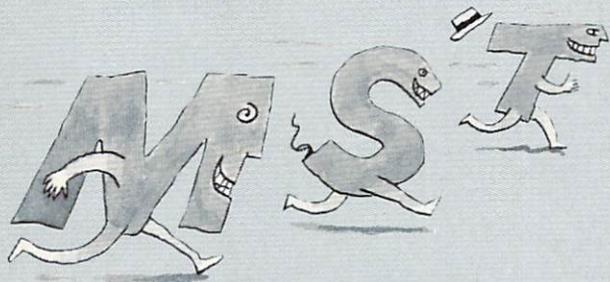
We're proud of our programs, and we want you to enjoy them as much as we enjoy writing them. If you just can't figure out what's wrong with a program, we'd like to help. But we can't if you don't provide us with important information. When you write us (no telephone calls, please), indicate:

- Which program you're having trouble with.
- Which type of computer you own, the type of BASIC you are using, how much RAM your computer has, and what DOS and peripherals you're using, if any.
- What error messages your computer has given you.
- Your name, address, and telephone number.

If possible, please enclose a printout. Address all correspondence to Programming P.S., FAMILY COMPUTING, 730 Broadway, New York, NY 10003.

# CHARACTER RACE

BY JOEY LATIMER



As a child, I used to vacation with my family at a popular mountain resort that featured a big penny arcade. I won my first pocketknife there, playing games of skill for "win-tickets." As I recall, a pocketknife was worth about 25 "win-tickets," and I won most of mine at a game called "Beanbag Horse Race." You would beat other players in driving a tin horse down a track by throwing a stream of beanbags into a hole marked with your color.

This month's Beginner Program was inspired by my childhood recollections. In *Character Race*, four characters (letters, numbers, etc.) are entered into the computer. The computer then "drives" these characters across the screen for an exciting race. Of course, the computer uses random numbers, not beanbags, to drive the characters; so, strictly speaking, this is a game of chance, not skill. We can't promise you a pocketknife, either—but we hope you have fun.

## PROGRAM NOTES

*Character Race* begins by storing the characters you enter in four compartments of a string array, RCS. At the same time, four compartments of a parallel numeric array, RP, are given values denoting the characters' starting positions on the left side of the screen.

To run the race, the computer generates a random number between one and four, pointing to one

of the characters. This character is printed on the screen at the horizontal position marked by its pointer in RP. The pointer is then increased by one, so that the next time this character is chosen, it will be printed one space closer to the right side of the screen (the finish line).

The process repeats until an IF test tells the computer that one lucky character has reached the far right column of the screen. At this point, a special effect in color or sound (different for each machine) informs the user that the race is won. The screen clears, the winning character is announced, and the program ends.

Some versions of the program (Apple, ADAM) use the expression PRINT CHR\$(7); to sound a tone at the end of the race (the Atari version uses PRINT CHR\$(253);). According to a standard for computers, called ASCII, printing character seven should cause a tone to sound. On systems that comply with this standard, it's a handy way to make a beep!

To prevent BASIC's READY prompt from appearing right underneath the final announcement, some versions end with a blank PRINT statement.

## RANDOM NUMBERS

How does a computer pick a number at random? Let's first examine what "random" means.

In the real world, it's difficult to predict the outcome of a single random

event because it isn't biased toward particular alternatives. Most of us, as a result, tend to associate "randomness" with "unpredictability."

In mathematics, however, formulas exist for generating lists of values that look like they were produced by a random process but are, nevertheless, perfectly predictable. Because such formulas use the result of a prior calculation as input, knowing the formula and the first value fed into it (called the "seed" value) allows you to predict succeeding values.

Most computers use formulas like this to generate "random" numbers. As you can see, the numbers aren't really "random" in the sense of being unpredictable. In fact, unless special steps are taken, the BASIC on some computers will produce the same series of values every time you RUN a program. Though this repeatability is useful in some situations, it's not great for programming games of chance.

To prevent *Character Race* from running the same way each time, we've used a RANDOMIZE command or special randomizing procedure to reseed the random number formula wherever necessary. Some systems (TRS-80 and Atari) randomize automatically.

On the Apple, we've implemented a routine that uses the RND function to

pull random numbers from the system until you press a key. Thereafter, the program continues generating numbers from this (hopefully unpredictable) point.

On the ADAM, we've used a procedure that asks you to input any number. A FOR/NEXT loop accesses this number of random values before proceeding with the race. ADAM owners may wish to try running the program twice with the same number. Can you guess what the result will be?

## MODIFYING THE PROGRAM

Daring programmers may wish to modify *Character Race* so that they don't have to RUN the program each time they want to play. The modification will involve adding statements to the end of the listing. Following a delay or a keypress, they will branch back to the beginning of the program. Once the randomizing is done, it's not necessary to do it again during a run, so if you make the modification, branch back to below the RANDOMIZE statement or randomizing routine.

As always, if you come up with a good enhancement of one of our Beginner Programs, we'd like to see it and maybe mention it in a future issue. Send a printout (no tapes or disks, please) to: Beginner Programs FAMILY COMPUTING 730 Broadway New York, NY 10003

## ADAM/Character Race

```

10 DIM rc$(4),rp(4)
20 HOME
30 PRINT "To randomize, input"
40 INPUT "a number greater than 1. ";n
50 IF n <= 1 THEN 40
60 FOR x = 1 TO n
70 q = RND(1)
80 NEXT x
90 HOME
100 FOR i = 1 TO 4
110 PRINT "What is the character"
120 PRINT "for racer #";i;
130 INPUT rc$(i)
140 IF LEN(rc$(i)) > 1 THEN 130
150 rp(i) = 1
160 NEXT i
170 HOME
180 PRINT "... And they're off!"
190 x = INT(RND(1)*4)+1
    
```

ILLUSTRATIONS BY JOSH COSEFIELD

## BEGINNER PROGRAM

```
200 VTAB x*4
210 HTAB rp(x)
220 PRINT rc$(x)
230 FOR de = 1 TO 30
240 NEXT de
250 rp(x) = rp(x)+1
260 IF rp(x) < 32 THEN 190
270 PRINT CHR$(7);
280 FOR de = 1 TO 1000
290 NEXT de
300 HOME
310 PRINT "... And the winner is ";CHR$(34);rc$(x);CHR$(34);"!"
```

### Apple/Character Race

```
10 DIM RCS(4),RP(4)
20 HOME
30 PRINT "PRESS ANY KEY TO RANDOMIZE."
39 REM --"POKE -16368,0" PREPARES KEYBOARD--
40 POKE -16368,0
49 REM --"PEEK(-16384)" TELLS IF KEY IS PRESSED--
50 IF PEEK(-16384) < 128 THEN N = RND(1):GOTO 50
59 REM --"POKE -16368,0" CLEARS KEYBOARD--
60 POKE -16368,0
70 HOME
80 FOR I = 1 TO 4
90 PRINT "WHAT IS THE CHARACTER FOR RACER #";I;
100 INPUT RCS(I)
110 IF LEN(RCS(I)) > 1 THEN 100
120 RP(I) = 1
130 NEXT I
140 HOME
150 PRINT "... AND THEY'RE OFF!"
160 X = INT(RND(1)*4)+1
170 VTAB X*4
180 HTAB RP(X)
190 PRINT RCS(X);
200 RP(X) = RP(X)+1
210 IF RP(X) < 41 THEN 160
220 PRINT CHR$(7);
230 FOR DE = 1 TO 500
240 NEXT DE
250 HOME
260 PRINT "... AND THE WINNER IS ";CHR$(34);RCS(X);CHR$(34);"!"
```

### Atari 400, 800, 600/800XL, & 130XE/ Character Race

```
10 DIM RCS(4),TS(40),RP(4)
19 REM --PREPARE KEYBOARD FOR INPUT--
20 OPEN #1,4,0,"K:"
29 REM --TURN OFF CURSOR--
30 POKE 752,1
40 PRINT CHR$(125);
50 FOR I=1 TO 4
60 PRINT "WHAT IS THE CHARACTER FOR RACER #";I;
70 INPUT TS
80 IF LEN(TS)>1 THEN 70
90 RCS(I,I)=TS
100 RP(I)=0
110 NEXT I
120 PRINT CHR$(125);
130 PRINT "... AND THEY'RE OFF!"
140 X=INT(RND(1)*4)+1
150 POSITION RP(X),X*4
160 PRINT RCS(X,X);
170 RP(X)=RP(X)+1
180 IF RP(X)<40 THEN 140
190 PRINT CHR$(253);
200 FOR DE=1 TO 250
210 NEXT DE
220 PRINT CHR$(125);
230 PRINT "... AND THE WINNER IS ";CHR$(34);RCS(X,X);CHR$(34);"!"
239 REM --TURN ON CURSOR--
240 POKE 752,0
250 PRINT
```

### Commodore 64 & 128 (C 64 mode)/Character Race

```
10 DIM RCS(4),RP(4)
20 PRINT CHR$(147);
30 FOR I=1 TO 4
40 PRINT "WHAT IS THE CHARACTER FOR RACER #";I;
50 INPUT RCS(I)
60 IF LEN(RCS(I))>1 THEN 50
70 RP(I)=0
80 NEXT I
90 PRINT CHR$(147);
100 PRINT "... AND THEY'RE OFF!"
110 X=INT(RND(1)*4)+1
119 REM --SET VERTICAL PRINT POSITION--
120 POKE 214,X*4
130 PRINT
140 PRINT TAB(RP(X));RCS(X);
150 RP(X)=RP(X)+1
160 IF RP(X)<40 THEN 110
170 FOR DE=1 TO 100
179 REM --SET A RANDOM SCREEN COLOR--
180 POKE 53280,INT(RND(1)*13)+2
190 NEXT DE
199 REM --RESET SCREEN TO NORMAL COLOR--
200 POKE 53280,254
210 PRINT CHR$(147);
220 PRINT "... AND THE WINNER IS ";CHR$(34);RCS(X);CHR$(34);"!"
230 PRINT
```

### IBM PC & compatibles\*/Character Race

```
10 DIM RCS(4),RP(4)
20 PRINT "Have you a 40 or an 80 column display"
30 INPUT "(Please input 40 or 80) ";DW
40 IF DW<>40 AND DW<>80 THEN 30
50 WIDTH DW
60 SCREEN 0,0
70 KEY OFF
80 CLS
90 RANDOMIZE
100 CLS
110 FOR I=1 TO 4
120 PRINT "What is the character for racer #";I;
130 INPUT RCS(I)
140 IF LEN(RCS(I))>1 THEN 130
150 RP(I)=1
160 NEXT I
170 CLS
180 PRINT "... And they're off!"
190 X=INT(RND*4)+1
200 LOCATE X*4,RP(X),0
210 PRINT RCS(X);
220 RP(X)=RP(X)+1
230 IF RP(X)<=DW THEN 190
240 SOUND 440,25
250 FOR DE=1 TO 500
260 NEXT DE
270 CLS
280 PRINT "... And the winner is ";CHR$(34);RCS(X);CHR$(34);"!"
290 PRINT
```

\*This program has been tested on the following computers, using the BASICs shown:  
IBM PC w/Color Graphics Adapter or Monochrome Printer Card, w/Disk BASIC D2.00  
or Advanced BASIC A2.00.  
IBM PCjr, w/Cassette BASIC C1.20 or Cartridge BASIC J1.00.  
Tandy 1000, w/GW-BASIC 2.02 version 00.05.00.

### TRS-80 Color Computer/Character Race

```
10 DIM RCS(4),RP(4)
20 CLS
30 FOR I=1 TO 4
40 PRINT "WHAT IS THE CHARACTER"
50 PRINT "FOR RACER #";I;
60 INPUT RCS(I)
70 IF LEN(RCS(I))>1 THEN 60
80 RP(I)=0
90 NEXT I
100 CLS
```

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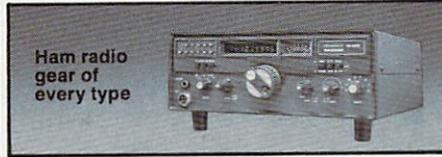
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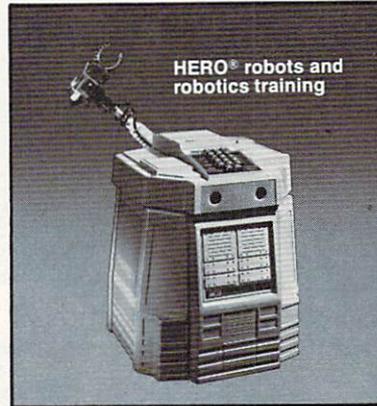
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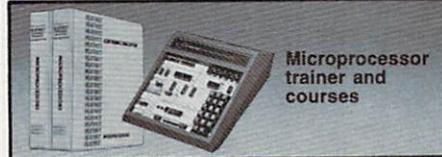
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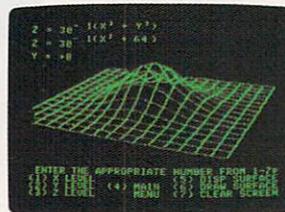
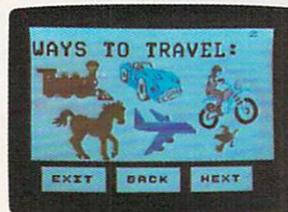
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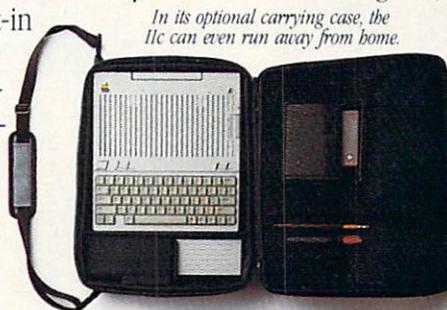
and appetites continue to grow at an alarming rate, there's one thing you

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As soon as they get

home from school.



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## BEGINNER PROGRAM

```
110 PRINT "... AND THEY'RE OFF!"
120 X=RND(4)
130 PRINT@X*64+RP(X),RCS(X);
140 RP(X)=RP(X)+1
150 IF RP(X)<32 THEN 120
160 FOR DE=1 TO 10
170 SOUND 50+RND(10),1
180 NEXT DE
190 CLS
200 PRINT "... AND THE WINNER IS ";CHR$(34);RCS(X);CHR
$(34);"!"
210 PRINT
```

### TRS-80 Models III & 4 (w/Model III BASIC) Character Race

```
10 DIM RCS(4),RP(4)
20 CLS
30 FOR I=1 TO 4
40 PRINT "WHAT IS THE CHARACTER FOR RACER #";I;
50 INPUT RCS(I)
60 IF LEN(RCS(I))>1 THEN 50
70 RP(I)=0
80 NEXT I
90 CLS
100 PRINT "... AND THEY'RE OFF!"
110 X=RND(4)
120 PRINT@X*128+RP(X),RCS(X);
130 RP(X)=RP(X)+1
140 IF RP(X)<64 THEN 110
150 FOR DE=1 TO 50
159 REM --CHANGE CHARACTER WIDTH--
160 PRINT CHR$(23);CHR$(28);
170 NEXT DE
180 CLS
190 PRINT "... AND THE WINNER IS ";CHR$(34);RCS(X);CHR
$(34);"!"
200 PRINT
```

### VIC-20/Character Race

```
10 DIM RCS(4),RP(4)
20 PRINT CHR$(147);
30 FOR I=1 TO 4
40 PRINT "WHAT IS THE CHARACTER"
50 PRINT "FOR RACER #";I;
60 INPUT RCS(I)
70 IF LEN(RCS(I))>1 THEN 60
80 RP(I)=0
90 NEXT I
100 PRINT CHR$(147);
110 PRINT "... AND THEY'RE OFF!"
120 X=INT(RND(1)*4)+1
130 POKE 214,X*4
140 PRINT
150 PRINT TAB(RP(X));RCS(X);
160 FOR DE=1 TO 30
170 NEXT DE
180 RP(X)=RP(X)+1
190 IF RP(X)<22 THEN 120
200 FOR DE=1 TO 100
209 REM --SET A RANDOM BORDER COLOR--
210 POKE 36879,24+(INT(RND(1)*7)+1)
220 NEXT DE
229 REM --RESET BORDER TO NORMAL COLOR--
230 POKE 36879,27
240 PRINT CHR$(147);
250 PRINT "... AND THE WINNER"
260 PRINT "IS ";CHR$(34);RCS(X);CHR$(34);"!"
270 PRINT
```

## HALLOWEEN CLASSIC

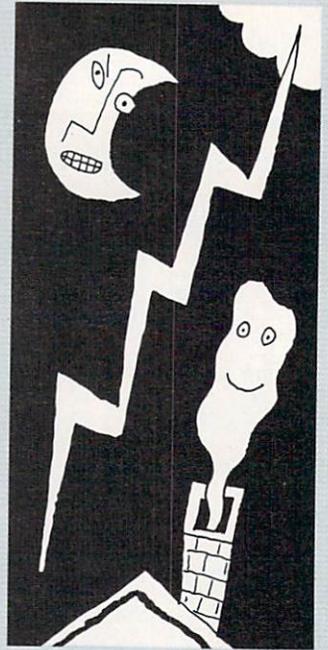
BY JOEY LATIMER

The classic image of Halloween night is one of dark, lightning-filled skies, ghosts in flight, and hollow, sinister eyes peering from the shadows. While this isn't the scene found in most neighborhoods you can make your holiday a little more "Halloweeny," with our *Halloween Classic* program. In it, you might find some of the Halloween atmosphere you've been missing: dancing ghosts, lightning flashes, and peering eyes.

To give the local kids a treat, set up your computer just inside your front door on Halloween night. Better use a sturdy table, and remember to tie back all loose wires that might trip little feet. Then boot up *Halloween Classic* before the trick-or-treaters start knocking. When they arrive, ask for a volunteer to press any key. Don't be surprised if you can't get rid of the little goblins!

### PROGRAM NOTES

*Halloween Classic* is a fairly complicated program with animated graphics



and sound. We've used sprite graphics in the C 64 and TI-99/4A versions, player-missile graphics on the Atari version, shape-table graphics on ADAM and Apple, and DRAW-language graphics techniques on the CoCo. Readers interested in how we used these techniques may wish to refer to *Pgraph!* (FAMILY COMPUTING *March*, page 62) for an explanation of Atari player-missile graphics and a handy utility for using them. Watch for upcoming articles on the special graphics capabilities of your computer.

### ADAM/Halloween Classic

```
10 LOMEM: 29000
20 DIM xy(4,2)
30 POKE 16766,109:POKE 16767,109
40 FOR i = 28000 TO 28093:READ a:POKE i,a:NEXT i
50 FOR i = 1 TO 28:READ m(i,1),m(i,2),m(i,3):NEXT i
60 FOR i = 1 TO 4:READ xy(i,1),xy(i,2):NEXT i
70 HOME:HGR2
80 HCOLOR= 5:FOR i = 1 TO 43:READ x,y,z
90 IF i < 27 THEN HPLLOT x,y TO x,z:GOTO 110
100 HPLLOT x,y TO z,y
110 NEXT i
120 HPLLOT 125,22 TO 37,110:HPLLOT 125,22 TO 213,110
130 POKE 28006,230:CALL 28000
140 SCALE= 8:FOR i = 1 TO RND(1)*14+8
150 HCOLOR= 3:ROT= 50:DRAW 3 AT 70,3
160 ROT= 20:DRAW 3 AT 180,60
170 POKE 28006,245-RND(0)*5:CALL 28000
180 IF RND(1) > 0.7 THEN GOSUB 1000
190 HCOLOR= 4:ROT= 50:XDRAW 3 AT 70,3
200 ROT= 20:XDRAW 3 AT 180,60
210 NEXT i:POKE 28006,255:CALL 28000
220 POKE 28006,144:CALL 28000
230 ROT= 0:SCALE= 2:FOR i = 242 TO 62 STEP -4
240 FOR j = i TO i-3 STEP -1
250 POKE 28006,128:CALL 28000
```

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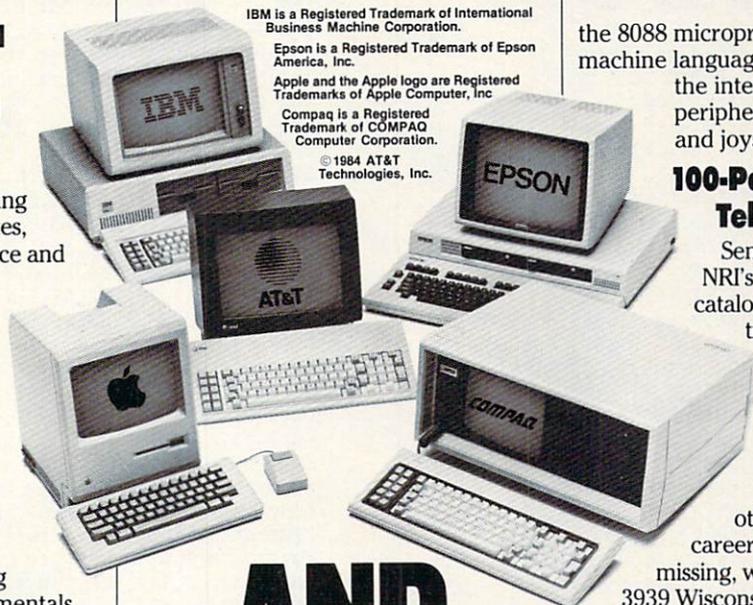
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## HALLOWEEN PROGRAM

```
260 POKE 28006,3512/j:CALL 28000:NEXT j
270 HCOLOR= 3:DRAW 1 AT i,6
280 HCOLOR= 4:XDRAW 1 AT i,6:NEXT i
290 POKE 28006,159:CALL 28000
300 FOR i = 14 TO 39 STEP 2:HCOLOR= 3:DRAW 1 AT 63,i
310 HCOLOR= 4:XDRAW 1 AT 63,i:NEXT i
320 HCOLOR= 3:FOR i = 1 TO 4
330 DRAW INT((i+1)/2) AT xy(i,1),xy(i,2)
340 h(i,1) = xy(i,1):h(i,2) = xy(i,2):NEXT i
350 p = 1:g = 1:CALL 28007
360 POKE 28006,m(p,1):CALL 28000
370 POKE 28006,m(p,2):CALL 28000
380 POKE 28006,144:CALL 28000:t = m(p,3)*25
390 HCOLOR= 4:XDRAW INT((g+1)/2) AT h(g,1),h(g,2)
400 dh = (INT(RND(1)*3)-1)*4:dv = (INT(RND(1)*3)-1)*4
410 h(g,1) = xy(g,1)-dh:h(g,2) = xy(g,2)-dv
420 HCOLOR= 3:DRAW INT((g+1)/2) AT h(g,1),h(g,2)
430 IF RND(1) > 0.7 THEN GOSUB 1000
440 IF t > 0 THEN t = t-1:GOTO 440
450 p = p+1-28*(p = 28):g = g+1-4*(g = 4)
460 POKE 28006,159:CALL 28000
470 IF PEEK(64885) = 0 THEN 360
480 HCOLOR= 4:FOR i = 1 TO 4
490 XDRAW INT((i+1)/2) AT h(i,1),h(i,2):NEXT i
500 GOTO 140
1000 HCOLOR= 4+fe:HPLLOT 123,154:HPLLOT 127,154
1010 fe = NOT fe:RETURN
2000 DATA 58,102,109,211,255,201,0,62,0,50,117,253,201
3000 DATA 3,0,8,0,35,0,62,0
4000 DATA 44,44,44,45,53,53,53,54,62,60,55,39,63,62
4010 DATA 60,55,39,36,108,9,60,110,41,60,6,0
4020 DATA 44,44,44,45,53,53,53,54,62,62,39,55
4030 DATA 63,60,62,39,39,36,108,9,60,110,41,60,6,0
4040 DATA 60,60,60,36,37,37,5,216,155,62
4050 DATA 46,46,31,56,62,62,6,0,0
5000 DATA 143,15,2,131,14,2,134,13,6,131,14,6
5010 DATA 143,15,6,143,15,2,131,14,2,134,13,2
5020 DATA 138,10,2,131,14,2,134,13,2,143,15,6
5030 DATA 134,13,2,143,11,2,138,10,2
5040 DATA 138,10,2,138,10,2,128,10,2,138,10,2
5050 DATA 143,11,2,131,14,2,134,13,2,143,11,2
5060 DATA 143,11,2,143,11,2,138,10,2
5070 DATA 143,11,2,134,13,2
6000 DATA 86,111,150,111,70,159,166,159
7000 DATA 44,104,191,52,144,176,56,52,56,60,56,88
7010 DATA 60,144,176,68,88,124,76,88,124,80,56,68
7020 DATA 84,52,56,96,144,176,104,144,176,112,88,124
7030 DATA 112,144,191,120,88,124,116,152,160,132,88
7040 DATA 124,136,152,160,140,88,124,140,144,191,148
7050 DATA 144,176,156,144,176,176,88,124,184,88
7060 DATA 124,193,144,176,200,144,176,208,104,191
7070 DATA 44,191,208,52,176,104,148,176,200,52,144,104
7080 DATA 112,144,140,148,144,200,0,134,44,208,134,252
7090 DATA 68,124,120,132,124,184,68,88,120,132,88,184
7100 DATA 58,56,60,80,56,84,56,52,84
7110 DATA 116,152,136,116,160,136
```

### Apple/Halloween Classic

```
10 HIMEM: 7676
20 DIM XY(4,2),H(4,2),M(28,2):FE = 1
30 POKE 232,252:POKE 233,29
40 FOR I = 768 TO 804:READ A:POKE I,A:NEXT I
50 FOR I = 1 TO 28:READ M(I,1),M(I,2):NEXT I
60 FOR I = 1 TO 4:READ XY(I,1),XY(I,2):NEXT I
70 FOR I = 7676 TO 7756:READ A:POKE I,A:NEXT I
80 HOME:HGR2
90 FOR I = 1 TO 15:READ K0,X,Y,A,B:HCOLOR= K0
100 FOR RO = A TO B:HPLLOT X,RO TO Y,RO:NEXT RO,I
110 HCOLOR= 5:FOR RO = 8 TO 94
120 HPLLOT 129-RO,RO TO 113+RO,RO:NEXT RO
130 SCALE= 8:FOR I = 1 TO RND(1)*14+8
140 FOR J = 3 TO 4:HCOLOR= J:ROT= 50:DRAW 3 AT 64,20
150 ROT= 20:DRAW 3 AT 196,60
160 A = PEEK(-16336):A = PEEK(-16336):NEXT J
170 IF RND(1) > 0.7 THEN GOSUB 1000
180 NEXT I
```

```
190 SCALE= 2:C = 0:FOR I = 9 TO 49
200 ROT= C:C = C+1.6:HCOLOR= 3:DRAW 1 AT I,24
210 POKE 6,10:POKE 8,I*3:CALL 768
220 HCOLOR= 4:DRAW 1 AT I,24:NEXT I
230 FOR I = 25 TO 39:HCOLOR= 3:DRAW 1 AT 50,I
240 HCOLOR= 4:DRAW 1 AT 50,I:NEXT I
250 HCOLOR= 3:FOR I = 1 TO 4
260 DRAW INT((I+1)/2) AT XY(I,1),XY(I,2)
270 H(I,1) = XY(I,1):H(I,2) = XY(I,2):NEXT I
280 P = 1:G = 1:POKE -16368,0
290 HCOLOR= 4:DRAW INT((G+1)/2) AT H(G,1),H(G,2)
300 DH = (INT(RND(1)*3)-1)*4:DV = (INT(RND(1)*3)-1)*4
310 HCOLOR= 3
320 H(G,1) = XY(G,1)-DH:H(G,2) = XY(G,2)-DV
330 DRAW INT((G+1)/2) AT H(G,1),H(G,2)
340 POKE 6,M(P,2)*20:POKE 8,M(P,1):CALL 768
350 IF RND(1) > 0.7 THEN GOSUB 1000
360 P = P+1-28*(P = 28):G = G+1-4*(G = 4)
370 IF PEEK(-16384) <= 127 THEN 290
380 HCOLOR= 4:FOR I = 1 TO 4
390 DRAW INT((I+1)/2) AT H(I,1),H(I,2):NEXT I
400 GOTO 130
1000 HCOLOR= 4+FE:HPLLOT 117,154:HPLLOT 123,154
1010 FE = NOT FE:RETURN
2000 DATA 165,8,201,2,176,2,169,2,74,133,10,164,8
2010 DATA 240,8,173,48,192,234,234,136,208,251,56
2020 DATA 165,7,229,10,133,7,176,235,198,6,208,231,96
3000 DATA 72,2,64,2,60,5,64,5,72,5,72,2,64,2,60
3010 DATA 2,47,2,64,2,60,2,72,4,60,2,53,2,47,2
3020 DATA 47,2,47,2,45,2,47,2,53,2,64,2,60
3030 DATA 2,53,2,53,2,53,2,47,2,53,2,60,2
4000 DATA 77,111,147,111,67,159,157,159
5000 DATA 3,0,8,0,35,0,62,0
6000 DATA 44,44,44,45,53,53,53,54,62,60,55,39,63,62
6010 DATA 60,55,39,36,108,9,60,110,41,60,6,0
6020 DATA 44,44,44,45,53,53,53,54,62,62,39,55
6030 DATA 63,60,62,39,39,36,108,9,60,110,41,60,6,0
6040 DATA 60,60,60,36,37,37,5,216,155,62
6050 DATA 46,46,31,56,62,62,6,0,0
7000 DATA 1,0,239,142,191
7010 DATA 5,43,199,86,191,6,107,132,142,191
7020 DATA 4,113,126,150,158,4,130,131,165,166
7030 DATA 6,62,108,96,126,6,132,178,96,126
7040 DATA 6,52,98,144,174,6,142,188,144,174
7050 DATA 4,70,100,96,126,4,140,170,96,126
7060 DATA 4,60,90,144,174,4,150,180,144,174
7070 DATA 3,45,70,51,85,3,43,72,48,50
```

### Atari 400, 800, 600/800 XL, & 130XE w/48K RAM /Halloween Classic

```
10 DIM P$(2048),T$(255),H$(128),M(30,2)
20 GRAPHICS 7+16:SETCOLOR 1,5,3:SETCOLOR 2,0,0
30 P$=CHR$(0):P$(2048)=P$:P$(2)=P$
40 V=INT((ADR(P$)+1024)/1024)*1024/256
50 P1=V*256+564:FOR I=0 TO 20:READ A
60 POKE P1+I,A:POKE P1+23+I,A
70 POKE P1+128+I,A:POKE P1+151+I,A
80 POKE P1+204+I,A:NEXT I
90 POKE P1+6,127:POKE P1+29,90:POKE P1+31,102
100 POKE P1+134,127:POKE P1+135,127
110 P1=V*256-ADR(P$)+512:P2=P1+128:P3=P2+128
120 H$=P$(P3,P3+127)
130 POKE 54279,V:POKE 53277,3:POKE 559,PEEK(559)+8
140 POKE 623,8:POKE 704,0:POKE 705,0:POKE 706,15
150 FOR I=1 TO 30:READ A,B:M(I,1)=A:M(I,2)=B:NEXT I
160 COLOR 3:PLOT 0,0
170 FOR I=1 TO 3:READ A,B,C:PLOT A,B:FOR J=1 TO C
180 READ A,B:DRAWTO A,B:NEXT J:NEXT I:RESTORE 3000
190 FOR I=1 TO 3:READ A,B,C:PLOT 159-A,B:FOR J=1 TO C
200 READ A,B:DRAWTO 159-A,B:NEXT J:NEXT I
210 COLOR 1:FOR I=30 TO 82
220 PLOT 35,I:DRAWTO 115,I:NEXT I
230 COLOR 2:C=2:FOR I=9 TO 29
240 PLOT 75-C,I:DRAWTO 75+C,I:C=C+2:NEXT I
250 FOR I=34 TO 78 STEP 4
260 PLOT 35,I:DRAWTO 115,I:NEXT I
```

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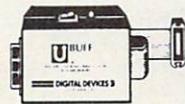
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# HALLOWEEN PROGRAM

```

270 FOR I=15 TO 27:COLOR 2+2*(I/2=INT(I/2))
280 PLOT 35,I:DRAWTO 44,I:NEXT I
290 FOR I=50 TO 82:PLOT 67,I:DRAWTO 83,I:NEXT I
300 COLOR 3:FOR I=45 TO 90 STEP 45:FOR J=35 TO 54
310 PLOT I,J:DRAWTO I+15,J
320 PLOT I,J+23:DRAWTO I+15,J+23:NEXT J:NEXT I
330 FOR I=55 TO 57:PLOT 73,I:DRAWTO 77,I:NEXT I
340 FOR I=1 TO 25+RND(0)*25
350 SOUND 0,INT(RND(0)*50),8,15
360 IF PEEK(704)<>0 THEN POKE 704+RND(0)*2,INT(RND(0)*
16)*16+13
370 SETCOLOR 2,0,0:IF RND(0)>0.5 THEN SETCOLOR 2,0,15
380 NEXT I:SETCOLOR 2,0,0
390 SOUND 0,0,0
400 FOR I=704 TO 706:POKE I,15:NEXT I
410 POKE 53248,0:POKE 53249,0:POKE 53250,84
420 FOR I=1 TO 50
430 T$=P$(P3+I-1,P3+I+20):P$(P3+I,P3+I+21)=T$
440 SOUND 0,I,10,10:NEXT I:SOUND 0,0,0
450 FOR I=1 TO 15
460 POKE 53248,112-I:POKE 53249,127+I
470 SOUND 0,160-I*10,8,15:FOR D=1 TO 100:NEXT D
480 NEXT I:SOUND 0,0,0
490 POKE 764,255:L1=0:T1=0:T2=12:F1=0:F2=0
500 T$=P$(P1)
510 IF T1=0 THEN L1=L1+1-30*(L1=30):SOUND 0,0,0,SOUN
D 0,M(L1,1),10,10:T1=M(L1,2)*6
520 IF T2>0 THEN 580
530 COLOR 4:IF RND(0)>0.5 THEN F2= NOT F2:COLOR 1
540 PLOT 74,56:PLOT 76,56
550 P$(P1-2*F2,P2+127-2*F2)=T$
560 F1= NOT F1:HP=3*((F1=0)-(F1=1))
570 POKE 53248,97+HP:POKE 53249,142+HP:T2=12
580 T1=T1-1:T2=T2-1
590 IF PEEK(764)=255 THEN 510
600 P$(P1,P2+127)=T$:POKE 53250,0
610 P$(P3,P3+127)=H$
620 COLOR 4:PLOT 74,56:PLOT 76,56:GOTO 340
1000 DATA 24,60,90,255,231,255,82,66,74,62,24,126
1010 DATA 189,189,189,60,60,60,60,60,28
2000 DATA 72,2,64,2,60,4,64,4,72,4,72,2,64,2,60
2010 DATA 2,47,2,64,2,60,2,72,4,60,2,53,2,47,2
2020 DATA 47,1,47,1,47,2,45,2,47,2,53,2,64,2,60
2030 DATA 2,53,2,53,1,53,1,53,2,47,2,53,2,60,2
3000 DATA 0,0,8,10,10,20,10,21,23,25,25,27,27
3010 DATA 35,29,40,27,45,10,10,7,20,10,25,8,35
3020 DATA 15,38,15,45,17,46,25,48,30,10,10,5,10
3030 DATA 15,12,17,12,25,9,30,18,40
3040 DATA 45,35,45,57,90,35,90,57

```

## Commodore 64 & 128 (C 64 mode)/Halloween Classic

```

10 DIM XY(4,2),D(32,2),MH(32),ML(32)
20 SB=1024:CB=55296:V=53248:S=54272
30 FOR I=0 TO 23:POKE S+I,0:NEXT I:POKE S+24,15
40 POKE S+5,24:POKE S+6,238:POKE 53280,8:POKE 53231,0
50 PRINT CHR$(147);
60 PRINT TAB(6);"LOADING DATA ... PLEASE WAIT."
70 POKE 2040,252:POKE 2041,253
80 POKE 2042,254:POKE 2043,255
90 FOR I=1 TO 4:READ XY(I,1),XY(I,2):NEXT I
100 FOR I=1 TO 32:READ D(I,1),D(I,2):NEXT I
110 FOR I=1 TO 32:READ MH(I),ML(I):NEXT I
120 FOR I=16128 TO 16191:READ A:POKE I,A:POKE I+64,A
130 POKE I+128,A:POKE I+192,A:NEXT I
140 FOR I=16248 TO 16255:READ A
150 POKE I,A:POKE I+128,A:NEXT I
160 PRINT CHR$(147);:READ Y:FOR X=0 TO 760
170 IF X=Y THEN POKE CB+X,0:POKE SB+X,160:GOTO 190
180 READ A:Y=Y+A
190 NEXT X
200 FOR RO=2 TO 12:FOR CO=20-RO TO 17+RO
210 POKE SB+CO+RO*40,160:POKE CB+CO+40*RO,11
220 NEXT CO,RO
230 FOR I=1 TO 15:READ X,Y,A,B,CH,KO
240 FOR RO=X TO Y:FOR CO=A TO B
250 POKE CB+CO+RO*40,KO:POKE SB+CO+RO*40,CH

```

```

260 NEXT CO,RO,I
270 FOR I=1 TO 3:READ CO,RO,CH,KO
280 POKE CB+CO+RO*40,KO:POKE SB+CO+RO*40,CH:NEXT I
290 POKE V+27,14:POKE S+4,129
300 FOR T=1 TO RND(1)*100+25
310 POKE 53281,RND(1)*2
320 POKE V+RND(1)*4+39,RND(1)*7+2
330 IF RND(1)>0.05 AND T>1 THEN 350
340 POKE S+1,RND(1)*5+1
350 NEXT T
360 POKE S+11,128:POKE 53281,0
370 FOR I=1 TO 4:POKE V+38+I,1
380 XY(I,2)=XY(I,2)+26:NEXT I
390 POKE V+21,0:K=2:FOR I=2 TO 4
400 POKE V+K,XY(I,1):POKE V+K+1,XY(I,2):K=K+2:NEXT I
410 POKE S+24,5:POKE S+4,17
420 POKE S,239:POKE V,80:POKE V+1,20:POKE V+21,15
430 FOR I=21 TO 150:POKE S+1,150-I
440 POKE V+1,I:IF I=96 THEN POKE V+27,15
450 NEXT I
460 POKE V+1,XY(1,2):POKE V,XY(1,1):POKE S+4,129
470 POKE S,239:FOR I=1 TO 13:FOR J=1 TO 4
480 POKE V+J*2-1,XY(J,2):XY(J,2)=XY(J,2)-2:NEXT J
490 POKE S+1,I:NEXT I:POKE S,0:POKE S+1,0:POKE S+4,33
500 FOR I=1 TO 32:J=0:FOR K=1 TO 4
510 POKE V+J,XY(K,1)-D(I,1):POKE V+J+1,XY(K,2)-D(I,2)
520 J=J+2:NEXT K
530 POKE S+1,MH(I):POKE S,ML(I)
540 IF RND(1)>0.8 THEN POKE 56074,INT(RND(1)*2):POKE 5
6075,PEEK(56074)
550 GET K$:IF K$<>" THEN 290
560 NEXT I:GOTO 500
1000 DATA 196,144,132,144,104,199,224,199
2000 DATA 0,-4,0,4,0,-4,0,4,0,2,0,2,0,-2,0,-2
2010 DATA -4,0,4,0,-4,0,4,0,2,0,2,0,-2,0,-2,0
2020 DATA 4,4,-4,-4,-4,4,4,4,4,4,4,-4,-4,-4,-4
2030 DATA -4,4,4,-4,4,-4,-4,4,-4,4,-4,4,4,-4,4,-4
3000 DATA 8,97,9,104,9,247,9,247,9,104,9,104,8,97,8
3010 DATA 97,8,97,9,104,9,247,12,143,9,104,9,247,8
3020 DATA 97,8,97,9,247,11,48,12,143,12,143,12,143
3030 DATA 13,78,12,143,11,48,9,104,9,247,11,48,11
3040 DATA 48,11,48,12,143,11,48,9,247
4000 DATA 0,0,0,0,0,0,0,0,0,0,0,126,0,0,255,0
4010 DATA 3,255,128,7,255,192,15,255,224,30,56,240
4020 DATA 62,186,248,126,56,252,127,255,252,255
4030 DATA 255,254,255,255,255,255,255,255,255
4040 DATA 255,255,255,255,255,255,255,199,24,227
4050 DATA 199,24,227,0,255,56,231,28,56,231,28,0
5000 DATA 4,23,9,8,9,15,2,5,8,2,1,5,1,15,2,5,1,6
5010 DATA 1,5,1,2,16,4,3,4,3,6,16,6,1,5,7,6,1,19
5020 DATA 6,2,5,2,7,17,6,4,3,26,2,11,30,9,2,30,11,30
5030 DATA 11,316,0
6000 DATA 19,24,0,39,160,9,13,24,6,31,160,11
6010 DATA 18,24,17,20,160,9,18,21,8,14,214,5
6020 DATA 18,21,23,29,214,5,11,14,12,17,214,5
6030 DATA 11,14,20,25,214,5,18,21,9,13,32,0
6040 DATA 18,21,24,28,32,0,11,14,13,16,32,0,11
6050 DATA 14,21,24,32,0,12,12,7,7,219,2,11,11
6060 DATA 7,8,219,2,9,10,7,9,219,2,8,8,6,10,219
6070 DATA 2,18,19,46,8,19,19,46,8,20,21,174,9

```

## TI-99/4A w/TI Extended BASIC/Halloween Classic

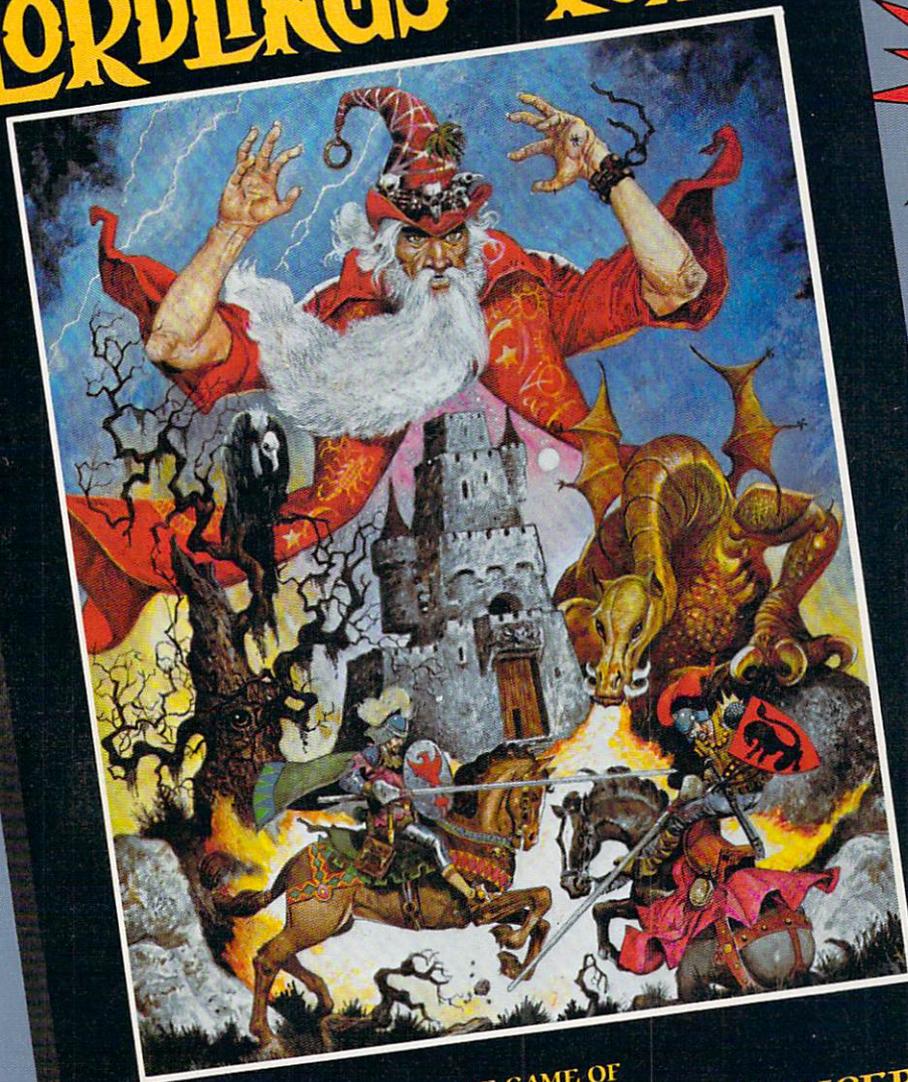
```

10 DIM A$(5),M(32,2),N(32)::FR=760::F=1
20 RANDOMIZE :: CALL CLEAR :: CALL SCREEN(2)
30 FOR I=1 TO 32 :: READ M(I,1),M(I,2)::NEXT I
40 FOR I=1 TO 32 :: READ N(I)::NEXT I
50 FOR I=1 TO 5 :: READ A$(I)::NEXT I
60 FOR I=1 TO 13 :: READ CH,CI
70 CALL CHAR(CH,A$(CI))::NEXT I
80 CALL COLOR(2,2,10)
90 FOR CS=8 TO 14 :: READ FG,BG
100 CALL COLOR(CS,FG,BG)::NEXT CS
110 FOR J=1 TO 47 :: READ A,B
120 CALL HCHAR(A,B,104)::NEXT J
130 CALL COLOR(10,2,2)
140 FOR I=3 TO 11
150 CALL HCHAR(I,19-I,112,2*I-5)::NEXT I

```

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# ALPHABET SOUP

## Can You Digest the Messages?

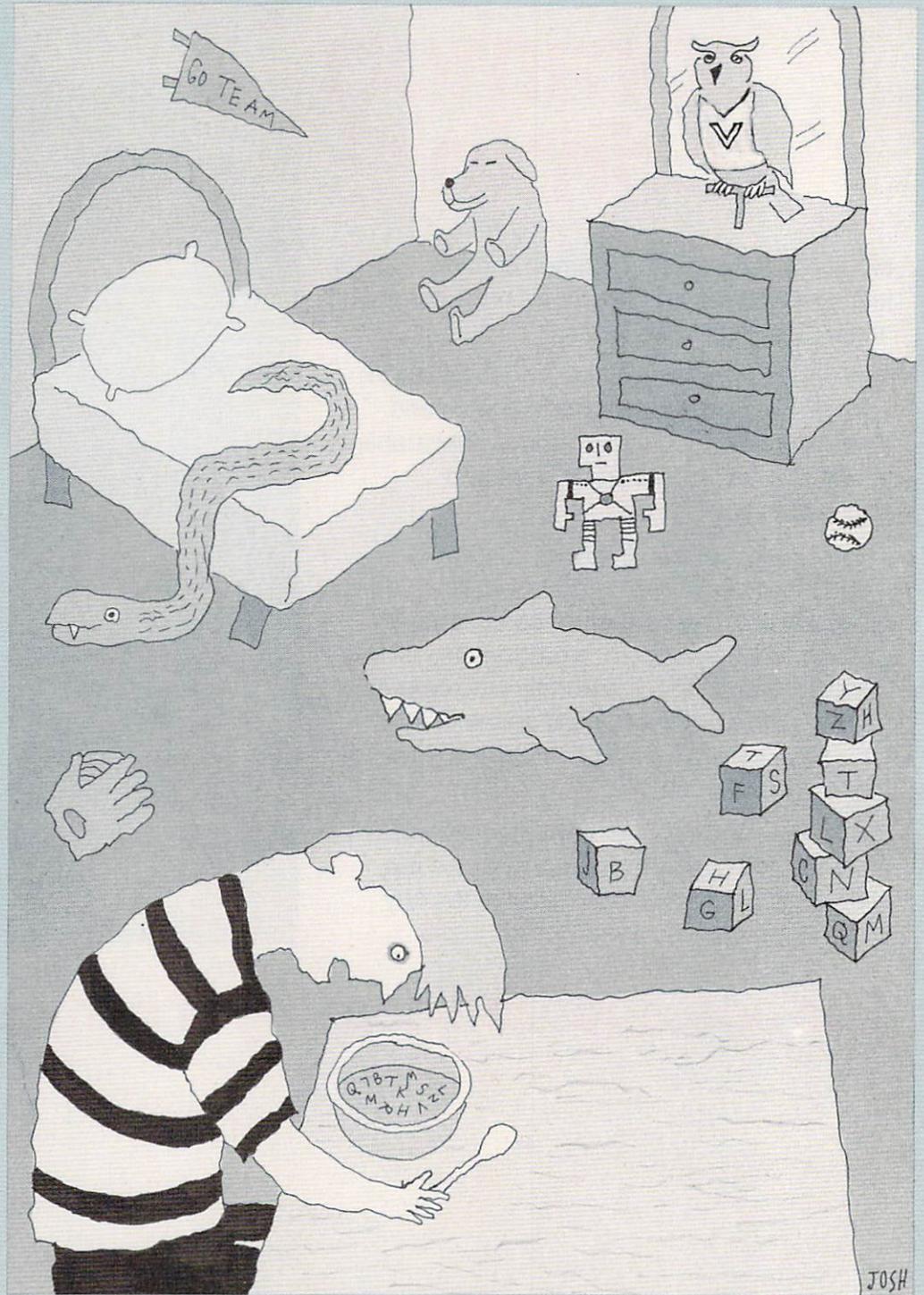
**PUZZLE BY PETER FAVARO AND SARAH KORTUM**  
**PROGRAM BY STEVEN C.M. CHEN**

Once you've solved this puzzle, you can keep on having fun with the program. Details are given in the Solution on page 71. But don't read it unless you're sure you don't want to try the puzzle first.

"Young man, if your head wasn't so firmly attached to your shoulders, I'm sure you'd lose that, too!" Jeremy Hicks Jr. must have heard that remark from his mother at least a thousand times a day. It seemed that everything he put down disappeared, only to reappear later in some odd place. For instance, while searching frantically for a book report one day, Jeremy found it stuck to the bottom of an ice-cream carton in the freezer. The teacher said she was sure his book report would *taste* delicious, but she was unsure how to read through the large, sticky blobs of chocolate and strawberry ice cream.

It wasn't that Jeremy was intentionally absent-minded. He tried his best to keep on top of things. He put his school books and supplies in the same spot each day, but invariably they turned up someplace else. Once he pulled his favorite pen out of a meatloaf his mother had baked for dinner.

One day, while contemplating his topsy-turvy life over his favorite lunch, a steaming hot bowl of alphabet soup, Jeremy noticed something peculiar: Letters were rising to the surface of the soup, then submerging again! Jeremy watched in fascination. Soon, nearly all of the let-



ters had disappeared, and those that remained seemed to form some kind of incomprehensible message.

Jeremy jotted the puzzling collection of letters

down on his paper napkin and took another sip of soup. As he watched the pasta letters swirling to and fro again, he heard a familiar voice in the background: "Jeremy, stop

playing with your food and finish!"

Jeremy quickly jotted down each new message that appeared between sips. After the soup was finished, he began to try to

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## PUZZLE

decipher the 12 patterns. Little did Jeremy know that a very well-kept secret was being shared with him—a secret telling him that maybe he wasn't so absent-minded after all!

### HOW TO PLAY

Type each line of the program into your computer exactly as shown, carefully making the appropriate modifications (if needed). (See "Tips to the Typist," page 46, for help with typing in programs.) Be sure to double-check all the DATA statements carefully. Then SAVE the program to disk or cassette.

When you RUN the program, you'll be asked for your name and for the name of some object that you misplace frequently. Press RETURN or ENTER after typing in each answer.

Next you'll see the sur-

face of a bowl of alphabet soup, with the letters rising and diving until eventually only a few are left. When you've studied those letters, press RETURN or ENTER to take another "sip" of soup and watch the letters swirl into a new pattern.

After all the soup is gone, you have four choices. You can have another bowlful of soup (which will give you the same letter patterns). You can guess (and type in) the solution to the puzzle (which will be suggested by the patterns formed by the letters on the soup's surface and by the illustration, on page 60). You can ask for a hint (if you don't guess correctly the first time). You also have the option to quit the program.

The solution to the puzzle is on page 71.

```

40 SP$ = CHR$(32):QS = " OR <Q> TO QUIT."
50 FOR X = 1 TO SW:FOR Y = 1 TO 24:SM(X,Y) = 0
60 NEXT Y:NEXT X:WP(0,1) = 0:WP(0,2) = 0
70 FOR X = 1 TO 8:READ TS:GOSUB 2010:H$(X) = TS:NEXT X
80 RS = "":FOR X = 3 TO 8:RS = RS+H$(X)+SP$
90 NEXT X:RS = LEFT$(RS,27)+"."
100 PT(1) = 1:FOR X = 1 TO FR+(F = 1)*5:READ T
110 PT(X+1) = PT(X)+T:FOR Y = PT(X) TO PT(X+1)-1
120 READ TS:GOSUB 2000:WD$(Y) = TS:NEXT Y:NEXT X
130 HOME:IF F = 2 THEN 230
140 PRINT "TYPE IN YOUR FIRST NAME.":PRINT
150 INPUT "MY NAME IS ";TS:IF TS = "" THEN 130
160 GOSUB 1000:WD$(48) = TS
170 HOME:MS = "TYPE IN AN OBJECT YOU OFTEN"
180 MS = MS+" MISPLACE (ONE WORD ONLY).":GOSUB 3000
190 PRINT:INPUT "MY ";TS:IF TS = "" THEN 170
200 PS = TS+"?":GOSUB 1000:WD$(18) = TS
210 HOME:NS = "SOUP'S ON!":GOSUB 3500
220 NS = "COME AND GET IT!":GOSUB 3500:GOSUB 4000
230 FOR S = 1 TO FR:HOME:C = 1:Z$ = ""
240 DP = PT(S+1)-PT(S):IF DP > 21 THEN DP = 21
250 DY = INT(23/DP)
260 FOR X = PT(S) TO PT(S)+DP-1:Z$ = Z$+WD$(X)
270 LW = LEN(WD$(X)):IF LW > SW THEN LW = SW
280 DX = INT(SW/LW):T = RND(1)*DY+1+WP(C-1,2)
290 FOR Y = 1 TO LW:WP(C,1) = RND(1)*DX+1:WP(C,2) = T
300 IF Y > 1 THEN WP(C,1) = WP(C,1)+WP(C-1,1)
310 SM(WP(C,1),WP(C,2)) = 1:C = C+1:NEXT Y:NEXT X
320 LZ = LEN(Z$):FOR X = 1 TO MAX
330 GOSUB 5000:RP(X,1) = XP:RP(X,2) = YP
340 SM(XP,YP) = 2:NEXT X:RC = MAX:WC = 0
350 FOR X = 1 TO MAX/2:P = INT(RND(1)*RC)+1
360 GOSUB 5000:SM(XP,YP) = 2:SM(RP(P,1),RP(P,2)) = 0
370 FOR D = 1 TO DL:NEXT D
380 VTAB RP(P,2):HTAB RP(P,1):PRINT SP$;
390 RP(P,1) = XP:RP(P,2) = YP
400 IF RND(1) > 0.5 THEN 430
410 WC = WC+1:IF WC > LZ THEN 430
420 P = WC:GOSUB 6000

```

### Apple II series/Alphabet Soup: Eat

```

10 DL = 40:MAX = 96:SW = 40
20 FR = 12:DIM H$(8),WD$(FR*10):F = 1
30 DIM PT(FR+1+(F = 1)*5),RP(MAX,2),SM(SW,24),WP(126,2)

```

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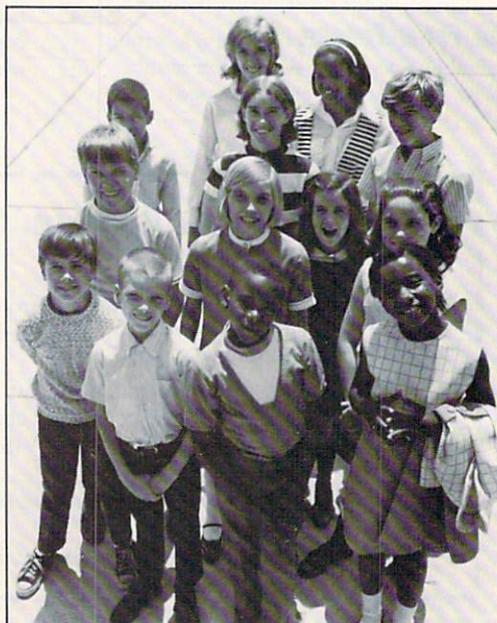
Keynote speaker is Del Yocam, V.P., Apple Computer, with featured speaker Tom Snyder and special "Kid Keynoter" Rawson Stovall, the 13-year old syndicated computer columnist.

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...The National Computer Show for Kids  
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430 IF RND(1) > 0.5 OR RC = 0 THEN 470
440 P = INT(RND(1)*RC)+1:XP = RP(P,1):YP = RP(P,2)
450 M$ = SP$:GOSUB 6500:SM(XP,YP) = 0
460 RP(P,1) = RP(RC,1):RP(P,2) = RP(RC,2):RC = RC-1
470 NEXT X:IF WC > LZ-1 THEN 490
480 FOR P = WC TO LZ:GOSUB 6000:NEXT P
490 M$ = SP$:FOR X = 1 TO RC:XP = RP(X,1):YP = RP(X,2)
500 GOSUB 6500:SM(XP,YP) = 0:NEXT X
510 M$ = "PRESS <RETURN> TO TAKE A SIP OF SOUP."
520 GOSUB 7000:GOSUB 3000
530 GOSUB 8000:IF K$ <> CHR$(13) THEN 530
540 FOR X = 1 TO LZ:SM(WP(X,1),WP(X,2)) = 0
550 NEXT X:NEXT S
560 HOME:M$ = "YOU'VE FINISHED ALL THE SOUP!"
570 GOSUB 3000:IF F = 2 THEN END
580 T$ = "":GOSUB 8500
590 GOSUB 8000:IF K$ = "Q" THEN END
600 ON K$ = "E" GOTO 230:IF K$ <> "G" THEN 590
610 HOME:M$ = "WHERE IS YOUR "+P$:GOSUB 3000:PRINT
620 INPUT "BEHIND THE ";T$:IF T$ = "" THEN 610
630 M$ = "":FOR X = 1 TO LEN(T$):K$ = MID$(T$,X,1)
640 GOSUB 8030:M$ = M$+K$:NEXT X
650 IF M$ = H$(2) THEN 720
660 HOME:N$ = "SORRY, YOU'RE WRONG!":GOSUB 3500
670 T$ = " <H> FOR A HINT,":GOSUB 8500
680 GOSUB 8000:IF K$ = "E" THEN 230
690 ON K$ = "H" GOTO 710:IF K$ = "Q" THEN END
700 ON K$ <> "G" GOTO 680:GOTO 610
710 HOME:M$ = R$:GOSUB 3000:GOSUB 4000:GOTO 560
720 HOME:M$ = "THE NEXT DAY THE SOUP SAID ..."
730 GOSUB 3000:PRINT:FOR X = 13 TO 17
740 FOR Y = PT(X) TO PT(X+1)-1:PRINT WD$(Y);SP$;
750 NEXT Y:PRINT:NEXT X:END
1000 M$ = "":FOR A = 1 TO LEN(T$):W = 0
1010 K$ = MID$(T$,A,1):GOSUB 8030:FOR B = 1 TO 5
1020 IF K$ = MID$(H$(1),B,1) THEN W = 1:B = 5
1030 NEXT B:IF NOT W THEN M$ = M$+K$
1040 NEXT A:T$ = M$:IF T$ = "" THEN T$ = SP$:RETURN
1050 M$ = "":FOR A = 1 TO LEN(T$):K$ = MID$(T$,A,1)

```

```

1060 IF K$ > "a" AND K$ < CHR$(91) THEN M$ = M$+K$
1070 NEXT A:IF M$ = "" THEN T$ = SP$:RETURN
1080 T$ = M$:RETURN
2000 IF F = 2 THEN GOSUB 1000:RETURN
2010 M$ = "":V = ASC(LEFT$(T$,1))-64
2020 FOR Z = 2 TO LEN(T$):N = ASC(MID$(T$,Z,1))-V
2030 M$ = M$+CHR$(N+26*(N < 65)):NEXT Z
2040 T$ = M$:RETURN
3000 IF LEN(M$) <= SW THEN N$ = M$:GOSUB 3500:RETURN
3010 Y = SW+1:Z = 1:FOR X = Y TO 2 STEP -1
3020 IF MID$(M$,X,1) = SP$ THEN Z = 0:Y = X:X = 2
3030 NEXT X:N$ = LEFT$(M$,Y-1):GOSUB 3500
3040 M$ = RIGHT$(M$,LEN(M$)-Y+Z):GOTO 3000
3500 IF LEN(N$) = SW THEN PRINT N$;:RETURN
3510 PRINT TAB((SW-LEN(N$))/2+1);N$;RETURN
4000 M$ = "PRESS ANY KEY TO CONTINUE."
4010 GOSUB 7000:GOSUB 3000:GOSUB 8000:RETURN
5000 XP = SW*RND(1)+1:YP = 23*RND(1)+1
5010 IF SM(XP,YP) <> 0 THEN 5000
5020 M$ = CHR$(65+RND(1)*26):GOSUB 6500:RETURN
6000 XP = WP(P,1):YP = WP(P,2)
6010 M$ = MID$(Z$,P,1):GOSUB 6500:RETURN
6500 VTAB YP:HTAB XP:PRINT M$;:RETURN
7000 VTAB 24-INT(LEN(M$)/SW+0.9):HTAB 1:RETURN
8000 POKE -16368,0
8010 K = PEEK(-16384)-128:IF K < 0 THEN 8010
8020 POKE -16368,0:K$ = CHR$(K):IF K = 3 THEN END
8030 IF K$ < CHR$(97) THEN RETURN
8040 K$ = CHR$(ASC(K$)-32):RETURN
8500 M$ = "PRESS <E> TO EAT ANOTHER BOWLFUL OF SOUP"
8510 M$ = M$+" <G> TO GUESS,"+T$+Q$:GOSUB 7000
8520 GOSUB 3000:RETURN
9000 DATA MNRVBH,SHPE,GLCLYF,IFXAM
9010 DATA RZSK,DEX,KWPLDE,QFEV
10000 DATA 4,IF,PH,LZHENX,RUJLJK,3,HEP,FYIXXE,JBXN
10010 DATA 3,EMISL,JIB,PJXDWI,4,VSPDP,NAYBU,RF,DWRH
10020 DATA 4,HB,TFWN,MLE,HI,3,PFBI,JDRXU,NPH
10030 DATA 5,DXL,SMAGZL,MSEZ,KESD,ND
10040 DATA 5,HBPB,SP,QYM,GARU,QK,4,LF,TM,GKMMJSA,LFD

```

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**PUZZLE**

```

10050 DATA 4,QSK,FITYJX,JDRCL,NQZ
10060 DATA 4,PDT,KWV,FHNTJ,PICJXDW,3,SYFEK,MG,DC
10070 DATA 2,IMA,FK,6,HE,QTE,MA,MYATE,EYWHP,KJ
10080 DATA 5,QP,LTH,PTISLHT,HZ,MTZ,6,JC,EKK,NH
10090 DATA SGMAK,PM,NU,5,JPB,VIN,MS,XRF,EXR
    
```

**Atari 400/800, 600/800XL, & 130XE/Alphabet Soup: Eat**

```

10 OPEN #1,4,0,"K":POKE 82,0
20 F=1:FR=12:T=FR+1+(F=1)*5
30 DIM PT(T),PW(T*21),RP(96,2),SM(40,24),WP(106,2)
40 DIM AS(25),CLS(1),HS(36),KS(1),MS(25),PS(25)
50 DIM QS(16),SPS(1),TS(25),XS(125),WDS(T*90),ZS(106)
60 CLS=CHR$(125):SPS=CHR$(32):QS=" OR <Q> TO QUIT."
70 FOR X=1 TO SW:FOR Y=1 TO SH:SM(X,Y)=0
80 NEXT Y:NEXT X:WP(0,1)=0:WP(0,2)=0
90 HS="":FOR X=1 TO 8:READ TS:GOSUB 2010
100 HS(LEN(HS)+1)=TS:IF X<3 THEN 120
110 HS(LEN(HS)+1)=SPS
120 NEXT X:HS(36)="."
130 PT(1)=1:FOR X=1 TO FR+(F=1)*5:READ T
140 PT(X+1)=PT(X)+T:FOR Y=PT(X) TO PT(X+1)-1
150 READ TS:GOSUB 2000:PW(Y)=LEN(WDS)+1
160 WDS(PW(Y))=TS:NEXT Y:NEXT X
170 PW(Y)=LEN(WDS)+1
180 ON F=2 GOTO 340:AS=""
190 PRINT CLS;"TYPE IN YOUR FIRST NAME.":PRINT
200 PRINT "MY NAME IS ";:INPUT TS:IF TS="" THEN 180
210 GOSUB 1000:LB=LEN(TS):AS=TS
220 PRINT CLS;" TYPE IN AN OBJECT YOU OFTEN MISPLACE"
230 POSITION 12,1:PRINT "(ONE WORD ONLY).":
240 PRINT :PRINT "MY ";:INPUT TS:IF TS="" THEN 220
250 POKE 752,1:PS=TS:PS(LEN(TS)+1)=""
260 GOSUB 1000:LA=LEN(TS)
270 XS=WDS(53):WDS(52+LA)=XS:WDS(52,51+LA)=TS
280 FOR X=19 TO 71:PW(X)=PW(X)+LA-1:NEXT X
290 XS=WDS(PW(49)):WDS(PW(48)+LB)=XS
300 WDS(PW(48),PW(48)+LB-1)=AS
310 FOR X=49 TO 71:PW(X)=PW(X)+LB-1:NEXT X
320 PRINT CLS:POSITION 14,0:PRINT "SOUP'S ON!"
330 POSITION 12,1:PRINT "COME AND GET IT!":GOSUB 3000
340 POKE 752,1:FOR S=1 TO FR:PRINT CLS;:C=1:ZS=""
350 DP=PT(S+1)-PT(S):IF DP>21 THEN DP=21
360 DY=INT(21/DP)
370 FOR X=PT(S) TP PT(S)+DP-1
380 ZS(LEN(ZS)+1)=WDS(PW(X),PW(X+1)-1)
390 LW=PW(X+1)-PW(X):IF LW>38 THEN LW=38
400 DX=INT(38/LW):T=INT(RND(1)*DX)+1+WP(C-1,2)
410 FOR Y=1 TO LW:WP(C,1)=INT(RND(1)*DX)+1:WP(C,2)=T
420 IF Y>1 THEN WP(C,1)=WP(C,1)+WP(C-1,1)
430 SM(WP(C,1),WP(C,2))=1:C=C+1:NEXT Y:NEXT X
440 LZ=LEN(ZS):FOR X=1 TO 96
450 GOSUB 4000:RP(X,1)=XP:RP(X,2)=YP
460 SM(XP,YP)=2:NEXT X:RC=96:WC=0
470 FOR X=1 TO 48:P=INT(RND(1)*RC)+1
480 GOSUB 4000:SM(XP,YP)=2:SM(RP(P,1),RP(P,2))=0
490 FOR D=1 TO 15:NEXT D
500 POSITION RP(P,1),RP(P,2):PRINT SPS;
510 RP(P,1)=XP:RP(P,2)=YP
520 IF RND(1)>.5 THEN 550
530 WC=WC+1:IF WC>LZ THEN 550
540 P=WC:GOSUB 5000
550 IF RND(1)>.5 OR RC=0 THEN 590
560 P=INT(RND(1)*RC)+1:XP=RP(P,1):YP=RP(P,2)
570 MS=SPS:GOSUB 6000:SM(XP,YP)
580 RP(P,1)=RP(RC,1):RP(P,2)=RP(RC,2):RC=RC-1
590 NEXT X:IF WC>LZ-1 THEN 610
600 FOR P=WC TO LZ:GOSUB 5000:NEXT P
610 MS=SPS:FOR X=1 TO RC:XP=RP(X,1):YP=RP(X,2)
620 GOSUB 6000:SM(XP,YP)=0:NEXT X
630 POSITION 1,22
640 PRINT "PRESS <RETURN> TO TAKE A SIP OF SOUP."
650 GOSUB 7000:IF K<>155 THEN 650
660 FOR X=1 TO LZ:SM(WP(X,1),WP(X,2))=0
670 NEXT X:NEXT S
680 PRINT CLS;:POSITION 5,0
690 PRINT "YOU'VE FINISHED ALL THE SOUP!"
    
```

```

700 IF F=2 THEN POKE 82,2:POKE 752,0:END
710 TS="":GOSUB 8000
720 GOSUB 7000:IF KS="Q" THEN END
730 ON KS="E" GOTO 340:IF KS<>"G" THEN 720
740 POKE 752,0:PRINT CLS;"WHERE IS YOUR ";PS:PRINT
750 PRINT "BEHIND THE ";:INPUT TS:IF TS="" THEN 740
760 POKE 752,1:MS="":FOR X=1 TO LEN(TS):KS=TS(X,X)
770 GOSUB 7020:MS(LEN(MS)+1)=KS:NEXT X
780 IF MS=HS(6,8) THEN 870
790 PRINT CLS
800 POSITION 9,0:PRINT "SORRY, YOU'RE WRONG!"
810 TS=" <H> FOR A HINT,":GOSUB 8000
820 GOSUB 7000:IF KS="E" THEN 340
830 ON KS="H" GOTO 850:IF KS="Q" THEN END
840 ON KS<>"G" GOTO 820:GOTO 740
850 PRINT CLS
860 POSITION 5,0:PRINT HS(9):GOSUB 3000:GOTO 680
870 POKE 82,2:PRINT CLS;"THE NEXT DAY THE SOUP SAID .."
880 PRINT :FOR X=13 TO 17
890 FOR Y=PT(X) TO PT(X+1)-1
900 PRINT WDS(PW(Y),PW(Y+1)-1);SPS;:NEXT Y
910 PRINT :NEXT X:POKE 752,1:END
1000 MS="":FOR A=1 TO LEN(TS):W=0
1010 KS=TS(A,A):GOSUB 7020:FOR B=1 TO 5
1020 IF KS=HS(B,B) THEN W=1:B=5
1030 NEXT B:IF NOT W THEN MS(LEN(MS)+1)=KS
1040 NEXT A:TS=MS:IF TS="" THEN TS=SPS:RETURN
1050 MS="":FOR A=1 TO LEN(TS):KS=TS(A,A)
1060 IF KS>"0" AND KS<CHR$(91) THEN MS(LEN(MS)+1)=KS
1070 NEXT A:IF MS="" THEN TS=SPS:RETURN
1080 TS=MS:RETURN
2000 IF F=2 THEN GOSUB 1000:RETURN
2010 MS="":V=ASC(TS(1,1))-64
2020 FOR Z=2 TO LEN(TS):N=ASC(TS(Z,Z))-V
2030 MS(LEN(MS)+1)=CHR$(N+26*(N<65)):NEXT Z
2040 TS=MS:RETURN
3000 POSITION 7,22:PRINT "PRESS ANY KEY TO CONTINUE."
3010 GOSUB 7000:RETURN
4000 XP=INT(38*RND(1))+1:YP=INT(23*RND(1))
4010 IF SM(XP,YP)<>0 THEN 4000
4020 MS=CHR$(65+INT(RND(1)*26)):GOSUB 6000:RETURN
5000 XP=WP(P,1):YP=WP(P,2)
5010 MS=ZS(P,P):GOSUB 6000:RETURN
6000 POSITION XP,YP:PRINT MS;:RETURN
7000 GET #1,K:IF K=155 THEN RETURN
7010 KS=CHR$(K)
7020 IF KS<CHR$(97) THEN RETURN
7030 KS=CHR$(ASC(KS)-32):RETURN
8000 POSITION 2,21
8010 PRINT "PRESS <E> TO EAT ANOTHER BOWLFUL OF"
8020 IF TS<>"G" THEN 8040
8030 PRINT " SOUP, <G> TO GUESS,":QS:RETURN
8040 PRINT " SOUP, <G> TO GUESS,":TS;" OR"
8050 POKE 85,12:PRINT QS(4);:RETURN
9000 DATA MNRVBH,SHPE,GLCLFY,IFXAM
9010 DATA RZSK,DEX,KWPLDE,QFEV
10000 DATA 4,IF,PH,LZHENX,RUJLJK,3,HEP,FYIXXE,JBXN
10010 DATA 3,EMISL,JIB,PJXDWI,4,VSPDP,NAYBU,RF,DWRH
10020 DATA 4,HB,TFWN,MLE,HI,3,PFBI,JDRXU,NPH
10030 DATA 5,DXL,SMAGZL,MSEZ,KESD,ND A
10040 DATA 5,HBPB,SP,QYM,GARU,QK,4,LF,TM,GKMMJSA,LFD
10050 DATA 4,QSK,FITYJX,JDRCL,NQZ
10060 DATA 4,PDT,KWV,FHNTJ,PICJXDW,3,SYFEK,MG,DC
10070 DATA 2,IMA,FK,6,HE,QTE,MA,MYATE,EYWHP,KJ
10080 DATA 5,QP,LTH,PTISLHT,HZ,MTZ,6,JC,EKK,NH
10090 DATA SGMAK,PM,NU,5,JPB,VIN,MS,XRF,EXR
    
```

**Commodore 64 & 128 (in C 64 mode)/Alphabet Soup: Eat**

```

10 POKE 53281,12:POKE 53280,12:PRINT CHR$(5)
20 F=1:FR=12:MAX=100:SH=25:SW=40
30 DH=SH-3+(SW=22):DIM HS(8),WDS(FR*10)
40 DIM PT(FR+1-(F=1)*5),RP(MAX,2),SM(SW,SH),WP(DH*6,2)
50 CLS=CHR$(147):SPS=CHR$(32):QS=" OR <Q> TO QUIT."
60 FOR X=1 TO SW:FOR Y=1 TO SH:SM(X,Y)=0
70 NEXT Y:NEXT X:WP(0,1)=-1:WP(0,2)=0
    
```

```

80 FOR X=1 TO 8:READ T$:GOSUB 2010:HS(X)=T$:NEXT X
90 RS="":FOR X=3 TO 8:RS=RS+HS(X)+SPS
100 NEXT X:RS=LEFT$(RS,27)+""
110 PT(1)=1:FOR X=1 TO FR-(F=1)*5:READ T
120 PT(X+1)=PT(X)+T:FOR Y=PT(X) TO PT(X+1)-1
130 READ T$:GOSUB 2000:WD$(Y)=T$:NEXT Y:NEXT X
140 PRINT CL$;:IF F=2 THEN 240
150 MS="TYPE IN YOUR FIRST NAME.":GOSUB 3000:PRINT
160 T$="":INPUT "MY NAME IS ";T$:IF T$="" THEN 140
170 GOSUB 1000:WD$(48)=T$
180 PRINT CL$;:MS="TYPE IN AN OBJECT YOU OFTEN"
190 MS=MS+" MISPLACE (ONE WORD ONLY).":GOSUB 3000
200 PRINT:T$="":INPUT "MY ";T$:IF T$="" THEN 180
210 PS=T$+"?":GOSUB 1000:WD$(18)=T$
220 PRINT CL$;:NS="SOUP'S ON!":GOSUB 3500
230 NS="COME AND GET IT!":GOSUB 3500:GOSUB 4000
240 FOR S=1 TO FR:PRINT CL$;:C=1:Z$=""
250 DP=PT(S+1)-PT(S):IF DP>DH THEN DP=DH
260 DY=INT((SH-2)/DP)
270 FOR X=PT(S) TO PT(S)+DP-1:Z$=Z$+WD$(X)
280 LW=LEN(WD$(X)):IF LW>SW-2 THEN LW=SW-2
290 DX=INT((SW-2)/LW):T=INT(RND(1)*DY)+1+WP(C-1,2)
300 FOR Y=1 TO LW:WP(C,1)=INT(RND(1)*DX)+1:WP(C,2)=T
310 IF Y>1 THEN WP(C,1)=WP(C,1)+WP(C-1,1)
320 SM(WP(C,1),WP(C,2))=1:C=C+1:NEXT Y:NEXT X
330 LZ=LEN(Z$):FOR X=1 TO MAX
340 GOSUB 5000:RP(X,1)=XP:RP(X,2)=YP
350 SM(XP,YP)=2:NEXT X:RC=MAX:WC=0
360 FOR X=1 TO MAX/2:P=INT(RND(1)*RC)+1
370 GOSUB 5000:SM(XP,YP)=2:SM(RP(P,1),RP(P,2))=0
380 FOR D=1 TO 30:NEXT D
390 POKE 214,RP(P,2):PRINT:PRINT SPC(RP(P,1));SPS
400 RP(P,1)=XP:RP(P,2)=YP
410 IF RND(1)>.5 THEN 440
420 WC=WC+1:IF WC>LZ THEN 440
430 P=WC:GOSUB 6000
440 IF RND(1)>.5 OR RC=0 THEN 480
450 P=INT(RND(1)*RC)+1:XP=RP(P,1):YP=RP(P,2)
460 M$=SP$:GOSUB 6500:SM(XP,YP)=0
470 RP(P,1)=RP(RC,1):RP(P,2)=RP(RC,2):RC=RC-1
480 NEXT X:IF WC>LZ-1 THEN 500
490 FOR P=WC TO LZ:GOSUB 6000:NEXT P
500 M$=SP$:FOR X=1 TO RC:XP=RP(X,1):YP=RP(X,2)
510 GOSUB 6500:SM(XP,YP)=0:NEXT X
520 M$="PRESS <RETURN> TO TAKE A SIP OF SOUP."
530 GOSUB 7000:GOSUB 3000
540 GOSUB 8000:IF K$<>CHR$(13) THEN 540
550 FOR X=1 TO LZ:SM(WP(X,1),WP(X,2))=0
560 NEXT X:NEXT S
570 PRINT CL$;:MS="YOU'VE FINISHED ALL THE SOUP!"
580 GOSUB 3000:IF F=2 THEN END
590 T$="":GOSUB 8500
600 GOSUB 8000:IF K$="Q" THEN END
610 ON -(K$="E") GOTO 240:IF K$<>"G" THEN 600
620 PRINT CL$;:MS="WHERE IS YOUR "+PS:GOSUB 3000:PRINT
630 T$="":INPUT "BEHIND THE ";T$:IF T$="" THEN 620
640 M$="":FOR X=1 TO LEN(T$):K$=MID$(T$,X,1)
650 M$=M$+K$:NEXT X
660 IF M$=HS(2) THEN 730
670 PRINT CL$;:NS="SORRY, YOU'RE WRONG!":GOSUB 3500
680 T$=" <H> FOR A HINT,":GOSUB 8500
690 GOSUB 8000:IF K$="E" THEN 240
700 ON -(K$="H") GOTO 720:IF K$="Q" THEN END
710 ON -(K$<>"G") GOTO 690:GOTO 620
720 PRINT CL$;:M$=RS:GOSUB 3000:GOSUB 4000:GOTO 570
730 PRINT CL$;:M$="THE NEXT DAY THE SOUP SAID ..."
740 GOSUB 3000:PRINT:FOR X=13 TO 17
750 FOR Y=PT(X) TO PT(X+1)-1:PRINT WD$(Y);SPS;
760 NEXT Y:PRINT:NEXT X:END
1000 M$="":FOR A=1 TO LEN(T$):W=0
1010 K$=MID$(T$,A,1):FOR B=1 TO 5
1020 IF K$=MID$(HS(1),B,1) THEN W=-1:B=5
1030 NEXT B:IF NOT W THEN M$=M$+K$
1040 NEXT A:T$=M$:IF T$="" THEN T$=SP$:RETURN
1050 M$="":FOR A=1 TO LEN(T$):K$=MID$(T$,A,1)
1060 IF K$>"a" AND K$<CHR$(91) THEN M$=M$+K$
1070 NEXT A:IF M$="" THEN T$=SP$:RETURN

```

```

1080 T$=M$:RETURN
2000 IF F=2 THEN GOSUB 1000:RETURN
2010 M$="":V=ASC(LEFT$(T$,1))-64
2020 FOR Z=2 TO LEN(T$):N=ASC(MID$(T$,Z,1))-V
2030 M$=M$+CHR$(N-26*(N<65)):NEXT Z
2040 T$=M$:RETURN
3000 IF LEN(M$)<=SW THEN N$=M$:GOSUB 3500:RETURN
3010 Y=SW+1:Z=1:FOR X=Y TO 2 STEP -1
3020 IF MID$(M$,X,1)=SP$ THEN Z=0:Y=X:X=2
3030 NEXT X:N$=LEFT$(M$,Y-1):GOSUB 3500
3040 M$=RIGHT$(M$,LEN(M$)-Y+Z):GOTO 3000
3500 IF LEN(N$)=SW THEN PRINT N$;:RETURN
3510 PRINT SPC((SW-LEN(N$))/2);N$:RETURN
4000 M$="PRESS ANY KEY TO CONTINUE.":GOSUB 7000
4010 GOSUB 3000:GOSUB 8000:RETURN
5000 XP=INT((SW-2)*RND(1))+1:YP=INT((SH-2)*RND(1))
5010 IF SM(XP,YP)<>0 THEN 5000
5020 M$=CHR$(65+RND(1)*26):GOSUB 6500:RETURN
6000 XP=WP(P,1):YP=WP(P,2)
6010 M$=MID$(Z$,P,1):GOSUB 6500:RETURN
6500 POKE 214,YP:PRINT:PRINT SPC(XP);M$:RETURN
6510 PRINT SPC(XP);M$;:RETURN
7000 POKE 214,SH-INT(LEN(M$)/SW+2.9):PRINT:RETURN
8000 GET K$:ON -(K$="") GOTO 8000:RETURN
8500 M$="PRESS <E> TO EAT ANOTHER BOWLFUL OF SOUP"
8510 M$=M$+" <G> TO GUESS,"+T$+Q$:GOSUB 7000
8520 GOSUB 3000:RETURN
9000 DATA MNRVBH,SHPE,GLCLYF,IFXAM
9010 DATA RZSK,DEX,KWPLDE,QFEV
10000 DATA 4,IF,PH,LZHENX,RUJLJK,3,HEP,FYIXXE,JBXN
10010 DATA 3,EMISL,JIB,PJXDWI,4,VSPDP,NAYBU,RF,DWRH
10020 DATA 4,HB,TFWN,MLE,HI,3,PFBI,JDRXU,NPH
10030 DATA 5,DXL,SMAGZL,MSEZ,KESD,NDA
10040 DATA 5,HBPB,SP,QYM,GARU,QK,4,LF,TM,GKMMJSA,LF
10050 DATA 4,QSK,FITYJX,JDRC,NQZ
10060 DATA 4,PDT,KWV,FHNTJ,PICJXDW,3,SYFEK,MG,DC
10070 DATA 2,IMA,FK,6,HE,QTE,MA,MYATE,EYWHP,KJ
10080 DATA 5,QP,LTH,PTISLHT,HZ,MTZ,6,JC,EKK,NH
10090 DATA SGMAK,PM,NU,5,JPB,VIN,MS,XRF,EXR

```

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CIRCLE READER SERVICE 28

# COMMODORE 64

## \$ 139<sup>95</sup>

- 170K Disk Drive \$149.95
- Tractor Friction Printer \$159.95
- 13" Hi-Res Color Monitor \$169.95

# COMPUTER AND SOFTWARE SALE

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PRICES MAY BE LOWER

# C128 COMMODORE COMPUTER

(Order Now)

## \$ 289<sup>95</sup>

- 340K 1571 Disk Drive \$259.00
- Voice Synthesizer \$39.95
- 12" Green or Amber Monitor \$69.95
- Printer/Typewriter Combination \$249.95

### SPECIAL SOFTWARE COUPON

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

(Examples)

### PROFESSIONAL SOFTWARE COMMODORE 64

Name	List	Sale	Coupon
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Paperback Data Base	\$69.00	\$34.95	\$24.95
Paperback Dictionary	\$24.95	\$14.95	\$10.00
Practicalc II	\$69.95	\$49.95	\$44.95
Print Shop (Disk)	\$44.95	\$32.95	\$26.95
Practicalc	\$59.95	\$24.95	\$19.95
Programmers Reference Guide	\$20.95	\$16.95	\$12.50
Programmers Helper (Disk)	\$59.95	\$29.95	\$19.95
80 Column Screen (Disk)	\$59.95	\$29.95	\$19.95
Disk Filer (by Flip-N-File)	\$39.95	\$14.95	\$12.95
Deluxe Tape Cassette	\$89.00	\$44.95	\$34.95
Pro Joy Stick	\$19.95	\$12.95	\$10.00
Light Pen	\$39.95	\$14.95	\$ 9.95
Dust Cover	\$ 8.95	\$ 6.95	\$ 4.60
Simon's Basic	\$29.95	\$22.95	\$19.95
Pitstop II Epyx	\$39.95	\$22.95	\$19.95
Super Graphics Expander	\$29.95	\$22.95	\$19.95
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Filewriter	\$59.95	\$29.95	\$24.95

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We expect a limited supply the 1st week in July. We will ship on a first order basis. This all-new revolutionary 128K computer uses all Commodore 64 software and accessories plus all CPM programs formatted for the disk drive. List \$349.00. **SALE \$289.95.**

### 340K 1571 COMMODORE DISK DRIVE \$259.00

Double Sided, Single Disk Drive for C-128 allows you to use C-128 mode plus CPM mode. 17 times faster than 1541, plus runs all 1541 formats. List \$349.00. **Sale \$259.00.**

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Easy to use. Just plug into your Commodore 64 computer and you're ready to transmit and receive messages. Easier to use than dialing your telephone, just push one key on your computer! Includes exclusive easy to use program for up and down loading to printer and disk drives. **Best in U.S.A.** List \$129.00. **SALE \$39.95.**

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For Commodore-64 computers. Just plug it in and you can program words and sentences, adjust volume and pitch, make talking adventure games, sound action games and customized talkies!! **FOR ONLY \$19.95** you can add TEXT TO SPEECH, just type a word and hear your computer talk — **ADD SOUND TO "ZORK", SCOTT ADAMS AND OTHER ADVENTURE GAMES!!** (Disk or tape.) List \$89.00. **SALE \$39.95.**

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Your choice of green or amber screen monitor, top quality, 80 columns x 24 lines, easy to read, anti-glare! **PLUS \$9.95** for connecting cable. Com-64 or VIC-20. List \$159.00. **SALE \$69.95.**

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"JUKI" Superb letter quality, daisy wheel printer/typewriter combination. Two machines in one — just a flick of the switch, 12" extra large carriage, typewriter keyboard, automatic margin control and relocate key, drop in cassette ribbon! (90 day warranty) centronics parallel or RS232 serial port built in (Specify). List \$349.00. **SALE \$249.95. (Ltd. Qty.)**

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You pay only \$139.95 when you order the powerful 84K COMMODORE 64 COMPUTER! LESS the value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your computer that allows you to SAVE OVER \$500 off software sale prices!! With only \$100 of savings applied, your net computer cost is \$39.95!!

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You pay only \$159.95 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. Impact dot matrix, bidirectional. LESS the value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your printer that allows you to SAVE OVER \$500 off software sale prices!! With only \$100 of savings applied your net printer cost is only \$59.95.

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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!! **PLUS 4 slot expander!**

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## 312/382-5244 to order

# GIANT PRINTER SALE!!

List \$399.00

**10" Printer**

**S A L E \$ 179<sup>00</sup> S A L E**

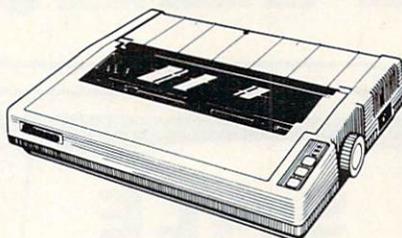
10" Comstar 10X — This Bi-directional Tractor/Friction Printer prints standard sheet 8½"x11" paper and continuous forms or labels. High resolution bit image graphics, underlining, horizontal tab setting, true lower descenders, with super scripts and subscripts, prints standard pica, compressed, expanded, block graphics, etc. Fantastic value. (Centronics parallel interface.)

List \$399.00. Sale \$179.00.

1 Year Warranty

**120-140 CPS**

Premium Quality



List \$599.00

**15½" Printer**

**S A L E \$ 249<sup>00</sup> S A L E**

15½" Comstar 15X — Has all the features of the 10" Comstar 10X plus a wider 15½" carriage and more powerful electronics to handle large ledger business forms! (Better than FX-100). The 15½" Comstar 15X also prints on standard size paper and continuous forms and labels. Fantastic value. (Centronics parallel interface.)

List \$599.00. Sale \$249.00.

List \$499.00

**10" Printer**

**S A L E \$ 229<sup>00</sup> S A L E**

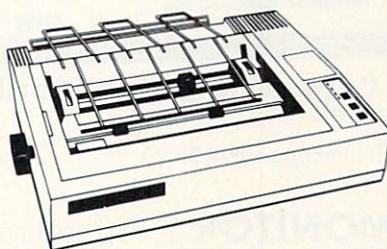
10" Comstar 160+ High Speed — This Bi-directional Tractor/Friction Printer combines the above features of the 10" Comstar 10X with speed (150-170 cps) and durability. Plus you get a 2K buffer, 96 user definable characters, super density bit image graphics, and square print pins for clearer, more legible print (near letter quality). This is the best value for a rugged dependable printer. (Centronics parallel interface.)

List \$499.00. Sale \$229.00.

1 Year Warranty

**150-170 CPS**

High Speed



List \$699.00

**15½" Printer**

**S A L E \$ 299<sup>00</sup> S A L E**

15½" Comstar 160+ High Speed — This Bi-directional Tractor/Friction Printer has all the features of the 10" Comstar 160+ High Speed plus a wider 15½" carriage and the heavy duty electronics required for today's business loads. You can use large ledger business forms as well as standard sheets and continuous forms and labels. This is the best wide carriage printer in the U.S.A. (Centronics parallel interface.)

List \$699.00. Sale \$299.00.

List \$599.00

**10" Printer**

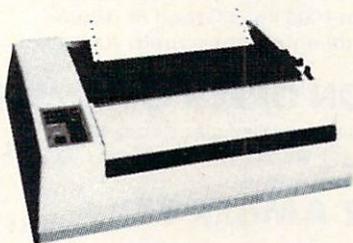
**S A L E \$ 259<sup>00</sup> S A L E**

10" Comstar 2000 — The ultimate printer has arrived! This Bi-directional Tractor/Friction Printer gives you all the features of the Comstar 160 plus higher speed (165-185 cps), 256 downloadable characters, proportional setting, external dark printing mode and a \*lifetime printhead warranty. PLUS ...

Lifetime warranty\*

**165-185 CPS**

High Speed & Letter Quality



List \$599.00

**10" Printer**

**S A L E \$ 259<sup>00</sup> S A L E**

With the flip of a switch you can go into the letter quality mode which makes all your printing look like it came off a typewriter. Turn in term papers, do articles or just print programs. Have the best of letter quality and speed in one package. Fantastic printer (Centronics parallel interface.)

List \$599.00. Sale \$259.00.

**• 15 Day Free Trial — 1 Year Immediate Replacement Warranty**  
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Atari — \$59.00

Apple II, II+, IIe — \$59.00

Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA.

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No C.O.D. to Canada, APO-FPO.

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**312/382-5244 to order**

# COLOR MONITOR

**Sale**

# SALE!!!

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COLORS

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- Sharp Clear Text
- Anti-Glare Screen
- 40 Columns x 24 Lines
- Supports 80 Columns

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**13" Color Computer Monitor**

\*Connecting cable \$9.95

**Sale \$169.95\***

**13" RGB & COMPOSITE MONITOR** List \$399.00

Must be used to get 80 columns in color with 80 column computers (C128 & Atari ST). (add \$14.50 shipping)

**Sale \$279<sup>00</sup>\***

**14" COMMODORE 1702 COLOR MONITOR** List \$299.00  
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**Sale \$179<sup>00</sup>\***

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**12" XTRON SUPER HI-RESOLUTION MONITOR** List \$249.00  
80 Columns x 24 Lines, Super Hi-Resolution 1000 lines Green or Amber Super-Clear "Easy to Read" text with special anti-glare screen! (Ltd. Qty.)

**Sale \$109.95\***

**12" ZENITH HI-RESOLUTION GREEN OR AMBER TEXT DISPLAY MONITOR** List \$199.00  
80 Columns x 24 Lines, Hi-Resolution, crisp clear easy to read text with anti-glare screen! A MUST for word processing. (Ltd. Qty.)

**Sale \$89.95\***

**12" MONITOR GREEN OR AMBER TEXT** List \$159.00  
80 Columns x 24 Lines, easy to read up front controls (Ltd. Qty.)

**Sale \$69.95\***

\* Connecting cable \$9.95

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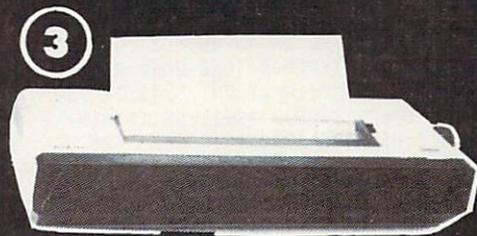


88K *Lowest Price In The USA!* 152K

# Computer System Sale

• Students • Word Processing • Home • Business

**88K System \$449**  
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<sup>1</sup> **Rated "Best Buy" by Consumers Digest Buyers Guide, January 1985**

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- Atari 1027 Letter Quality 20 CPS Printer
- Atari Writer Word Processor
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All connecting cables & T.V. interface included.  
Monitors sold separately.

LIST PRICE	INDIVIDUAL SALE PRICE
\$179.00	<b>\$109<sup>00</sup></b>
299.00	<b>199<sup>00</sup></b>
299.00	<b>199<sup>00</sup></b>
59.95	<b>39<sup>95</sup></b>
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SYSTEM  
SALE PRICE

**152K SYSTEM**  
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	List	Sale	
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13" Hi Resolution Color Monitor	\$399.00	<b>169.95</b>	
* ATARI 130XE 152K Computer	\$249.00	<b>159.00</b>	Add \$10 for UPS

**15 DAY FREE TRIAL.** We give you 15 days to try out this ATARI COMPUTER SYSTEM!! If it doesn't meet your expectations, just send it back to us prepaid and we will refund your purchase price!! **90 DAY IMMEDIATE REPLACEMENT WARRANTY.** If any of the ATARI COMPUTER SYSTEM equipment or programs fail due to faulty workmanship or material within 90 days of purchase we will replace it IMMEDIATELY with no service charge!!

**Best Prices • Over 1000 Programs and 500 Accessories Available • Best Service**  
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# PUZZLE

## IBM PC & compatibles\*/Alphabet Soup: Eat

```

10 dl = 120: max = 80: sw = 31
20 DL=30:F=1:FR=12:MAX=190:SH=24:SW=80
30 WIDTH SW:LOCATE ,,,0:DEF FNR(A)=INT(RND*A)+1
40 DH=SH-3:DIM H$(8),W$(FR+10)
50 DIM PT(FR+1-(F=1)*5),RP(MAX,2),SM(SW,SH),WP(DH*6,2)
60 SP$=CHR$(32):QS="" OR <Q> TO QUIT."
70 FOR X=1 TO SW:FOR Y=1 TO SH:SM(X,Y)=0
80 NEXT Y:NEXT X:WP(0,1)=0:WP(0,2)=0
90 FOR X=1 TO 8:READ TS:GOSUB 2010:H$(X)=TS:NEXT X
100 RS="" :FOR X=3 TO 8:RS=RS+H$(X)+SP$
110 NEXT X:RS=LEFT$(RS,27)+""
120 PT(1)=1:FOR X=1 TO FR-(F=1)*5:READ T
130 PT(X+1)=PT(X)+T:FOR Y=PT(X) TO PT(X+1)-1
140 READ TS:GOSUB 2000:W$(Y)=TS:NEXT Y:NEXT X
150 CLS:IF F=2 THEN 250
160 PRINT "TYPE IN YOUR FIRST NAME.":PRINT
170 TS="" :INPUT "MY NAME IS ";TS:IF TS="" THEN 150
180 GOSUB 1000:W$(48)=TS
190 CLS:MS="TYPE IN AN OBJECT YOU OFTEN"
200 MS=MS+" MISPLACE (ONE WORD ONLY).":GOSUB 3000
210 PRINT:TS="" :INPUT "MY ";TS:IF TS="" THEN 190
220 PS=TS+"?":GOSUB 1000:W$(18)=TS
230 CLS:NS="SOUP'S ON!":GOSUB 3500
240 NS="COME AND GET IT!":GOSUB 3500:GOSUB 4000
250 FOR S=1 TO FR:CLS:C=1:Z$=""
260 DP=PT(S+1)-PT(S):IF DP>DH THEN DP=DH
270 DY=INT((SH-1)/DP)
280 FOR X=PT(S) TO PT(S)+DP-1:Z$=Z$+W$(X)
290 LW=LEN(W$(X)):IF LW>SW THEN LW=SW
300 DX=INT(SW/LW):T=FNR(DY)+WP(C-1,2)
310 FOR Y=1 TO LW:WP(C,1)=FNR(DX):WP(C,2)=T
320 IF Y>1 THEN WP(C,1)=WP(C,1)+WP(C-1,1)
330 SM(WP(C,1),WP(C,2))=1:C=C+1:NEXT Y:NEXT X
340 LZ=LEN(Z$):FOR X=1 TO MAX
350 GOSUB 5000:RP(X,1)=XP:RP(X,2)=YP
360 SM(XP,YP)=2:NEXT X:RC=MAX:WC=0
370 FOR X=1 TO MAX/2:P=FNR(RC)
380 GOSUB 5000:SM(XP,YP)=2:SM(RP(P,1),RP(P,2))=0
390 FOR D=1 TO DL:NEXT D
400 LOCATE RP(P,2),RP(P,1):PRINT SP$;
410 RP(P,1)=XP:RP(P,2)=YP
420 IF FNR(10)>5 THEN 450
430 WC=WC+1:IF WC>LZ THEN 450
440 P=WC:GOSUB 6000
450 IF FNR(10)>10 OR RC=0 THEN 490
460 P=FNR(RC):XP=RP(P,1):YP=RP(P,2)
470 MS=SP$:GOSUB 6500:SM(XP,YP)=0
480 RP(P,1)=RP(RC,1):RP(P,2)=RP(RC,2):RC=RC-1
490 NEXT X:IF WC>LZ-1 THEN 510
500 FOR P=WC TO LZ:GOSUB 6000:NEXT P
510 MS=SP$:FOR X=1 TO RC:XP=RP(X,1):YP=RP(X,2)
520 GOSUB 6500:SM(XP,YP)=0:NEXT X
530 MS="PRESS <ENTER> TO TAKE A SIP OF SOUP."
540 GOSUB 7000:GOSUB 3000
550 GOSUB 8000:IF K$<>CHR$(13) THEN 550
560 FOR X=1 TO LZ:SM(WP(X,1),WP(X,2))=0
570 NEXT X:NEXT S
580 CLS:MS="YOU'VE FINISHED ALL THE SOUP!"
590 GOSUB 3000:IF F=2 THEN END
600 TS="" :GOSUB 8500
610 GOSUB 8000:IF K$="Q" THEN END
620 IF K$="E" THEN 250 ELSE IF K$<>"G" THEN 610
630 CLS:MS="WHERE IS YOUR "+PS:GOSUB 3000:PRINT
640 TS="" :INPUT "BEHIND THE ";TS:IF TS="" THEN 630
650 MS="" :FOR X=1 TO LEN(TS):K$=MID$(TS,X,1)
660 GOSUB 8010:MS=MS+K$:NEXT X
670 IF MS=H$(2) THEN 740
680 CLS:MS="SORRY, YOU'RE WRONG!":GOSUB 3500
690 TS="" <H> FOR A HINT,":GOSUB 8500
700 GOSUB 8000:IF K$="E" THEN 250
710 IF K$="H" THEN 730 ELSE IF K$="Q" THEN END
720 IF K$<>"G" THEN 700 ELSE 630
730 CLS:MS=RS:GOSUB 3000:GOSUB 4000:GOTO 580
740 CLS:MS="THE NEXT DAY THE SOUP SAID ..."
750 GOSUB 3000:PRINT:FOR X=13 TO 17
760 FOR Y=PT(X) TO PT(X+1)-1:PRINT W$(Y);SP$;

```

```

770 NEXT Y:PRINT:NEXT X:PRINT:PRINT:END
1000 MS="" :FOR A=1 TO LEN(TS):W=0
1010 K$=MID$(TS,A,1):GOSUB 8010:FOR B=1 TO 5
1020 IF K$=MID$(H$(1),B,1) THEN W=-1:B=5
1030 NEXT B:IF NOT W THEN MS=MS+K$
1040 NEXT A:TS=MS:IF TS="" THEN TS=SP$:RETURN
1050 MS="" :FOR A=1 TO LEN(TS):K$=MID$(TS,A,1)
1060 IF K$>"a" AND K$<CHR$(91) THEN MS=MS+K$
1070 NEXT A:IF MS="" THEN TS=SP$:RETURN
1080 TS=MS:RETURN
2000 IF F=2 THEN GOSUB 1000:RETURN
2010 MS="" :V=ASC(LEFT$(TS,1))-64
2020 FOR Z=2 TO LEN(TS):N=ASC(MID$(TS,Z,1))-V
2030 MS=MS+CHR$(N-26*(N<65)):NEXT Z
2040 TS=MS:RETURN
3000 IF LEN(MS)<=SW THEN NS=MS:GOSUB 3500:RETURN
3010 Y=SW+1:Z=1:FOR X=Y TO 2 STEP -1
3020 IF MID$(MS,X,1)=SP$ THEN Z=0:Y=X:X=2
3030 NEXT X:NS=LEFT$(MS,Y-1):GOSUB 3500
3040 MS=RIGHT$(MS,LEN(MS)-Y+Z):GOTO 3000
3500 IF LEN(NS)=SW THEN PRINT NS:RETURN
3510 PRINT TAB((SW-LEN(NS))/2);NS:RETURN
4000 MS="PRESS ANY KEY TO CONTINUE."
4010 GOSUB 7000:GOSUB 3000:GOSUB 8000:RETURN
5000 XP=FNR(SW):YP=FNR(SH-1)
5010 IF SM(XP,YP)<>0 THEN 5000
5020 MS=CHR$(64+FNR(26)):GOSUB 6500:RETURN
6000 XP=WP(P,1):YP=WP(P,2)
6010 MS=MID$(Z$,P,1):GOSUB 6500:RETURN
6500 LOCATE YP,XP:PRINT MS:RETURN
7000 LOCATE 24-INT(LEN(MS)/SW+.99),1:RETURN
8000 K$=INKEY$:IF K$="" THEN 8000
8010 IF K$<CHR$(97) THEN RETURN
8020 K$=CHR$(ASC(K$)-32):RETURN
8500 MS="PRESS <E> TO EAT ANOTHER BOWLFUL OF SOUP"
8510 MS=MS+", <G> TO GUESS,"+TS+QS:GOSUB 7000
8520 GOSUB 3000:RETURN
9000 DATA MNRVBH,SHPE,GLCLYF,IFXAM
9010 DATA RZSK,DEX,KWPLDE,QFEV
10000 DATA 4,IF,PH,LZHENX,RUJLJK,3,HEP,FYIXXE,JBXN
10010 DATA 3,EMISL,JIB,PJXDWI,4,VSPDP,NAYBU,RF,DWRH
10020 DATA 4,HB,TFWN,MLE,HI,3,PFBI,JDRXU,NPH
10030 DATA 5,DXL,SMAGZL,MSEZ,KESD,ND
10040 DATA 5,HBPB,SP,QYM,GARU,QK,4,LF,TM,GKMMJSA,LFD
10050 DATA 4,QSK,FITYJX,JDRC,NQZ
10060 DATA 4,PDT,KWV,FHNTJ,PIJCJXDW,3,SYFEK,MG,DC
10070 DATA 2,IMA,FK,6,HE,QTE,MA,MYATE,EYWHWP,KJ
10080 DATA 5,QP,LTH,PTISLHT,HZ,MTZ,6,JC,EKK,NH
10090 DATA SGMAK,PM,NU,5,JPB,VIN,MS,XRF,EXR

```

\*This program has been tested on the following computers, using the BASICs shown:  
 IBM PC w/Color Graphics Adapter or Monochrome/Printer Card, w/Disk BASIC D2.00  
 or Advanced BASIC A2.00.  
 Tandy 1000, w/GW-BASIC 2.02 version 00.05.00.

## MODIFICATIONS FOR OTHER COMPUTERS

### ADAM/Alphabet Soup: Eat

Use the Apple version with the following alterations: Delete lines 8010 and 8020. Also, change lines 10 and 8000 to read as follows:

```

10 dl=120:fr=12:max=80:sw=31
8000 GET K$:IF K$=CHR$(3) THEN END

```

### IBM PCjr/Alphabet Soup: Eat

Use the IBM PC version, except change line 20 to read as follows:

```

20 DL=50:F=1:FR=12:MAX=100:SH=24:SW=40

```

### TRS-80 Color Computer/Alphabet Soup: Eat

Use the IBM PC version with the following alterations: Change lines 10, 20, 30, 400, 6500, and 7000 to read as follows:

```

10 CLEAR 1000

```

**PUZZLE**

```
20 DL=30:F=1:FR=12:MAX=55:SH=16:SW=32
30 DEF FNR(A)=RND(A)
400 PRINT@ (RP(P,2)-1)*SW+RP(P,1)-1,SP;
6500 PRINT@ (YP-1)*SW+XP-1,M$;:RETURN
7000 PRINT@ (SH-INT(LEN(M$)/SW+1.99))*SW,"";:RETURN
```

**TRS-80 Model III & Model 4 (w/Model III BASIC)/Alphabet Soup: Eat**

Use the IBM PC version, with the following alterations: Change lines 10, 20, 30, 400, 6500, and 7000 to read as follows:

```
10 CLEAR 1000
20 DL=30:F=1:FR=12:MAX=105:SH=16:SW=64
30 DEF FNR(A)=RND(A)
400 PRINT@ (RP(P,2)-1)*SW+RP(P,1)-1,SP;
6500 PRINT@ (YP-1)*SW+XP-1,M$;:RETURN
7000 PRINT@ (SH-INT(LEN(M$)/SW+1.99))*SW,"";:RETURN
```

**VIC-20 w/8K or 16K RAM Cartridge/Alphabet Soup: Eat**

Use the Commodore 64 version with the following alterations: Delete line 10. Then change line 20 to read as follows:

```
20 F=1:FR=12:MAX=55:SH=23:SW=22
```

**PROGRAMMING P.S.**

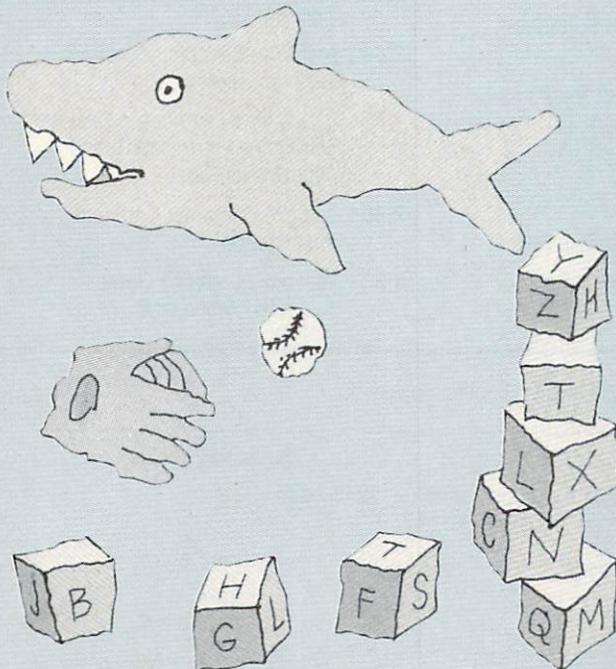
Correction to a previous program

**Commodore 64 w/disk drive or Datassette (printer optional)/Home Information Manager (August 1985, pages 61-64)**

This program assumes there will be at least one card in any filebox you try to GET or STORE; it will malfunction if you try to GET or STORE one that's completely empty. To prevent this, you can change lines 1850 and 1930 to read as follows:

```
1850 FOR J=1 TO FT:PRINT#2,F$(J):NEXT J:IF RT=0 THEN 1870
1930 FOR J=1 TO FT:INPUT#2,F$(J):NEXT J:IF RT=0 THEN 1950
```

**Note:** The Commodore 64 program will not work on the Apple as published. Watch for our Apple version in an upcoming issue.



**SOLUTION TO ALPHABET SOUP: EAT**

The words in each DATA statement will appear on a separate screen. You must make two other changes to the program for it to run properly, both in line 20. First, change the 12 in line 20 to the number of separate DATA lines you've added. (That's the number of different screens the program will display.) Second, change F=1 to F=2.

Remember that one word will be displayed on each line, so you can't have more words displayed than there are lines on your computer screen. Extra lines will be ignored. Similarly, if you've put in a word that has more consonants than fit onto a line of your screen, the extra letters won't be displayed.

This program is a unique way to get a message across to your family or friends. Have fun with it!

The vowels (except Y) and punctuation marks will be removed from each word, and all letters will be converted to capitals. When your friends play the game, they'll see letters appear and disappear, eventually leaving your message (minus vowels) on the screen. For example, the DATA statement given above would cause something like this to appear:

```
R VR
T
T
H R
T
M
T M
```

**BONUS PROGRAM: Alphabet Soup: Serve**

You can use this program to serve up your own cryptic messages to your friends. Here's how: First, delete all the DATA statements from line 1000 onward (leave lines 9000-9010 unchanged). Then add your own DATA statements starting at line 1000. Each line should start with the line number, followed by DATA, the number of words that follow on that line, a comma, and the words you'd like spelled out, separated by commas (but with no comma at the end of the line). For example, if you wanted the message MEET ME AT THREE AT THE RIVER to be spelled out on the first screen, you'd add the following line to the program:

```
1000 DATA 7,MEET,ME,AT,THREE,AT,THE,RIVER
```

The invisible creatures have hidden your object behind something in Jeremy's room—an object you can identify using the clues in the rhyme. Look at the illustration and you'll see a stuffed owl (dressed in a shirt with a large "V")—the "V"-owl. Type owl when asked for your guess and the soup will say . . .

Dear (player's name)  
We can no longer trick you  
You have discovered our game  
So off to another we go  
For more of the same

The messages spelled out by the soup have had all the vowels removed. With the vowels in place, the 12 phrases read as follows:

```
We are invisible creatures
Who scurry around
Hiding your things
Without making a sound
To locate your (object inputted by player)
Please think about
The things from this poem
That we have taken out
It is difficult, true
But consider this clue
And look behind something
Familiar to you
```

# ARE YOU MISSING MEMBERS OF YOUR FAMILY?

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Win \$25!!  
K-Power Contest  
Page 80

# K-POWER

FOR THE COMPUTER GENERATION

## Computing With Champions

Baseball has the Series, football has Bowls, sailing has Cups, and, in Yonkers, New York, computer "athletes" have computer competitions! Yes, the situation was tense at the Yonkers Enrichment Center last summer, site of the Third Annual Computer Competition. This two-day contest pitted the best young programmers from 35 school districts against each other. The lucky winners would walk away with brand-new IBM, Apple, and Radio Shack computers. The stakes were high and so were the hopes . . .

You may think this computer competition stuff sounds corny, but the Yonkers "programming bee" is anything but. Talk about K power! Many contestants are veteran competitors, and their track records for quickly solving complex problems are legendary. The competition is as fierce as any you'd find on the football field, and the "play" is surprisingly exciting to watch. The contest works like this:

Contestants are chosen from local



Nearly 100 hackers competed in the Third Annual Computer Competition in Yonkers, New York.

school districts and are divided into three categories by age: Elementary for grades four to six, Junior for grades seven and eight, and Senior for grades nine through 12.

These hackers program solutions to five computer questions in BASIC. Contestants compete on their machine of choice (Apple, IBM, Radio Shack, or Commodore) in a two-hour race against the clock. Answers to the problems are judged by a panel of experts.

Seventeen-year-old Brien Wheeler caught his breath after crossing the

finish line at least 20 minutes before the others in his division. Brien, an 11th-grade competitor from Pearl River High School, was fighting to hold the first place title he gained in last year's competition.

"Palpitations," he declared. "Maybe I seemed cool, but my heart was going donk, donk, donk, donk." Brien took second place and won a Radio Shack Model 100.

The first-prize IBM PC went to a newcomer in the Senior division, Jeff Zawrotny, 15, of Mahopac Junior High School. Winner of last year's Junior competition, Jeff was the only Senior contestant to answer all the problems.

Mark Giordano ("Major Apple" to his friends) looked visibly drained even before the difficult tiebreaker question. "I barely finished the questions," fretted the 16-year-old from Dobbs Ferry High School. "They were pretty tough and very varied." But exhaustion turned to elation as Mark walked away with third place and a Radio Shack Model 100.

## Test Yourself!

How would you fare in a computer competition? Think you belong in "the top echelon"? Here are two sample problems:

**JUNIOR:** Write a program that asks for the input of five first names (lim-

iting the input to names of 12 characters each) and then asks for an integer between 1 and 1,000 for that individual name. The program should check for input and not allow names of more than 12 characters or numbers outside the permitted range. The program should abort if improper input is used, but should

explain the error, and then prompt the user to try again.

**SENIOR:** Write a program that will accept the names and SAT scores of any number of students as INPUT. The program should print out each student's name and SAT score first in alphabetical order, and then in order of decreasing SAT scores.

## SOFTWARE SCOOP!

Attention all you **Stephen King** and **James Bond** fans! **Mindscape** has created **Stephen King's The Mist** and **James Bond: A View to a Kill** for Apple and IBM computers (\$39.95). Macintosh versions are expected in October. . . . Speaking of Macintosh,

Mindscape just released **Deja Vu**, the company's first product designed for the Mac. The suspense game incorporates the characters, props, and intrigue of a classic 1940s mystery, Mindscape says. . . . **Penguin Software** presents **The Sword of Kadash** by designer **Chris Cole** for Apple and

Commodore 64 (\$34.95). Your mission: To retrieve the enchanted sword from the Fortress of the Dragon. A **free color poster** that's included with the game will help you identify the creepy creatures within the game's 200 rooms and passages. . . . Until next month, **happy gaming!**

## Bugs, Bugs, and More Bugs

Throughout history, we humans have been constantly pestered by annoying arachnids, troublesome termites, bothersome beetles, molesting mosquitoes, and many other species of bugs. Wherever we go, those vexing vermin seem to find a way to follow us. So it was inevitable for bugs to make a home in our newest technology: computers.

Below is a list of computer bugs compiled by our readers and by K-POWER's buggsy assistants —The SPECIAL Ks (David Langendoen, Alex Sharar, and Damon Osgood). Although the bugs were selected randomly from our "Computer Bug Contest" entries, we feel this is the finest list for yards around. Creators of chosen bugs won software.

**The Carroach (System Crashus).** This bug lives deep inside my cartridge slot. Every time I'm in the middle of a great, high-scoring game, this buggger plays around with the contents of my game. —JEFF MALEC, 14, Rome, New York

**The Playing Manthis (Keyboardus Jamus).** This bug disguises itself as an innocent-looking piece of circuitry. Then it waits for the moment of truth when you press the key that will end the game in your favor. He springs from nowhere to grab your command and to hold it . . . and lets it go . . . a second too late!!!!

—ROBERT WAI, 13, San Diego, California

**The Dead Turtle.** When I save my game and run it the next day, it just sits there on the middle of the

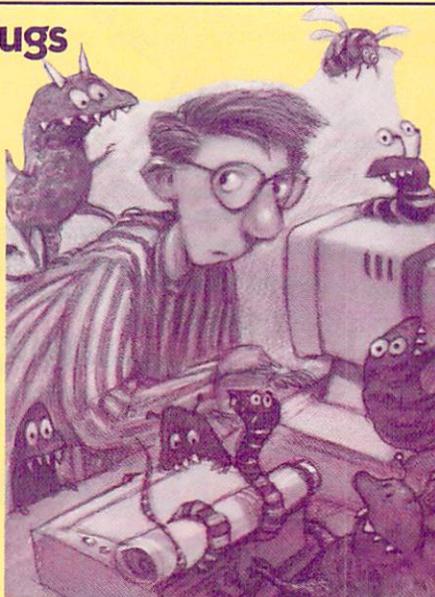


ILLUSTRATION BY HOWARD LEVINS

screen . . . thanks to The Dead Turtle.

—DIANE BENHAM, 12, Rutland, Vermont

**Cheater Bug (That'sus Notus Fairus).** *Habitat:* Any game that pits you against the computer. *Habits:* This bug gets in there and makes you think the computer is cheating! —RON ZOINES, 15, Columbus, Nebraska

**Mosqueko.** My bug's habitat is slow, easy games. First he'll fly to your ear, and then, when you're about to win, he squeaks real loud and messes you up. —CHUCKIE SAILEY, 12, Morrisville, Pennsylvania

**The Tapeworm (Makeus Scratchus).** My tapeworm lives around the "read" head inside my Atari program recorder and causes loading errors. —BOYD HARMON, 15, Santa Rosa, California

**The Venomous Tapeworm.** More venomous than the species cited above. It crawls into my cassette tapes and overlaps programs. It causes many errors! —MATT CLARK, 13, Meridian, Idaho

**Monitor Mite.** This little show-off will do anything to be in pictures. It will make its presence known by distorting your picture in any way it can. Its favorite activity is placing its name in various places throughout your text files and programs. Guido wuz here! Mergatroid lives! (Rats!) —SPECIAL Ks

**TV Tsetse.** Even worse than the monitor mite, this spiteful creature loves nothing more than to create outside interference by overlaying your programs with reruns of "Lost in Space" and "Sheriff Lobo." —SPECIAL Ks

**The Keyboard Beezle (Habiticous Typographixo Parasiticula).** A worm-like creature that is the most feared, most widespread, most abundant computer bug known to exist. Its eggs are laid onto the keys of your keyboard where oils from your fingers cause them to hatch and be absorbed into your body. You begin to lose concentration, make errors again and again . . . —BILLY L.B. STARKEY, 15, St. Paul, Nebraska

**Syntaxus.** Lives in the lower region of the RAM in all computers and jams programs. Its goal is to bug programmers. The only known cure for syntaxus is an automatic proof-reader, which is only available at your local K-Mart store for a very high price. —RODNEY K. MAGNUSON JR., 15, Lincoln, Nebraska

# LOGON

## L E T T E R S

### MISSING GOLD COFFIN

I just received the May 1985 issue of FAMILY COMPUTING (which I feel is the best magazine on the market), and turned to page 66, and read the tips you had for *Zork I*.

On page 66, question two asked how to enter Hades. I had been ringing the bell before I saw the magazine, and knew I was on to something. But when I did what was said (ring the bell, light the candles with the matches from the dam, and read the book), I couldn't enter Hades!

Was there something special I had to do before ringing the bell?

Also, I thought I reached every room, but when I saw in question one that there was a Cyclops Room, I about fainted. How do you get there? Thanks for the information.

BILL ADAMS, 15  
New Brighton, Pennsylvania

Dear Bill,

According to K-POWER's hint experts, the SPECIAL Ks, keep trying on

the Hades angle—it does work. To get to the Cyclops Room, traverse a maze of rooms, each of which looks just like the others. To get through this maze, the best strategy would be to drop a different object in each room so you'll be able to tell exactly where you are. Then map out what exits lead to what rooms, and, with enough experimenting, you should be able to find the Cyclops. By the way, we left a treasure off the list—don't forget the Gold Coffin.

THE EDITORS

# DOCTOR KURSOR'S KLINIC

I've heard a "parser" is used in writing text adventure games. What is it and how does it work?

**DR. KURSOR:** According to Brian Moriarty, author of Infocom's new text adventure game, *Wish-bringer*, "A parser is the part of an adventure-game program that lets it 'understand' what you're typing." To "parse" a sentence means to analyze it grammatically.

The earliest adventure games had two-word parsers, Brian told us. Two-word parsers understood simple sentences like `COMMAND-OBJECT`, or `VERB-NOUN` (`GO NORTH`, `GET SWORD`, etc.) More recently, adventure games have begun to use complex parsers that understand more sophisticated commands (`GO NORTH THEN DROP EVERYTHING BUT THE SWORD AND THE LAMP`).

How does a parser work? Kind of like a data base. Parsers maintain long lists (or tables) of the words they recognize. These lists are broken down into categories. Commands like `GO`, `LOOK`, and `TAKE` go in one list; objects like `SWORD`, `LAMP`, and `JEWEL` go in another. Supplementing and connecting these word lists are lists of rules describing how words work together. (You can `GET` a `SWORD`, and you can `LOOK` at a `MOUNTAIN`, but you can't `GET` a `MOUNTAIN`.) To determine what a sentence means, the parser looks up words in the lists, and finds a rule or rules that tie them together.

The use of parsers isn't limited to adventure games. Compilers, as-

## Need an answer to a hi-tech question?

Dr. Kursor can't write you back, but he'll answer the most interesting questions here. Send your questions to Dr. Kursor's Klinik, c/o K-POWER, 730 Broadway, New York, NY 10003.



ILLUSTRATION BY SAM VIVIANO

semblers, and even your computer's BASIC language all use parsers that interpret statements in a high-level language and translate them into terms the computer can understand. Moreover, parsers that "understand" human languages like English are growing more powerful, and programmers are finding wider applications for them in business and educational computing. Research in this area of artificial intelligence is called "natural language processing."

## How does a surge protector work?

**DR. KURSOR:** Your house wiring carries an average of about 115 volts AC. Electricity from the environment, however (e.g., lightning striking a power cable, or a refrigerator turning itself on or off), can cause very brief surges of high voltage on your lines. Most appliances aren't harmed by these power

surges (sometimes called "spikes,") but the fragile microchips inside computers are very vulnerable to them. Surge protectors are devices designed to protect your delicate equipment from these damaging shocks.

Surge protectors are built around electronic components that act as insulators at normal voltage, but become conductors when excess voltage is applied. These components bridge the two lines that take current to and from your computer. When the voltage on the lines is normal, the components resist the flow of electricity, which lets power travel through your equipment (see diagram). When a high-voltage spike occurs, however, the components become conductors, creating a short circuit that directs the excess voltage back into the house wiring and from there into the ground, instead of through your machine.

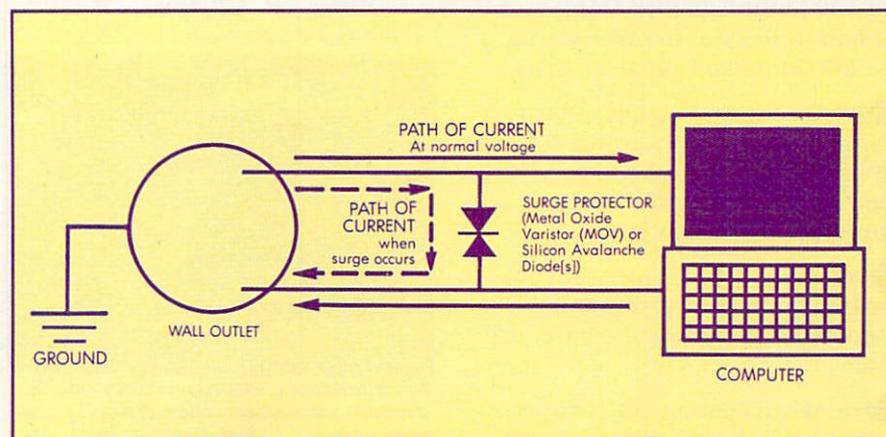


ILLUSTRATION BY JAMES C. MONTALBANO

# STRATEGY

## TIPS, TRICKS, AND HINTS

### MAIL ORDER MONSTERS

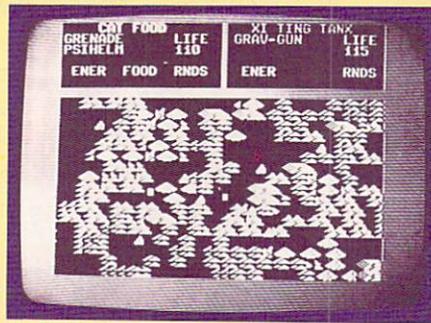
Electronic Arts. Arcade/construction set. Your mission: Create the monster of your dreams, and enter it into gladiatorial combat against computer- or human-controlled beasts. You receive victory points and money after successful bouts to improve your monster or finance a whole menagerie (hints and game for C 64).

🔑 In many cases, the most useful abilities are *speed* and *mind*. *Strength* is useful only in physical attacks and enables you to carry more equipment without being slowed down. *Armor* only defends against Beastfu. A high *life* also helps.

🔑 Make sure that the creature you create has access to some useful



Construct your own monster from a wide variety of species.



Stalk the enemy in treacherous terrain while avoiding urban installations.

X-tras. The best X-tras are *healing*, *teleport* (if you can't get this, *burrowing* or *gills* will help almost as much), *anti-thump*, *psi-blast*, and *sting* (in that order).

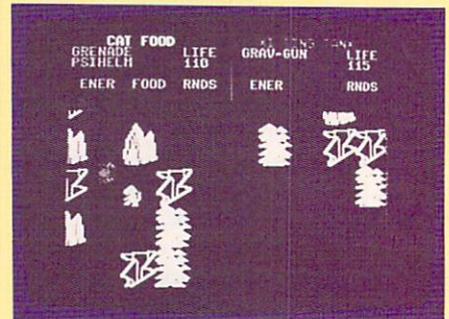
🔑 The best way to defeat a computer opponent is to play the scenario "Capture the Flag." Once you start, move your morph to some out-of-the-way location and let the computer start collecting the flags. You shouldn't have too much trouble killing the enemy monster with the guards and picking up victory after victory.

🔑 Use the terrain to your advantage! Hide in a clump of trees, and while the enemies' shots can't hit you, you can shoot them. While fighting the computer (on the combat screen) make the enemy morph walk through the terrain: It traverses slowly. Shoot it as it vainly

tries to reach you (grenades are particularly effective here).

🔑 Don't try fighting the horde unless you're suicidal or have the most amazing morph this side of the universe. If you have to try it, play one player and let the computer kill as many hordlings as it can, and then mop up the rest (if you can) after the computer player dies.

🔑 Computer-controlled opponents have difficulty moving on diagonals. You can evade them indefinitely by moving diagonally if your speed is approximately equal to that



Combat your foe using speed, cunning, and, above all, a grav gun.

of your opponents'. When fighting Sluggo or any other creature without ranged weapons, move diagonally away from it, fire diagonally behind you, and repeat this method until the enemy is defeated. —GREG HANSON, 14, Baytown, Texas; SPECIAL Ks

### AQUATRON

Sierra On-Line. Arcade/skill. Your mission: Using a high-performance fighter armed to the teeth, search out and annihilate everything in the air and in the sea. In other words . . . kill (hints and game for Apple).

🔑 On the first couple of boards, it's easy to get a lot of points by simply following the bombers, collecting their parachutes, and destroying the interceptors as they appear.

🔑 Your base is impervious to proximity missiles; if you must shoot something near the base, use them.

🔑 When coming out of hyper-drive in your base's sector, stay in

the middle of the screen so you don't accidentally crash into your base.

🔑 Always try to destroy the bombers first, then worry about everything else. Otherwise, they'll create more submarines and give



Battle bombers, escorts, interceptors, destroyers, submarines, contact mines, and power mines . . . just don't hit your base.

you more to worry about.

🔑 When attacking a destroyer, move so that it is off the screen, but with the orange blip that shows its position still visible. Then charge it, firing as you go. You should be able to destroy it without facing a barrage of missiles.

🔑 After level eight, find your base and fly away from it. Go in the direction of the most enemies, guns blazing. Once you run low on shields and/or proximity missiles, hyper-drive back to the base, pick up fresh supplies, and repeat the process. Don't worry if you miss a parachute or two. The most important thing is to destroy anything that poses an immediate threat. —SPECIAL Ks

## MINDWHEEL

Synapse and Broderbund. Text adventure. Your mission: Explore the minds of a scientist, a poet, a dictator, and a singer in order to find the lost wisdom of primeval man, and save the world from an imminent holocaust (hints and game for Atari, C 64, Apple, IBM PC/PCjr).

🔑 Pay close attention to the text. Many hints are given in the wording of descriptions and prompts. Especially valuable tips lie in the Mindwheel book, the songs of Bobby Clemons, and the comments

of something small, green, and rubbery.

🔑 Know your baseball trivia. Names and numbers will come into play.

🔑 If at first you get a pizza, try, try, again.

🔑 The keyboard is more than meets the ear.

🔑 Trust the militant lizard . . . once.

🔑 The baton is good for more than twirling.

🔑 What's round and cuts through thugs and (barbed wire) fences?

🔑 There's an oddly shaped key in the prisoners' tree.

🔑 In the pasture, don't pick up anything until after talking to the lady. Bribe the horse with something sweet, and build an impromptu instrument.

🔑 Some baseball players complain that they have a "hole" in their bat when they strike out. If you ever strike out, you'll have a legitimate excuse. —SPECIAL Ks

## H I N T H O T L I N E

**CASTLE WOLFENSTEIN**, Muse Software (Atari, Apple, C 64, IBM PC/PCjr). Arcade adventure. Your mission: to escape from a German W.W. II prison with the secret war plans.

🔑 When you start a new game, press ESC to save the game. Then catalog the game disk and type BRUN@WOLF. When the game starts, you will be somewhere in the castle, but your rank will now be "Field Marshal." However, if you're using the joystick, your controls will be screwy. To fix this, save the game again, reboot the game as usual, and follow the instructions given for adjusting the joystick controls. (Apple only) —M.S., *Harwood Heights, Illinois*

🔑 C 64 owners: Instead of going through that endless barrage of text that you probably have memorized by now, try this. Immediately after getting killed or caught, hold down the RUN-STOP key and press the RESTORE key. Then type SYS 2068 and press RETURN. You will then start in the same room that you left off in. —MIKE DIRENZO, 17, *Shelton, Connecticut*

🔑 In the July K-POWER section (page 61), we gave a pattern for escaping from any castle. Since then, we have discovered that this pattern only works for the Apple version of the game. We now have the pattern for the Atari version: Upstairs, left, left, down, upstairs, left, down, down, right, right, up, up, left,

up, left, left, down, right, upstairs, down, left, left, up, right, up, right, up, left, upstairs, up, left, down, down, right, right, up, up. Thanks to SAM NEAL, *Keswick, Virginia*.

**Attention:** If anyone knows the pattern for the C 64 and IBM versions, please send them in.

**ZAXXON**, Synapse Software (C 64). Arcade/skill. Your mission: To make your way through the enemy defenses, both on ground and in deep space, and destroy the evil robot Zaxxon.

🔑 You can become absolutely indestructible by doing the following: On the title screen, when the Zaxxon logo appears, type LOA. The computer should beep, and the word RED will appear on the screen. You are now immune to any form of destruction, even loss of fuel. —BILL GUNDLACH, 13, *Sandusky, Ohio*

**JUMPMAN**, Epyx (C 64). Arcade/skill. Your mission: to enter your own government's headquarters, recently taken over and sabotaged by the evil Alienators, and disarm the bombs found on each of the building's 30 levels.

🔑 Here's a way to get unlimited lives. Type the following, hitting RETURN after each command:

LOAD "I", 8.1

POKE 24015, 173

POKE 54296, 15

SYS 9\*4096

Be warned that you might become stuck on boards if you do the wrong

thing. (The board doesn't reset itself after you die.) —MACK SIMPSON, 16, *Texarkana, Texas*

### THE GREAT AMERICAN CROSS COUNTRY ROAD RACE

Activision (Atari, C 64). Arcade/skill. Your mission: to make as good a time as you can in a high-speed, cross-country road race.

🔑 On condemned roads or on those with rain alerts, drive up the center of the road, constantly accelerating. This will minimize the speed lost by hitting potholes or water, and you will increase your average speed.

🔑 If you're forced to slow down for the police or if you crash, check to see if a gas station is coming up. If one is, take the opportunity to "fill 'er up." —DAVID LANGENDOEN, 17, *Brooklyn, New York*

**KING'S QUEST**, Sierra On-Line (Apple, IBM PC/PCjr). Animated graphic adventure. Your mission: to find the treasures of the Kingdom of Daventry and return them to the king so that you may inherit the throne.

🔑 If you crack a walnut, you'll discover a rich diet.

🔑 If you go poking in holes, bring cheese for the rat.

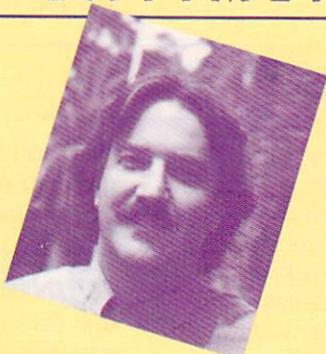
🔑 A key clue: Take three guesses at the old gnome's name.

🔑 Don't be stumped when looking for diamonds. —SPECIAL Ks



## MUSIC PROGRAMS BY JOEY LATIMER

Are you ready to rap? Yup, believe it or not, my wild and crazy technical workmates (Technical Editor John "The Overeducated Rapper" Jainschigg and Associate Gerald Cohen) have worked up a funky computerized rap song called "Hacker's Rap." This song lets you rap like a pro while the computer pounds out a funky beat. The program uses a "follow the bouncing ball" method of shadowing words and syllables so you know what and when to sing. Practice a few times yourself, and then invite your family or friends to join you in a "rap session!" Don't tell 'em you learned to rap from a computer—they'll never believe you!



The Apple, Atari, and Commodore 64 versions of *Hacker's Rap* each use a machine-language (ML) routine to carry out special functions in the program. The Apple computer has only rudimentary sound capabilities, so we've installed a machine-code routine in memory that helps the Apple produce musical tones. The Atari and Commodore lack built-in features for highlighting the lyrics of our rap song in time with the music, so we wrote machine code for both machines that performs this function. See the REM statements in all three versions for further details.

```

110 NEXT I:PRINT TAB(13);"*HACKER'S RAP*":PRINT
120 C = 1:FOR I = 1 TO 20:READ RS:PRINT RS
130 RS = RS+CHRS(13):LJ = 1:FOR J = 1 TO LEN(RS)
140 PS = MID$(RS,J,1):IF PS <> " " AND PS <> "-" AND J
< LEN(RS) THEN 160
150 S$(C) = MID$(RS,LJ,J-LJ+1):LJ = J+1:C = C+1
160 NEXT J:NEXT I:INVERSE
170 VTAB 3:HTAB 1
180 L1 = 0:T1 = 0:L2 = 0:T2 = 0
190 IF T1 > 0 THEN 220
200 L1 = L1+1-11*(L1 = 11):T1 = P(L1,2)*4
210 IF P(L1,1) = 1 THEN A = PEEK(-16336):A = PEEK(-163
36)
220 IF T2 > 0 THEN 240
230 L2 = L2+1:T2 = W(L2)*4:PRINT S$(L2);
240 T1 = T1-1:T2 = T2-1
250 IF L2 < 134 OR T2 > 0 THEN 190
260 FOR I = 1 TO 36
269 REM --"CALL 768" CALLS M/L FOR SOUND--
270 POKE 6,B(I,2)*30:POKE 8,B(I,1):CALL 768:NEXT I
280 F = NOT F:INVERSE:IF F THEN NORMAL
290 GOTO 170
1000 DATA 165,8,201,2,176,2,169,2,74,133,10,164,8
1010 DATA 240,8,173,48,192,234,234,136,208,251,56
1020 DATA 165,7,229,10,133,7,176,235,198,6,208,231,96
2000 DATA 1,1,0,3,1,1,0,3,1,1,0,1,1,1,0,1,1,1,0,2
3000 DATA 197,4,233,4,220,3,0,5,197,2,233,2,220,2
3010 DATA 206,2,197,2,0,6,197,4,233,4,220,3,0,5,146,4
3020 DATA 233,4,220,4,206,4
4000 DATA 1,8,2,2,2,1,8,2,2,1,1,2,1,12,2,3,1,11,2,4
4010 DATA 1,10,2,4,1,10,2,2,1,8,2,1,6,2,1,25,2,1,1
4020 DATA 2,1,15,4
5000 DATA WAN-TED A COM-PU-TER
5010 DATA THAT COULD NOT BE BEAT
5020 DATA SO I BOUGHT MY-SELF A SYS-TEM
5030 DATA THAT CAME COM-LETE.
5040 DATA IT HAD A MON-I-TOR A PRIN-TER
5050 DATA "AND A HARD DISK TOO;"
5060 DATA AND A Z-8-MIL-LION ZIL-LION
5070 DATA CY-CLE C. P. U.
5080 DATA I BROUGHT IT HOME UN-PACKED IT
5090 DATA AND I TURNED IT ON.
5100 DATA THE SCREEN LIT UP AND IT BE-GAN
5110 DATA TO SING THIS SONG.
5120 DATA "IT SAID: I AM A FLY COM-PU-TER"
5130 DATA YOU WON'T FIND AN-Y CU-TER
5140 DATA YOU WANT TO LEARN TO PRO-GRAM?
5150 DATA I'LL BE GLAD TO BE YOUR TU-TOR.
5160 DATA I'M AN AU-TO-MA-TED RAP-PER
5170 DATA "WHO KNOWS ALL THE WORDS;"
5180 DATA AND IF YOU SING A-LONG WITH ME
5190 DATA YOU KNOW YOU'LL NE-VER BE A NERD.

```

### APPLE/HACKER'S RAP

```

10 DIM P(11,2),B(37,2),W(134),S$(134)
20 F = 0:HOME
30 FOR I = 0 TO 36:READ A:POKE 768+I,A:NEXT I
40 FOR I = 1 TO 11:READ P(I,1),P(I,2):NEXT I
50 FOR I = 1 TO 18:READ B(I,1),B(I,2):NEXT I
60 FOR I = 19 TO 36:B(I,1) = B(I-18,1)
70 B(I,2) = B(I-18,2):NEXT I
80 C = 1:FOR I = 1 TO 31:READ V
90 IF V <> 1 THEN W(C) = V:C = C+1:GOTO 110
100 READ V:FOR J = 1 TO V:W(C) = 1:C = C+1:NEXT J

```

### ATARI 400, 800, 600/800 XL, & 130XE/ HACKER'S RAP

```

10 DIM P(11,2),B(37,2),W(134),RS(40)
20 POKE 82,5:POKE 752,1
30 FOR I=1536 TO 1585:READ V:POKE I,V:NEXT I
40 FOR I=1 TO 11:READ T,D:P(I,1)=T:P(I,2)=D:NEXT I
50 FOR I=1 TO 19:READ T,D:B(I,1)=T:B(I,2)=D:NEXT I
60 FOR I=20 TO 37
70 B(I,1)=B(I-18,1):B(I,2)=B(I-18,2)
80 NEXT I
90 C=1:FOR I=1 TO 31:READ V
100 IF V<>1 THEN W(C)=V:C=C+1:GOTO 120
110 READ V:FOR J=1 TO V:W(C)=1:C=C+1:NEXT J
120 NEXT I:PRINT CHR$(125)
130 POSITION 13,0:PRINT "*HACKER'S RAP*":PRINT
140 FOR I=1 TO 20:READ RS:PRINT RS:NEXT I
150 L1=0:T1=0:L2=0:T2=0:L3=0:T3=0
160 POKE 203,PEEK(88)+40:POKE 204,PEEK(89)

```

```

170 IF T1=0 THEN L1=L1+1-11*(L1=11):SOUND 0,0,0,0:SOUND
0,0,P(L1,1),8,10*(P(L1,1)<>0):T1=P(L1,2)*3
180 IF T2=0 THEN L2=L2+1-37*(L2=37):SOUND 1,0,0,0:SOUND
0,1,B(L2,1),12+2*(B(L2,1)=0),10:T2=B(L2,2)*3
190 SOUND 2,100*(T3=0),8,10*(T3=0):SOUND 2,0,0,0
199 REM --"A=USR(1536)" CALLS M/L TO HIGHLIGHT WORDS--
200 IF T3=0 THEN L3=L3+1:A=USR(1536):A=USR(1536):T3=W(L3)
L3)*3

```

```

210 T1=T1-1:T2=T2-1:T3=T3-1
220 IF L3<>134 THEN 170
230 IF T3=384 THEN A=USR(1536)
240 IF T3<>0 THEN 170
250 L3=0:GOTO 160
1000 DATA 104,160,0,177,203,240,11,201,13,240,7,73
1010 DATA 128,145,203,200,208,241,136,177,203,41,128
1020 DATA 208,24,200,177,203,240,251,201,13,240,247
1030 DATA 132,205,24,165,203,101,205,133,203,169,0
1040 DATA 101,204,133,204,96
2000 DATA 200,1,0,3,1,1,0,3,200,1,0,1,200,1,0,1,1,1
2010 DATA 200,1,0,2
3000 DATA 0,160,197,4,233,4,221,3,0,5,197,2,233,2,221
3010 DATA 2,203,2,197,2,0,6,197,4,233,4,221,3,0,5,146
3020 DATA 4,233,4,221,4,203,4
4000 DATA 1,8,2,2,1,8,2,2,1,1,2,1,12,2,3,1,11,2,4
4010 DATA 1,10,2,4,1,10,2,2,1,8,2,1,6,2,1,25,2,1,1,2
4020 DATA 1,15,132

```

```

5000 DATA WAN-TED A COM-PU-TER
5010 DATA THAT COULD NOT BE BEAT
5020 DATA SO I BOUGHT MY-SELF A SYS-TEM
5030 DATA THAT CAME COM-LETE.
5040 DATA IT HAD A MON-I-TOR A PRIN-TER
5050 DATA AND A HARD DISK TOO;
5060 DATA AND A Z-8-MIL-LION ZIL-LION
5070 DATA CY-CLE C. P. U.
5080 DATA I BROUGHT IT HOME UN-PACKED IT
5090 DATA AND I TURNED IT ON.
5100 DATA THE SCREEN LIT UP AND IT BE-GAN
5110 DATA TO SING THIS SONG.
5120 DATA IT SAID I AM A FLY COM-PU-TER
5130 DATA YOU WON'T FIND AN-Y CU-TER.
5140 DATA YOU WANT TO LEARN TO PRO-GRAM?
5150 DATA I'LL BE GLAD TO BE YOUR TU-TOR.
5160 DATA I'M AN AU-TO-MA-TED RAP-PER
5170 DATA WHO KNOWS ALL THE WORDS
5180 DATA AND IF YOU SING A-LONG WITH ME
5190 DATA YOU KNOW YOU'LL NE-VER BE A NERD.

```



## COMMODORE 64 & 128 (C 64 MODE)/ HACKER'S RAP

*Saved as "Nerd"  
Wont Run  
Line 30*

```

10 DIM P(11,2),B(37,3),W(134)
20 POKE 53280,0:POKE 53281,0:S=54272
30 FOR I=S TO S+23:POKE I,0:NEXT I:POKE S+24,15
40 POKE S+5,128:POKE S+6,128
50 POKE S+12,128:POKE S+13,128:POKE S+15,200
60 FOR I=49152 TO 49204:READ V:POKE I,V:NEXT I
70 FOR I=1 TO 11:READ P(I,1),P(I,2):NEXT I
80 FOR I=1 TO 19:READ B(I,1),B(I,2),B(I,3):NEXT I
90 FOR I=20 TO 37:FOR J=1 TO 3:B(I,J)=B(I-18,J)
100 NEXT J:NEXT I
110 C=1:FOR I=1 TO 31:READ V
120 IF V<>1 THEN W(C)=V:C=C+1:GOTO 140
130 READ V:FOR J=1 TO V:W(C)=1:C=C+1:NEXT J
140 NEXT I:PRINT CHR$(147);
150 PRINT TAB(13);CHR$(5);"*HACKER'S RAP*":PRINT
160 FOR I=1 TO 20:READ RS:PRINT TAB(5);RS:NEXT I
170 L1=0:T1=0:L2=0:T2=0:L3=0:T3=0
180 POKE 251,40:POKE 252,4
190 IF T1>0 THEN 220
200 L1=L1+1+11*(L1=11)

```

```

210 POKE S+1,P(L1,1):POKE S+4,129:T1=P(L1,2)*3
220 IF T2>0 THEN 260
230 L2=L2+1+37*(L2=37)
240 POKE S+7,B(L2,1):POKE S+8,B(L2,2):POKE S+11,33
250 T2=B(L2,3)*3
260 IF T3>0 THEN 290
269 REM --"SYS 49172" CALLS M/L TO HIGHLIGHT WORDS--
270 L3=L3+1:SYS 49152:SYS 49152
280 POKE S+18,129:POKE S+18,0:T3=W(L3)*3
290 T1=T1-1:T2=T2-1:T3=T3-1
300 IF L3<>134 THEN 190
310 IF T3=384 THEN SYS 49152:GOTO 190
320 IF T3<>0 THEN 190
330 L3=0:GOTO 180
1000 DATA 160,0,177,251,201,32,240,11,201,45
1010 DATA 240,7,73,128,145,251,200,208,239,136
1020 DATA 177,251,41,128,208,26,200,177,251,201
1030 DATA 32,240,249,201,45,240,245,132,253,24
1040 DATA 165,251,101,253,133,251,169,0,101,252
1050 DATA 133,252,96
2000 DATA 10,1,0,3,200,1,0,3,10,1,0,1,10,1,0,1,200
2010 DATA 1,10,1,0,2
3000 DATA 0,0,160,155,3,4,8,3,4,54,3,3,0,0,5
3010 DATA 155,3,2,8,3,2,54,3,2,103,3,2,155,3,2,0,0,6
3020 DATA 155,3,4,8,3,4,54,3,3,0,0,5,208,4,4,8,3,4
3030 DATA 54,3,4,103,3,4
4000 DATA 1,8,2,2,2,1,8,2,2,1,1,2,2,3,1,11,2,4
4010 DATA 1,10,2,4,1,10,2,2,1,8,2,1,6,2,1,25,2,1,1,2
4020 DATA 1,15,132

```

(After typing in the above listing, add lines 5000-5190 from the Apple version.)



## IBM PCjr w/CARTRIDGE BASIC & TV OR MONITOR w/SPEAKER/HACKER'S RAP

```

10 WIDTH 40:KEY OFF:SOUND ON:BEEP OFF
20 DIM P(11,2),B(37,2),W(134),S$(134)
30 CLS:COLOR 7:C0=2
40 FOR I=1 TO 11:READ P(I,1),P(I,2):NEXT I
50 FOR I=1 TO 19:READ B(I,1),B(I,2):NEXT I
60 FOR I=20 TO 37
70 B(I,1)=B(I-18,1):B(I,2)=B(I-18,2):NEXT I
80 C=1:FOR I=1 TO 31:READ V
90 IF V<>1 THEN W(C)=V:C=C+1:GOTO 110
100 READ V:FOR J=1 TO V:W(C)=1:C=C+1:NEXT J
110 NEXT I:PRINT TAB(13);"*HACKER'S RAP*":PRINT
120 C=1:FOR I=1 TO 20:READ RS:PRINT RS:RS=RS+CHR$(13)
130 LJ=1:FOR J=1 TO LEN(RS):PS=MID$(RS,J,1)
140 IF PS<>" " AND PS<>"-" AND J<LEN(RS) THEN 160
150 S$(C)=MID$(RS,LJ,J-LJ+1):LJ=J+1:C=C+1
160 NEXT J:NEXT I
170 COLOR C0:C0=(C0 MOD 5)+1:LOCATE 3,1,0
180 L1=0:T1=0:L2=0:T2=0:L3=0:T3=0
190 IF T1=0 THEN L1=(L1 MOD 37)+1:SOUND 32767,0:SOUND B
(L1,1),100,15,0:T1=B(L1,2)*4
200 IF T2=0 THEN L2=(L2 MOD 11)+1:NOISE P(L2,1),15*(P(L2,1)<>0),1:T2=P(L2,2)*4
210 IF T3=0 THEN L3=L3+1:PRINT S$(L3);:SOUND 400,0,0,15,10,1:T3=W(L3)*4
220 T1=T1-1:T2=T2-1:T3=T3-1:IF T3=0 AND L3=134 THEN 170
230 GOTO 190
1000 DATA 6,1,0,3,4,1,0,3,6,1,0,1,6,1,0,1
1010 DATA 4,1,6,1,0,2
2000 DATA 32767,160,130,4,110,4,116,3,32767,5,130,2
2010 DATA 110,2,116,2,123,2,130,2,32767,6,130,4,110,4
2020 DATA 116,3,32767,5,175,4,110,4,116,4,123,4
3000 DATA 1,8,2,2,2,1,8,2,2,1,1,2,2,1,12,2,3,1,11,2,4
3010 DATA 1,10,2,4,1,10,2,2,1,8,2,1,6,2,1,25,2,1,1
3020 DATA 2,1,15,132

```

(After typing in the above listing, add lines 5000-5190 from the Apple version.)

# COMPUCOPIA

## SHORT PROGRAMS BY JOHN JAIN SCHIGG

—INSPIRED BY A READER CONTRIBUTION

A "bubble sort" is one of many methods of sorting data stored in an array. By watching *Bubble Sort* work, you'll soon see how it got its name. As items in the array are sorted, they seem to "bubble up" through the list to their final positions.

*Bubble Sort* works by taking each item in a list and comparing it to the item that follows. The actual comparison is performed internally by BASIC according to the ASCII codes of the characters making up an item. If the two elements are out of order, the routine switches them before moving on. Several "passes" through the list are required to shuffle all the items to their final positions.

### APPLE/BUBBLE SORT

```
10 DIM D$(22)
20 B$ = CHR$(32):FOR I = 2 TO 79
30 B$ = B$+CHR$(32):NEXT I
40 HOME:PRINT "HOW MANY ITEMS WOULD YOU LIKE TO SORT?"
50 INPUT "(MUST BE BETWEEN 2 AND 22.) ";N
60 IF N < 2 OR N > 22 THEN 50
70 PRINT:FOR I = 1 TO N
80 PRINT "WHAT IS ITEM #";I;:INPUT D$(I):NEXT I
90 HOME:FOR I = 1 TO N:PRINT D$(I):NEXT I
100 FOR I = 1 TO N-1:FOR J = 1 TO N-I
110 IF D$(J) <= D$(J+1) THEN 160
120 T$ = D$(J):D$(J) = D$(J+1):D$(J+1) = T$
130 VTAB J:HTAB 1:PRINT B$
140 VTAB J:HTAB 1:PRINT D$(J):PRINT D$(J+1)
150 FOR D = 1 TO 200:NEXT D
160 NEXT J:NEXT I:HTAB 1:VTAB 23:END
```

### COMMODORE 64 & 128 (C 64 MODE)/ BUBBLE SORT

```
10 DIM D$(20)
20 B$=CHR$(32):FOR I=2 TO 39:B$=B$+CHR$(32):NEXT I
```

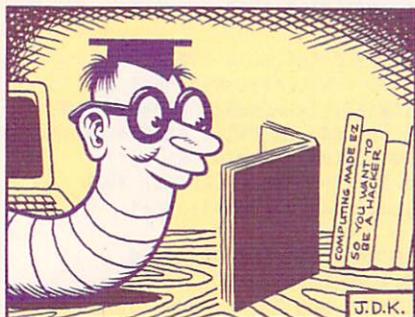
```
30 PRINT CHR$(147);
40 PRINT "HOW MANY ITEMS WOULD YOU LIKE TO SORT"
50 INPUT "(MUST BE BETWEEN 2 AND 20)";N
60 IF N<2 OR N>20 THEN 50
70 PRINT:FOR I=1 TO N
80 PRINT "WHAT IS ITEM #";I;:INPUT D$(I):NEXT I
90 PRINT CHR$(147):PRINT
100 FOR I=1 TO N:PRINT D$(I):NEXT I
110 FOR I=1 TO N-1:FOR J=1 TO N-I
120 IF D$(J)<=D$(J+1) THEN 160
130 T$=D$(J):D$(J)=D$(J+1):D$(J+1)=T$
140 POKE 214,J:PRINT:PRINT B$:PRINT B$
150 POKE 214,J:PRINT:PRINT D$(J):PRINT D$(J+1)
160 FOR DE=1 TO 150:NEXT DE
170 NEXT J:NEXT I:POKE 214,21:PRINT:END
```

### IBM PC & COMPATIBLES\*/BUBBLE SORT

```
10 DIM D$(22):B$=STRING$(39,32)
20 CLS:PRINT "HOW MANY ITEMS WOULD YOU LIKE TO SORT"
30 INPUT "(MUST BE BETWEEN 2 AND 22)";N
40 IF N<2 OR N>22 THEN 30
50 PRINT:FOR I=1 TO N
60 PRINT "WHAT IS ITEM #";I;:INPUT D$(I):NEXT I
70 CLS:FOR I=1 TO N:PRINT D$(I):NEXT I
80 FOR I=1 TO N-1:FOR J=1 TO N-I
90 IF D$(J)<=D$(J+1) THEN 140
100 T$=D$(J):D$(J)=D$(J+1):D$(J+1)=T$
110 LOCATE J,1:PRINT B$:PRINT B$
120 LOCATE J,1:PRINT D$(J):PRINT D$(J+1)
130 FOR DE=1 TO 200:NEXT DE
140 NEXT J:NEXT I:LOCATE 23,1:END
```

\*This program has been tested on the following computers, using the BASICs shown:  
IBM PC w/Color Graphics Adapter or Monochrome Printer Card, w/Disk BASIC D2.00  
or Advanced BASIC A2.00.  
IBM PCjr, w/Cassette BASIC C1.20 or Cartridge BASIC J1.00.  
Tandy 1000, w/GW-BASIC 2.02 version 00.05.00.

## NAME THAT BOOK CONTEST



It's back-to-school time and kids all over the country are "bookin' it" once again. Speaking of books . . . here at K-POWER we get all sorts of mail from hackers looking for good computing books. We're trying to put together a hacker reading list and thought we'd tap the best source we know: our readers. Please fill out the entry and list the books that have been of particular help to you in your computing endeavors . . . whether it's a book for novices or experts, a tome about

music or creating graphics, a general computing book, or a machine-specific one, etc. Give us the title and publisher of the book, and tell us how it helped you out and why you'd recommend it. In appreciation for

your help, we'll randomly pick three entries and award \$25 to each.

Please send entries to "Name That Book Contest," c/o K-POWER, 730 Broadway, New York, NY 10003, before October 27.

My Name \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone (\_\_\_\_) \_\_\_\_\_ Male \_\_\_\_\_ Female \_\_\_\_\_

Books I Would Recommend \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

and Why \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# WHAT'S IN STORE

## 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. Unless otherwise noted, all programs are in disk format.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, given the limi-

tations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions and literature that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users. **PS** = Play system, in the games reviews, the quality of the game design and the game's playability. **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities. **EU** = Ease of use after the initial learning period, which varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

### HOME BUSINESS/HOME MANAGEMENT/PRODUCTIVITY

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
BUILD A BOOK ABOUT YOU The Scarborough System 55 S. Broadway Tarrytown, NY 10591 (800) 882-8222 \$39 © 1985	Create stories with information about your child. Kit comes with two blank books. There are colorful illustrated pages to print on, and a needle and thread for binding. † —BUMGARNER	Reviewed on 48K Apple. Also for C 64/128; 64K IBM PC/PCjr.	30-day warranty (includes user-damaged); \$6 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	A	★ ★ ★ ★
EXECUTIVE FILER Paperback Software 2612 Eighth St. Berkeley, CA 94710 (415) 644-2116 \$49 © 1985	Electronic filing system works particularly well in collating and organizing notes and addresses for papers and mass-mailings. Works by searching through records with keywords. Doesn't alphabetize or sort. —TAETZSCH	Reviewed on 192K IBM PC. Also for 256K IBM PCjr.	90-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★
EXECUTIVE WRITER Paperback Software 2612 Eighth St. Berkeley, CA 94710 (415) 644-2116 \$69 © 1984	Menu choices and helpful prompts streamline everything from brief letter-writing to professional report-processing. † —TAETZSCH	Reviewed on 128K IBM PC. Also for 256K IBM PCjr.	90-day warranty; \$5 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	E	★ ★ ★ ★
PAPER CLIP Batteries Included 30 Mural St. Richmond Hill, Ontario L4B 1B5 Canada (416) 881-9816 \$59 (Atari); \$89 (C 64) © 1985	Serious, professional-level word processor combines advanced text-editing and print-formatting features with such goodies as built-in word count, calculators, and programmable macros. † —RASKIN	Reviewed on 48K Atari. Also for C 64.	User makes backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	A	★ ★ ★ ★
MIND PROBER Human Edge Software 2445 Faber Place Palo Alto, CA 94303 (415) 493-1593 \$29 (C 64); \$49 (Apple/IBM) © 1984	Assess personalities of friends and business relations by answering a series of questions about their character traits. Resulting "profile" of subject recommended purely for pleasure. † —WILDMAN	Reviewed on C 64. Also for 64K Apple; 128K Mac; 128K IBM PC/PCjr.	90-day warranty; \$9.95 thereafter or for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	E	★ ★ ★ ★
PLAYWRITER: TALES OF ME Woodbury Software 127 White Oak Lane Old Bridge, NJ 08857 (201) 679-0200 \$39 © 1984	Young kids respond to a series of questions in order to write, edit, illustrate, print, and bind a book about themselves, a friend, or an imaginary character. One of four scenarios in <i>Playwriter</i> series. † —FRANK	Reviewed on 48K Apple. Also for C 64; 64K IBM PC/PCjr.	1-year warranty; \$2.50 for shipping.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★ ★

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

# WHAT'S IN STORE SOFTWARE GUIDE

## EDUCATION/FUN LEARNING

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
ADVENTURES IN COLORLAND: SPACE SAGAS Hayden Software 600 Suffolk St. Lowell, MA 01854 (800) 343-1218/ (617) 937-0200 \$29 © 1983	Four interactive stories with four different scenes that kids can color and add animated figures to. Lacks variety and ease of use to sustain kids' interest. —SUMMERS	Reviewed on C 64. Also for 64K Apple; 64K IBM PC/PCjr. Joystick optional.	90-day warranty; \$10 fee thereafter.	★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★
THE ARGOS EXPEDITION CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2500 \$34 © 1984	Teamwork, exploration, and negotiation encouraged in game that takes up to 4 players on an intergalactic mission to hunt down artifacts from a lost civilization. For ages 10 and up.† —SUMMERS	C 64. Joysticks. Paddles required for more than 2 players.	90-day warranty; \$5 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
BOPIE'S GREAT WORD CHASE DLM One DLM Park Allen, TX 75002 (214) 448-6300 \$29 © 1985	Word recognition and spelling practiced in a <i>Pac-Man</i> -type arcade game. Use preprogrammed words or those you enter yourself. Arcade element sometimes overshadows learning. For kids ages 7-12. —FRANK	Reviewed on 64K Apple. Also for 64K IBM PC/PCjr; C 64.	6-month warranty; \$15 fee thereafter.	★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★
EUROPEAN NATIONS AND LOCATIONS DesignWare 185 Berry St. San Francisco, CA 94107 (415) 546-1866 \$44 © 1985	Ages 9 and up (also for younger kids) learn locations and facts about Europe in a quiz package. —MORRIS	Reviewed on 48K Apple. Also for C 64; 64K IBM PC/PCjr.	90-day warranty; satisfaction guaranteed first 30 days.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
EXCEL-A-READ American Educational Computer P.O. Box 5093 2450 Embarcadero Way Palo Alto, CA 94303 \$59 © 1985	Improve reading speed and comprehension with a package that uses innovative approaches. Best for high-school students and adults.† —MORRIS	Reviewed on 48K Apple. Also for 128K IBM PC/PCjr (with cart. BASIC).	90-day warranty; \$10 fee thereafter.	★ ★ ★	★ ★ ★	★ ★	N/A	A	★ ★ ★
LOGIC LEVELS Fisher-Price Learning Software 1 Kendall Square Cambridge, MA 02139 (617) 494-1200 \$19-\$24 © 1984	Ages 7-12—and older, if our family's an indication—create Rube Goldberg-like contraptions and mazes, then send ball rolling. You can move on to higher skill levels as you run through each maze. —SUMMERS	Reviewed on C 64 (cart. and d.). Also for 48K Atari (cart.); Coleco ADAM (cart.); 64K Apple. Joystick.	30-day warranty; \$5 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
QUATIONS Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3501 \$39 © 1985	Build the most complex equation possible using 13 tiles you're given and those already laid down in mathematical variation on Scrabble. Fun and challenging for ages 9 and up. —MORRIS	Reviewed on 48K Apple.	60-day warranty; \$10 fee for 10 subsequent months.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
WHERE IN THE WORLD IS CARMEN SANDIEGO? Broderbund Software 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 \$39 © 1985	Geography, world history, research skills, and more rub off on players from junior high to adult as they attempt to track down a thief whose trail may lead around the world.† —MORRIS	64K Apple.	90-day warranty; \$7.50 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	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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Now, if this cold logic fails to convince you, perhaps an emotional appeal to your sense of patriotism and social consciousness will. Your choice is this. Either you buy their SAT, which kills innocent trees to make all that paper. Or you buy our SAT with 6 disks and Save America's Trees.

**The Perfect Score, \$69.95, from Mindscape** 

\*Suggested retail price. Available for Apple, Commodore 64 and IBM. The Perfect Score: Computer Preparation for the SAT. © 1984 Mindscape, Inc. All rights reserved.

**GAMES** REVIEWS BY JAMES DELSON

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	PS	GQ	EU	V
ARMAGEDDON Social Software P.O. Box 7207 Dearborn, MI 48121 (313) 751-2643 \$29 © 1984	Adaptation of classic military board game Risk, this is exciting and challenging for players of all levels, age 10+.	128K PC/PCjr.	Unlimited warranty; 30-day money-back guarantee.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
BOTTOMLINE CAPITALIST Venture Software 16200 Ventura Blvd. Encino, CA 91436 (818) 986-4110 \$80 © 1984	1-4 players vie to dominate a typical electronics market, and learn the basics of big business in a remarkably detailed, if poorly documented, financial simulation game. For ages 12+.	64K IBM PC.	90-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
CAPTAIN GOODNIGHT AND THE ISLANDS OF FEAR Broderbund Software 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 \$29 © 1985	Solo players, ages 10+, fly, shoot, drive, and dodge their way through enemy lines in complex strategy/arcade game requiring many skills. †	48K Apple.	90-day warranty; \$7.50 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
COUNTDOWN TO SHUTDOWN Activision P.O. Box 7287 Mountain View, CA 94042 (415) 960-0410 \$29 © 1985	Solo players control eight robots that penetrate the depths of a labyrinthine nuclear power plant, seeking to prevent a core melt-down. Good for ages 10+.	C 64. Planned for 64K Apple.	90-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
CUTTHROATS Infocom 125 CambridgePark Drive Cambridge, MA 02140 (617) 492-6000 \$34-\$39 © 1984	Join beach rats in a search for sunken treasure. Dive to retrieve the loot in an enjoyable intermediate-level, text-only adventure for ages 12+.	Reviewed on 48K Apple. Also for 48K Mac; 48K Atari; C64; 48K IBM PC/PCjr; TI-99/4A; TRS-80, Model III.	90-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	D	★ ★
THE GREAT AMERICAN CROSS COUNTRY ROAD RACE Activision P.O. Box 7287 Mountain View, CA 94042 (415) 960-0410 \$29 © 1985	Solitaire car-race game lets you choose from a variety of authentic U.S. routes, then race computer players. Wonderful graphics enhance this treat for ages 10+.	Reviewed on C 64. Also for 48K Atari.	90-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
KENNEDY APPROACH... MicroProse Software 120 Lakefront Drive Hunt Valley, MD 21030 (301) 667-1151 \$34 © 1985	Nerve-racking, edge-of-the-seat excitement awaits solo players trying their hands at air-traffic control simulation. One of the year's best. For ages 12+.	Reviewed on C 64. Also for 48K Atari.	60-day warranty; \$10 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
SIX-GUN SHOOTOUT Strategic Simulations, Inc. 883 Stierlin Road, Bldg. A-200 Mountain View, CA 94043 (415) 964-1353 \$39 © 1985	Return to rip-roaring days of the great movie westerns and shoot it out with legions of bad guys in a variety of Hollywood settings. For ages 10+.	Reviewed on 48K Apple. Also for 48K Atari; C 64.	30-day warranty; \$10 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
WHISTLER'S BROTHER Broderbund Software 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 \$29 © 1984	Make your way through 13 levels, trailed by an absent-minded brother. Simplistic but compelling arcade game. Good for beginners, 8+, who enjoy joystick action.	Reviewed on C 64. Also for 48K Atari.	90-day warranty; \$7.50 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
WILDERNESS Electric Transit, Inc. Distributed by Electronic Arts 2755 Campus Drive San Mateo, CA 94403 (415) 571-7171 \$49 © 1984	As a lone pilot who has crash-landed in the middle of nowhere, you must try to make your way through the wilderness and a variety of environments to safety. Fascinating adventure for ages 12+.	48K Apple.	90-day warranty; \$12 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★

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

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**Wanted:** super-sleuths with clever strategies and the ability to read schedules, maps, and charts. The danger's great but the rewards are, too—lots of fun and lots of practical, useful skills! Available for Apple, IBM, Commodore, and Atari Computers, 48K-64K.

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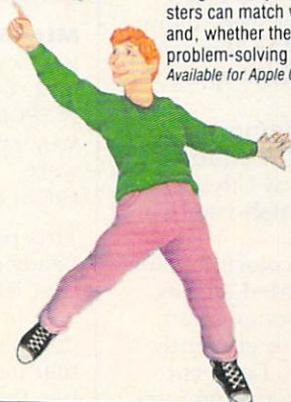
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A Scrabble®-like electronic board. Thirteen number and operation tiles. The aim: to build equations using as many tiles in one turn as possible. Youngsters can match wits with friends or the computer and, whether they win or lose, come out ahead in problem-solving skills. Available for Apple Computers, 48K.

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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 81 for information such as backup policies and addresses of software manufacturers.

### HOME BUSINESS/ HOME MONEY MANAGEMENT

#### Build a Book About You

**HARDWARE REQUIREMENTS:** Reviewed on Apple II series. Also for C 64; IBM PC/PCjr. Friction-feed printer.  
**MANUFACTURER:** Scarborough Systems  
**PRICE:** \$39

We always search for new, productive ways to use the computer together with the whole family. *Build a Book About You* requires family teamwork and pays off with a personalized story book your child will enjoy for years.

Armed with two book kits . . . 8½ by 11 heavy cardboard covers, pre-punched and illustrated pages, and a needle and thread to sew it all up, you've got all you need to "publish" your own children's books. The package asks you to furnish information about yourself, your friends, pets, and more. It inserts your answers into the plot line, thus creating a fanciful story with your children's world as the setting. Save it and up to 24 other stories on a disk.

Printing out the final product is where concentration and cooperation come in handy. For one thing *Build a Book About You's* documentation assumed that we would be using a friction-feed printer. Since our IBM graphics printer (tractor-feed) is compatible with one of the 20 printers listed in the documentation, I plunged ahead, expecting all to go smoothly. With a lot of effort, it's possible to use a tractor feed, using the test pages included in the package. Still we had trouble keeping the pages from smudging.

You can order two additional plots—*Adventures on the Riddle Planet* and *The Greatest Circus Story Ever Told*—to replenish your kit supply for \$9.95 a set.

These entertaining, colorfully illustrated computer-generated stories, with covers you can sponge clean, are a great alternative to currently high-priced kids books. Each episode has different fans around our house. Nine-year-old John prefers

the one about the Riddle Planet. Five-year-old Jamie likes the scented stickers she can paste into her mystery story.

—MARLENE ANNE BUMBARNER

#### PaperClip

**HARDWARE REQUIREMENTS:** Atari  
**MANUFACTURER:** Batteries Included  
**PRICE:** \$59

As word processors plunge in price, more and more packages are offering professional power at a less-than-professional price tag. *PaperClip*—a low-cost word processor that accommodates writers with truly advanced needs—is just such a package. New for the Atari, *PaperClip* has a number of special features. The ability to call up word count with a single keystroke, assign a word or phrase to a single key (an address or name, for instance), and utilize built-in arithmetic functions, really streamlines the writing process.

With the dual windowing feature, you can work on two different files simultaneously—writing a paper from notes taken on a different file, for instance.

*PaperClip* uses embedded commands to format your document. In other words, what you see on screen is not what you get on paper. If you want to see how the printed document will look, you can preview your text with a single keystroke.

To select operations with *PaperClip*, you use commands, rather than a menu system to select operations; it may take a while for you to memorize the commands. Though the commands do make some functional sense, there are a lot of them. Nevertheless, novelists, writing pros, older students, and others will find *PaperClip* thorough, comprehensive, easy on the pocketbook, and well worth the time it takes to learn.

—ROBIN RASKIN

#### Mind Prober

**HARDWARE REQUIREMENTS:** Reviewed on C 64. Also for Apple II series, IBM PC/PCjr.  
**MANUFACTURER:** Human Edge Software  
**PRICE:** \$29 (C 64); \$49 (Apple/IBM)

This package makes some rather heady claims. After all, "Software that lets you see people as they really are" (as the packaging announces) doesn't come along every day. The manual's recommendation that you use the package with friends and professional relations compounds

the promise, suggesting it's a valuable tool for assessing people's personalities and figuring out how to deal with them.

In operation, *Mind Prober* asks you to answer a series of questions about the person you wish to "probe." You must either "agree" or "disagree" with adjectives that might describe your subject—"inquiring," "ruthless," "sarcastic," or "desirable," for example. After some pauses, the program spews out two and a half page's worth of analysis based on your answers.

For parties and play, this program may serve some ice-breaking purposes. But the fun stops there.

Because of the "scientific" aura of the computer, unwary users might believe that the reports obtained have scientific merit. Parents might attempt to use it to analyze their kids or one another and then use the generated profile to influence the nature of family interaction.

*Mind Prober's* basic approach makes the resulting analysis look correct. But you have to realize exactly what the program does. Jargon aside, all it really does is ask you how you feel about somebody and then generate a report which tells you how you feel about that person! In other words, by restating, in more clinical terms, what you told it, it confirms your original impressions. It can't lose! Of course, it appears to work especially well with brief acquaintances. You have less information about the individual, so you can't challenge any of the report's conclusions that don't match your own.

It's a classic example of fortune-cookie psychology, and, I think, a serious misuse of computers.

—KENNETH WILDMAN

(EDITOR'S NOTE: *Kenneth Wildman, Ph.D.* is a professor and chair of psychology at Ohio Northern University. In the course of this review, he solicited the comments of two other licensed psychologists.)

#### PlayWriter: Tales of Me

**HARDWARE REQUIREMENTS:** Reviewed on Apple II series. Also for C 64, IBM PC/PCjr.  
**MANUFACTURER:** Woodbury Software  
**PRICE:** \$39

The *PlayWriter* series lets you and your family write and print out personalized stories with a professional look.

The stories evolve out of your child's answers to a series of ques-

tions by weaving the answers into one of four different narratives, depending on the edition you select. This question-and-answer approach may restrict more inventive authors' imaginations, but it can actually encourage younger kids who are frequently overwhelmed by the possibilities posed by a blank page. *Tales of Me* is one of these stories.

"ON 6-12-73, AT 7:00 AM, A VERY AMAZING THING HAPPENED: A BLUE-EYED, RED-HAIRED BABY NAMED JAY WOODPECKER WAS BORN. JAY WEIGHED 15 LBS. AND WAS 4 FEET TALL." The information for this paragraph in the story came from two 12-year-olds, who were having a

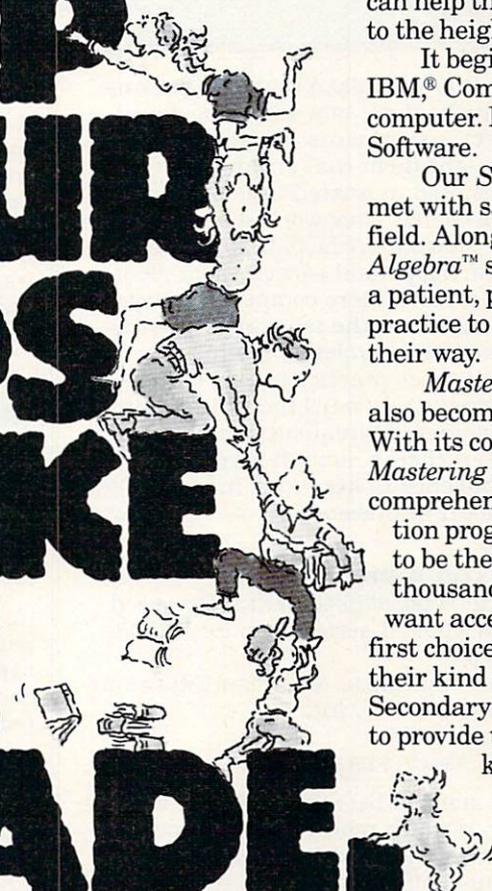
wonderful time and being as silly as only 12-year-old girls can be. I thoroughly enjoyed all six chapters of the finished story which detailed Jay's unbelievable day.

This package encourages revision. You can go back and edit any part of the story. The edit features, in fact, make for a good introduction to word processing for younger kids. Print out the final product on regular-sized paper, or use the 5-inch x 8½-inch paper supplied in the package and bind it into the hard cover provided for a finished book entitled *Tales of Me*. Stories printed out on the smaller paper include blank

space where kids may draw illustrations or apply the stickers that come with the package. You can order additional bookmaking supplies to create specialized personal gifts for friends.

The program is relatively easy to use, and the final product is very professional looking. I did have trouble getting the printer to work correctly. The documentation could be a bit more thorough on this front. All in all, however, this wonderful structured writing tool is a productive package that encourages writing and imagination, especially in kids age 6-12. —CATHY FRANK →

# HELP YOUR KIDS MAKE THE GRADE

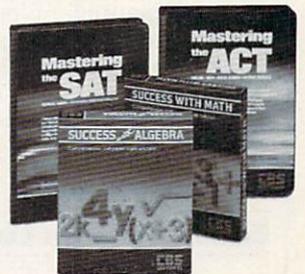


Now there's a way parents can help their children climb to the heights of success.

It begins with an Apple,<sup>®</sup> IBM,<sup>®</sup> Commodore<sup>™</sup> or Atari<sup>®</sup> computer. It takes off with CBS Software.

Our *Success with Math*<sup>™</sup> series has met with sales success second to none in its field. Along with our new *Success with Algebra*<sup>™</sup> series, your home computer will become a patient, private tutor—using serious drill and practice to help your children over the obstacles in their way.

*Mastering the SAT* has also become a best seller. With its counterpart, *Mastering the ACT*, it's the comprehensive test preparation program that's proven to be the first choice for thousands of students who want acceptance from their first choice college. They are the only programs of their kind created with the National Association of Secondary School Principals. And they're designed to provide the competitive edge that can help put your kids over the top.



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CIRCLE READER SERVICE 3

# WHAT'S IN STORE

## SOFTWARE REVIEWS

### Executive Writer

HARDWARE REQUIREMENTS: IBM PC/PCjr.  
MANUFACTURER: Paperback Software  
PRICE: \$69

If you're looking for a powerful, inexpensive, and easy-to-use word processor, *Executive Writer* may just fit the bill. With menu choices and helpful prompts, the program makes writing, revising, formatting, and printing all kinds of documents a painless process.

For instance, to underline text, you just press the function key F8 as instructed by the prompt at screen bottom. Everything typed from that point will automatically be underlined. Press F8 again and the underlining stops. F7 boldfaces print, F5 centers text, and so on.

With easily adjustable systems for numbering pages, spacing lines, setting margins, and other formatting features, *Executive Writer* simplifies the printing of longer documents. The package handles footnotes and indexes quite easily, as well. It lets you print graphics in the middle of a document, making it useful for, say, business reports requiring charts, graphs, or other visual enhancements.

One of my favorite extras, the macro command, lets you define a number key so that every time you push it a frequently used paragraph, sentence, or word appears.

A good manual, no bugs, and nice safety features all combine to make this package suitable for word-processing novices as well as more experienced, demanding users.

—LYN TAETZSCH

### Education/Fun Learning

#### The Argos Expedition

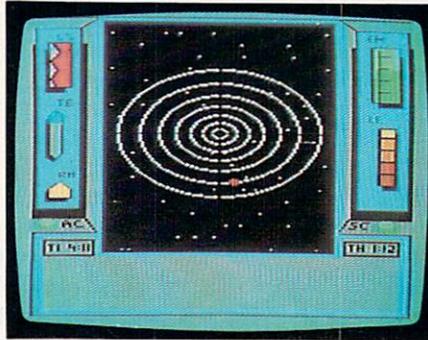
HARDWARE REQUIREMENTS: C 64.  
MANUFACTURER: CBS Software  
PRICE: \$34  
MANUFACTURER'S SUGGESTED AGE: 10+

Ten thousand energy units from base, your ship has only 6,000 units of energy remaining. Should you burn that valuable intercom to get back quickly, or will you race against the clock and make one more salvage operation, hoping to find a more expendable item to incinerate? Whatever you decide, the crew must agree.

*The Argos Expedition* encourages teamwork and negotiation. Two to four players work together to collect

and learn about artifacts left in space by an ancient civilization.

The goal is different for each game. At more difficult levels, players have secret assignments that may conflict with the overall goal. In addition to collecting and testing artifacts, all players must coordinate their efforts to survive the hazards in space. Success on any mission requires manual coordination and the ability to match colors and musical tones.



Our kids joked that this package taught them how to be sneaky on secret assignments. In fact, experience taught them that sneakiness often resulted in wasted time and failed missions. They worked out a system of sharing artifacts that kept everyone happy and earned them plenty of credits. More competitive players heightened the tension by playing their secret roles to the hilt.

It takes practice to win *The Argos Expedition*. You'll have to refer to the manual frequently at first. However, there's enough variety and challenge to keep kids interested for plenty of missions. —TAN SUMMERS

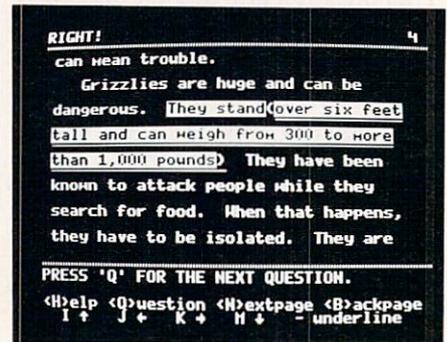
#### Excel-A-Read

HARDWARE REQUIREMENTS: Reviewed on Apple II series. Also for IBM PC/PCjr.  
MANUFACTURER: American Educational Computer, Inc.  
PRICE: \$59  
MANUFACTURER'S SUGGESTED AGE: 10+

A stack of best-sellers you've wanted to read for months sits on your bedside table. Last Sunday's paper is only half-finished, and today's mail brought two more magazines. *Excel-A-Read* may help you manage to tie together all the loose reading ends.

The program uses clever techniques to develop three skills essential to faster reading. It teaches you: to scan written material for key ideas and facts to take in longer groups of letters at a glance and to

read groups of words without backtracking (glancing over words you've already read).



*Excel-A-Read* is not for the very young. Words such as "havoc" and "inaccessible" suggest that it's best for late-junior high and senior high school students. No fancy bells and whistles sustain attention. Nevertheless, the package is easier and less daunting than some others.

On the negative side: Excessive loading and computing time mean a lot of staring at a screen with the message ONE MOMENT PLEASE. The instructions were also unclear on some points. I found the lack of printed material on which to practice frustrating. I had trouble transferring some of the techniques I learned to the printed page. With practice, however, you overlook these shortcomings. —TONY MORRIS

#### Where in the World Is Carmen Sandiego?

HARDWARE REQUIREMENTS: Apple II series.  
MANUFACTURER: Broderbund Software  
PRICE: \$39  
MANUFACTURER'S SUGGESTED AGE: 12+

"Terrific! Can't stop playing! In the past half-hour I've learned where the saw-scale viper is found; which country has a green-, white-, and red-striped flag; which country's currency is rupees; which countries speak Arabic."

These comments sound like a blueprint for a crackerjack piece of educational software. In fact, they describe *Where in the World Is Carmen Sandiego?*, one of those blockbuster packages that comes along every now and then. The kids can't stop playing it. They talk about it and share ideas. They argue about who will get to play next.

As a rookie sleuth, you have to track down one of Carmen Sandiego's international thieves, who has

stolen a precious object from one of a variety of locations. Using clues gathered from people you encounter, you have only a few days to catch the burglar.

Here's a sample scenario: One of San Diego's thugs has lifted Harald the Fairhaired's sword from an Oslo museum. The Interpol station from which you get your order directs you to solve the case in seven days.

According to one bystander, the thief showed an unusual interest in the Wuchang uprising and changed his currency into yuans.

You check the airline connections from Oslo and find out that the thief could have flown to one of five cities. If you knew which of those used yuans, you could pursue the thief.

That's when the *World Almanac* supplied in every package of *Where in the World . . .* comes in handy. A quick check indicates that the thief probably headed for Peking. You catch the next plane.

Once there, you continue your search for more clues. As you close in on the suspect, you contact Interpol to verify his or her identity from the information you've collected. Once you make a match—always remembering to obtain a warrant—you can make the arrest. As a result, you may get promoted to "Sleuth" status.



From there, the assignments get tougher until you've reached the level of "Ace Detective." Each case is different. With 10 thieves and 30 different countries to scour, it takes a while to exhaust all the possibilities.

The only drawback our family noted involved the ranking process. Once you've reached the highest status, you're retired and must start over again with simple cases, using a different name, or delete your name from the Acme Detective Agency files. Our kids hope Broderbund will release disks with new cases for more experienced sleuths.

—TONY MORRIS

## GAMES

### BottomLine Capitalist

HARDWARE REQUIREMENTS: IBM PC  
MANUFACTURER: Venture Software  
PRICE: \$80  
CRITIC'S SUGGESTED AGE: 12 +

If complex financial simulations are your thing, *BottomLine Capitalist* should top your list. This wonderfully sophisticated program for up to four would-be Nolan Bushnells lets you turn a small electronics company into a major national corporation.

Each player starts with a limited amount of cash and a minor manufacturing firm, tooled for turning out cordless telephones and portable television sets. To get you started, credit is easily obtainable. The game's easy-to-use menu system lets you do a variety of things, such as set unit prices and manufacturing costs, select marketing and advertising strategies, hire and fire executives, increase or decrease production, and acquire or build on new premises.

This breathtakingly detailed game may seem a bit too difficult at first, especially for newcomers to financial simulations. Once you get the hang of the play system, however, you'll find *BottomLine Capitalist* one of the year's best financial simulations.

Using the charts and tables generated by the program, even beginners can learn the basics of big business and compete with more experienced players.

The serious hitch in this otherwise fine package lies in its poor documentation, which consists of a series of charts, tables, and screen shots.

Nevertheless, if you can figure out how to play it, this game is a winner.

### Captain Goodnight and the Islands of Fear

HARDWARE REQUIREMENTS: Apple II series.  
MANUFACTURER: Broderbund Software  
PRICE: \$29  
CRITIC'S SUGGESTED AGE: 10 +

Take the best flying and target-shooting elements of *River Raid* or *Zaxxon*, combine them with the role-playing aspects of *Castle Wolfenstein*, and you'll have a game similar to *Captain Goodnight and the Islands of Fear*.

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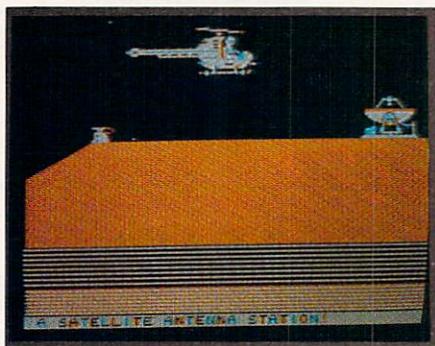
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## WHAT'S IN STORE SOFTWARE REVIEWS

This complex, joystick-operated solitaire adventure requires proficiency in a variety of different skills. Flying, shooting, reasoning, driving, dodging, running, and other challenges add up to many hours of compelling action as you guide your hero into enemy territory.

Cross the alien countryside, eliminating bad guys that cross your path. Penetrate the tough inner defenses of the enemy's compound and turn off the terrific "Acme Domsday Machine."

The game has a time-based play system. Beginners can play for quite a while without being eliminated, regardless of the number of times their hero is "killed" in the line of duty. By working against the clock, one can develop play skills, practicing stunts or maneuvers until ready to move on to the next task.



Unlike *Beach Head*, which you have to restart after you've played through a certain number of lives, *Captain Goodnight* lets you play on until the time runs out.

Playtesters went wild over this one. They would sit at the computer for hours, attempting to master its many elements. They even worked as teams, especially in the flying sequence where one person would spot enemies, while the other flew and blew up enemy installations.

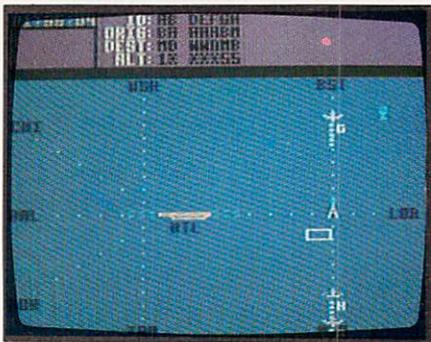
### "Kennedy Approach . . ."

**HARDWARE REQUIREMENTS:** C 64. Also for Atari. Joystick optional.  
**MANUFACTURER:** MicroProse Software  
**PRICE:** \$34  
**CRITIC'S SUGGESTED AGE:** 12 +

If you thought flying a plane was tough, try taking charge of an airport and keeping track of dozens of airplanes. This edge-of-the-seat, nerve-wracking air-traffic-controller simulation is one of the most intense games I've ever played. The nonstop battle of wits and hand-eye

challenges can drive you crazy, even as you applaud all the fun.

Each of the many different scenarios puts you in the role of an air traffic controller at a major airport in Atlanta, Denver, Dallas, Washing-



ton, or New York. You have a variety of levels to choose from: the training stint, graveyard shift (intermediate), morning or afternoon work (more difficult), or peak hours (toughest).

Finding the proper system and rhythm for controlling each airport takes a lot of practice. Use joystick and keyboard together to route flights and land and launch planes, keeping the jumbos and the Concorde from crossing paths.

You must achieve a delicate balance to coordinate regularly scheduled flights and make sure flights passing through your territory stay on time and on course. Pilots respond to your orders—in the first speaking simulation ever.

Highly playable learning scenarios help develop your skills to prepare for the extra tough tasks. While running Kennedy Airport during the heavy shift, for instance, you may feel unable to stay on top of the situation. This game, one of the year's best, makes you appreciate the demands and rigors of the air-traffic-control profession.

### Wilderness

**HARDWARE REQUIREMENTS:** Apple II series  
**MANUFACTURER:** Electric Transit, Inc.; distributed by Electronic Arts  
**PRICE:** \$49  
**CRITIC'S SUGGESTED AGE:** 12 +

Your light plane crashes in America's western wilds. You escape unharmed, but you are alone, equipped with an assortment of food, gear, clothing, and other paraphernalia to keep you alive until you reach safety. You don't know your whereabouts, much less in which direction the ranger station is. And, although you

have supplies, exposure, animal attack, starvation, or some other natural disaster lie in wait as you stumble through the brush.

Welcome to *Wilderness*, the most interesting and innovative text/graphic adventure to date—the best I've seen in the field so far. A time-clock condenses real time, keeping track of your physical condition as you hike away from the crash site. You must use compass and common sense to chart your way across plain and mountain, river and stream. You must eat provisions or find food; avoid snakes and other wild animals, or trap them for food; and wear the appropriate garments to survive weather conditions while say, climbing a hill or crossing a meadow.

The game's excellent documentation includes vast notes on trails and outdoor skills. But the only way you're going to finish the game in one piece is through planning and carefully applying common sense.

Should you bring a tent or a rubber raft? Heavy clothing or summer garb? What sort of food? Where should you set up camp?



Your physical condition is constantly updated as the sun rises and sets, and the temperature changes correspondingly. The computer charts your food and water consumption, too.

Playtesters went wild over this one. They loved the wrap-around hires graphics that let you rotate your gaze a full 360 degrees; the feeling of being really stranded; and the moment-by-moment excitement that comes with each computer update.

A stunning, thrilling adventure, *Wilderness* makes use of the best aspects of computer technology; it's as superb an educational experience (an excellent introduction to camping and backpacking, not to mention surviving) as it is entertaining.

—GAME REVIEWS BY JAMES DELSON

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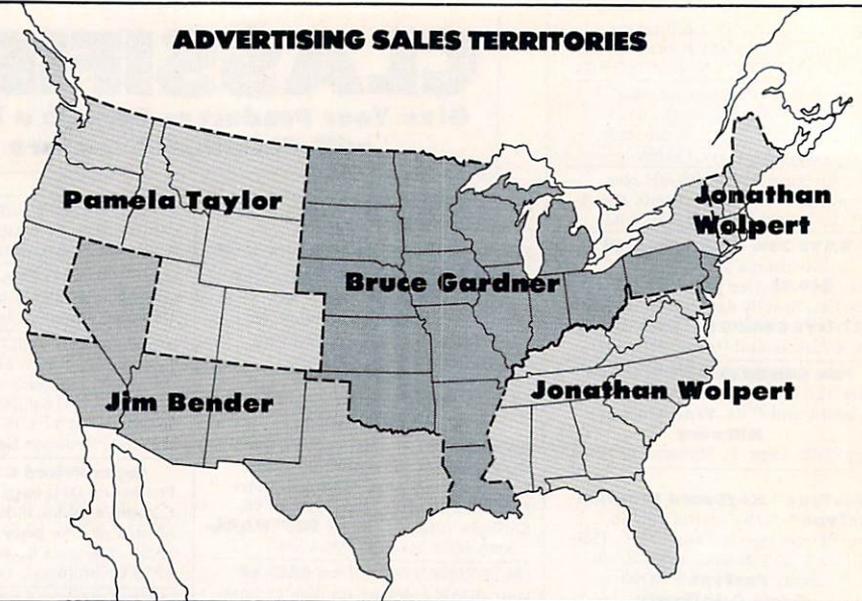
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**1. Do you own or plan to buy a modem?**

\_\_\_\_ Yes    \_\_\_\_ No

**2. How much do you intend to spend on this modem?**

- a. Less than \$100
- b. \$100-\$199
- c. \$200-\$299
- d. More than \$300

**3. What data base services do you subscribe to?**

- a. CompuServe
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