

As an alternate route, you can click on the Topic Tree icon and move from Economics to Finance and Government to an article on inflation. There you can call up the same "Business Cycle" article that you saw when you took the path through the History icon.

As a third route, you can click on the Finder icon, type the word *business*, watch the words *business cycle* move to the top of the list, double-click on the phrase, and find yourself once again at the "Business Cycle" article.

For an even closer look at how these various paths work, let's take a brief look at each of the eight icons. The eight icons are History, Topic Tree, Search, Finder, Science, World Atlas, Picture Tour, and Go Back.

The History icon brings up a time line of American history from 1492 to 1990. Above the time line are the important periods of history, including Revolutionary War, Major Inventions, and Roosevelt's New Deal. Clicking on any of these will lead you to a list of related articles.

Below the time line are more specific events, such as Boston Tea Party, Telephone Invented, and United Nations Formed. Clicking on any of these will lead you to that specific article.

With the Topic Tree icon, you begin with a list of 19 broad categories of knowledge (Arts, Communication, Earth, Economics, and so on). Clicking on any of these broad topics brings up a list of three or more subcategories and a list of related articles. The subcategories lead to another list of related articles. Using the Topic Tree to branch

from the general to the specific, you can quickly follow a logical path of learning—such as Living Things, Animal Products, and Silk.

The third icon, Search, lets you type in a word or phrase and see a list of related articles. You can then double-click on the article's name and read the article. Each instance of the word or phrase is highlighted in the article so you can quickly find the reference. You can also search through the pictures (or, more precisely, through the pictures' captions) to call up related pictures and articles.

Finder, the fourth icon, is simply an alphabetical index for the entire encyclopedia. To help you deal with this extremely long list, the program includes an intelligent title finder. Type a letter, and the list will move to the words and phrases starting with that letter. Type a second letter, and the list will move to the words and phrases that start with both letters (for example, type *di*, and the list will move to *diabetes*).

The fifth icon, Science, offers still another way to progress from the general to the specific. Four broad science categories—Living Things, The Human Body, Inner Earth to Outer Space, and Going Places—lead to subcategories and their related articles.

World Atlas, the sixth icon, leads to a map of the world which you can use to zoom into a country or region. You can click on the name of a country, city, or body of water and quickly call up its related article.

Picture Tour, the seventh icon, lets you randomly browse through 15,000 pictures and drawings. Click on

Bringing You the World of Knowledge with Sights and Sounds.

COMPTON'S
MULTIMEDIA
ENCYCLOPEDIA

BRITANNICA SOFTWARE

the button marked Article, and you can move directly to the related article.

The final icon, Go Back, simply lets you move back through the various screens you've visited up until that point—including screens from past sessions.

I had a great time exploring the new *Windows* version of *Compton's*. Using the various search methods, I enjoyed browsing through the lists and stopping at whatever article seemed interesting. While you lose the higher-resolution pictures and immediacy of the printed page, you gain the ability to search on a grand scale—in addition to the music, speeches, sounds, and animation.

It's not a bad tradeoff, especially when you consider that this 26-volume encyclopedia is considerably smaller than a paperback novel. □

IBM PC and compatibles that meet MPC (Multimedia PC) requirements, hard drive with 4MB available, Windows with Multimedia, sound board or CD-audio out required for sound, MPC compatible CD-ROM drive, mouse—\$895

**BRITANNICA SOFTWARE
345 Fourth St.
San Francisco, CA
94107
(800) 533-1030**

PATHWAYS

Steven Anzovin

SYNTHETIC STARS

Bogey leans forward and in that unmistakable voice says, "Here's looking at you, kid." He clinks glasses with Marilyn, who winks and laughs breathily when suddenly, through a floor grate, up oozes a metallic polyliquid that turns into—yes—Ronald Reagan. But he's only half human; his legs are still silvery puddles. "Where's the rest of me?" Ronnie demands. That's up to you, for the age of synthetic stars is upon us.

If you've seen *Terminator 2*, you know it's possible, using a computer, to mutate the human form in ways unimaginable just a few years ago. But what's pulling people to this film is more than Arnold Schwarzenegger's masterful impersonation of a robot; it's the incredible computer-generated special effects. As the new terminator, T1000, Robert Patrick plays his best scenes as a polymorphous blob. Talk about star quality!

The idea of shape-changing beings is as old as humanity. One of the best known, Proteus of Greek mythology, changed his form at will, but if you could hold him fast, he would answer any question you asked.

Recently, a number of sci-fi films, such as *The Thing*, have toyed with the same notion, but never has the concept been realized with such vividness as in *Terminator 2*, thanks to some very advanced computer graphics techniques and the cunning skill of Mark Dippe and the programmers at Industrial Light and Magic.

Much of what ILM did for *Terminator 2* is proprietary stuff involving the custom compositing of high-resolution frame-by-frame laser scans of 35mm film with 3-D reflectance-mapped computer models.

While some of this is only useful for characters who need to melt into mercury puddles, the same techniques can be used to *re-create* real people. That's the goal of Nadia and Daniel Thalmann, Swiss computer-graphics wizards and the masterminds behind the 1987 short film *Rendez-vous à Montréal*.

The plot is simple and brief: Computer-generated actors Humphrey Bogart and Marilyn Monroe, bored with the afterlife, return to earth to rendezvous at a cafe in Montreal. When Bogey appears, he finds a stone Marilyn waiting. A kiss brings her to life, and their romance begins.

It may not be stunning drama or even graphically convincing (the film now looks positively Stone Age), but there's an undeniable frisson in seeing Bogey and Marilyn together as they never were in reality.

As the Thalmanns claim in their recent book, *Synthetic Actors* (Springer-Verlag, 175 Fifth Avenue, New York, New York 10010; 212-460-1500; \$49.50), there are basically no barriers to creating convincing computer-generated versions of Hollywood stars.

From an artistic point of view, the authors say, such films allow "the creation of new stories with existing people

such as cinema stars or historical or political personalities. Fictitious persons may live alongside existing or dead ones."

How about Abe Lincoln versus Godzilla or Madonna in a video with Mother Teresa? What the authors don't say—because it's the obvious goal of synthetic-actor research—is that when the techniques are perfected (they nearly are), it will be close to impossible to distinguish real film and video personalities from synthetic ones. The old truism about politicians' being creations of the media could be the literal truth.

Thanks to the PC, you don't have to accept synthetic characters foisted upon you by media wizards. Yes, you too can build your own Marilyn, Terminator, or as-yet-undreamed-of blockbuster synthetic star.

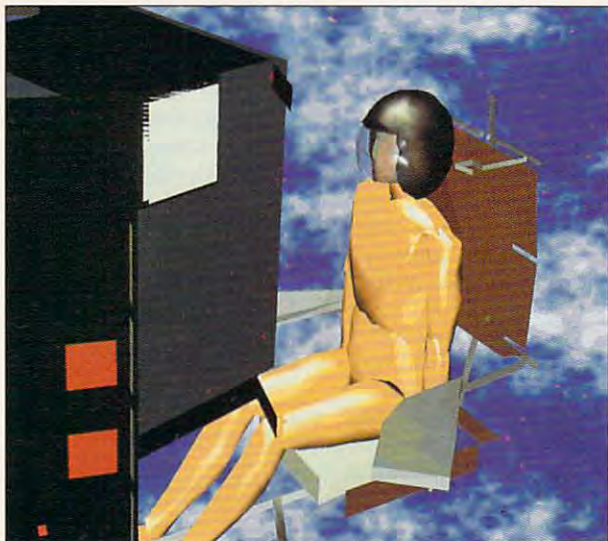
Software isn't quite at the ILM-level of sophistication yet, but a program called *Mannequin* from HUMANCAD (1800 Walt Whitman Road, Melville, New York 11747; 516-752-3568; \$699) can get a 3-D body into your computer.

Using an extensive library of ergonomic data, *Mannequin* lets you create the likenesses of men, women, and children of different body types and nationalities. The models are fully articulated, and can bend at any joint with the same range of movement as a human's, and they can be animated.

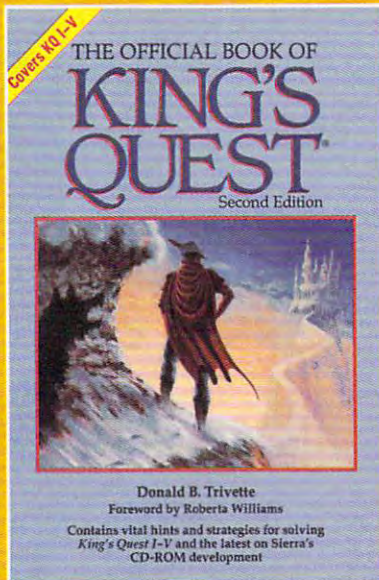
Not much can be done to personalize their faces from within *Mannequin*, but you can export models to any 3-D modeling program that accepts AutoCAD's 3-D file format, tweak the features there, and add clothes, hair, and 50-mm Gatling guns.

In fact, you can metamorphose a model any way you want. Animate your synthetic star in front of a digitized background, and you can start underbidding ILM on Hollywood's next sci-fi epic. □

Someday it may be impossible to distinguish real film and video personalities from synthetic ones.

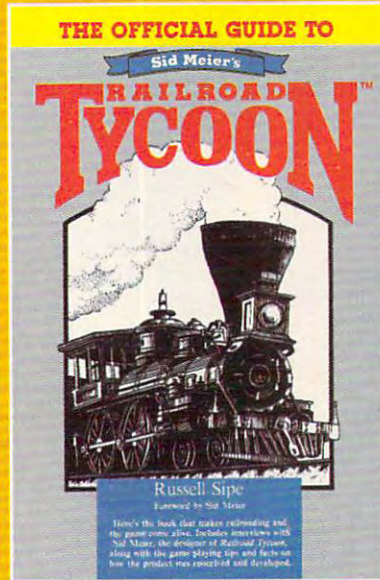


GET THE OFFICIAL CLUES TO THE HOTTEST GAMES!



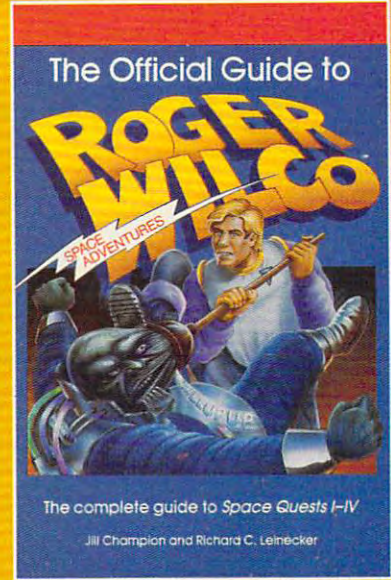
THE OFFICIAL BOOK OF KING'S QUEST, SECOND EDITION

Here's the source for hints, tips, and background for the newest adventure, *King's Quest V*. This new volume includes more clues, maps, and inside details, along with more ways to add even more fun to all five of the best-selling King's Quest games. Covers *King's Quest I - V*.



THE OFFICIAL GUIDE TO SID MEIER'S RAILROAD TYCOON

This is the book that makes railroading and the game come alive. Inside players will find interviews with Sid Meier, the designer of Railroad Tycoon, along with facts on how the product was conceived and developed. Also includes formulas the program uses to determine income and expense.



THE OFFICIAL GUIDE TO ROGER WILCO'S SPACE ADVENTURES

For the first time, Space Questers can learn what goes on in the mind of the most legendary janitor in the universe. Inside, you'll find complete maps for every Space Quest scenario, point values for every reaction, and Roger's walk-through to the finish of all the games. Covers *Space Quest I - IV*.

YES!

I want more hints and tips! Please send me the books checked below.

- The Official Book of King's Quest, Second Edition (2452) \$12.95
- The Official Guide to Roger Wilco's Space Adventures (237) \$14.95
- The Official Guide to Sid Meier's Railroad Tycoon (2443) \$12.95

_____ Total Number of Books

_____ Total Cost of Books Ordered

_____ Sales Tax (Residents of NY, NC, and NJ add appropriate sales tax for your area. Canadian orders add 7% goods and services tax.)

_____ Shipping and Handling: \$2 per book U.S.; \$4 Canada; \$6 foreign.

_____ Total Enclosed

Check or Money Order MC VISA

Signature _____ (Required)

Acct. No. _____ Exp. Date _____

Please Print

Name _____

Street Address _____

City _____ State _____ Zip _____

All orders must be paid in U.S. funds drawn on a U.S. bank.

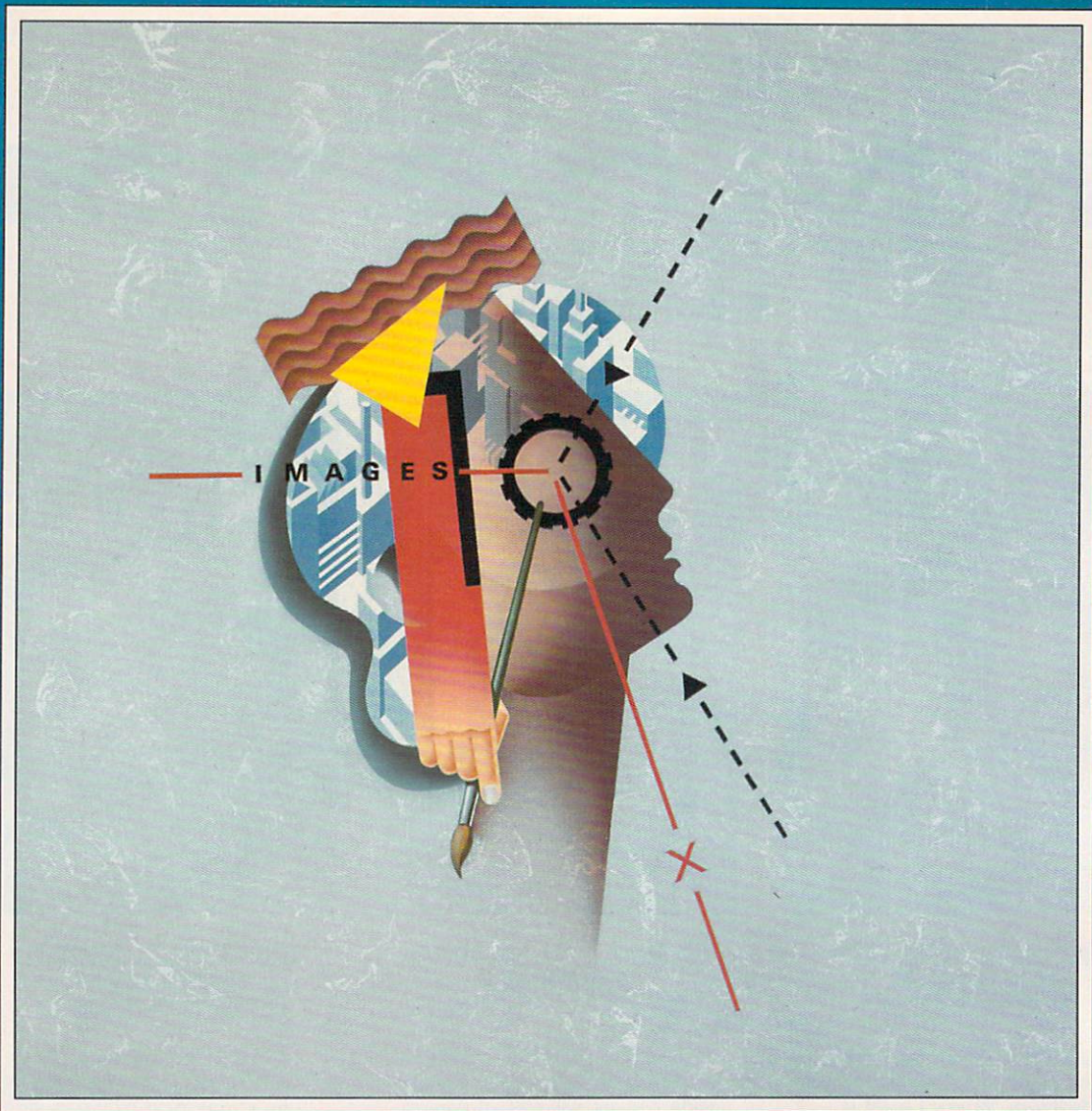
Mail this entire coupon to:

COMPUTE Books
c/o CCC
2500 McClellan Ave.
Pennsauken, NJ 08109

Offer good while supplies last.

12H91C





NOT SURPRISINGLY, ARTISTS
ARE LEERY
OF MACHINES MAKING ART.
SO WHEN THE
COMPUTER IS THE ARTIST,
WHAT DEFINES ART?

They write; they paint; they make music. They pretend to be human. But they're not. They're PCs.

And PCs are, with our help, masquerading as novelists, painters, musicians, poets, and sculptors. If they're good, they can fool the best of us. If they're bad, they still get a laugh.

But as their mimicry improves, the lines between what *they* make and what we create begin to blur. Ethical, legal, and artistic questions dance around like balls in a pinball machine.

They're not doing it by themselves, though. We're still pulling the strings, crafting the programs, and pushing the technology to fire our own creative juices—or to see if we can make these machines jump through the hoops.

But computers of the future may not be willing to play second fiddle.

Synthetic Photos

Says John Grimes of the Institute of Design at the Illinois Institute of Technology, "I don't really think machines can replace what humans intrinsical-

ly do. Whatever computers become, we will define ourselves in contradistinction." Yet Grimes has spent years developing *CameraWork*, which makes images in ways no human could.

A professional photographer, Grimes wanted to experiment with images, try countless variations—many of which he knew would fail—quickly and interactively. *CameraWork* was the result. By offering 30 fundamental processes and then letting users combine those artistic atoms in any number of ways, *CameraWork* can add, subtract, and metamorphose images in an almost infinite variety of ways. Painters have used it to transform charcoal drawings into sweeping pastels, and Grimes uses it to produce variations of his photographs.

"What you end up with is something unimaginable," he says. "You create a new image that cannot be anticipated." While these synthetic photographs wouldn't be possible without the computer, Grimes dismisses the idea of computers as cre-

ators. "They don't make instant art, nor do they make anyone an instant artist. What the computer provides is a lever for the imagination."

But the definitions blur. Harold Cohen, a Los Angeles-based painter, has spent the last 15 years perfecting a program that paints. Written in LISP, a computer language long associated with artificial intelligence research and development, *Arro*'s works have appeared in several electronic art shows.

AutoDesk's *Chaos: The Software*, though not styled as an art program, certainly produces interesting images. Fire up the program, walk away, and when you come back, you'll find strange clouds, mountains, or abstracts on your monitor. To some, those images are as much art as any Jackson Pollock.

Computerized self-animations—such as the MIT Media Lab's classic *Cootie*, in which an animated *Cootie* toy scuttles from place to place by its own set of rules—evoke images of the

kind of electronic life software only now filtering down to the home computer. Maxis Software's *SimAnt*, a simulated ant colony, is a good example. "Who knows if that isn't an art form?" asks John Grimes.

Total Eclipse of Art

Dead women tell tales. So claims Scott French. This Foster City, California freelance writer brought Jacqueline Susann back from the grave. She was the flamboyant author of such sultry 1960s novels as *Valley of the Dolls*.

Using a Macintosh IIcx and off-the-rack artificial intelligence software, French painstakingly re-created Susann's style, characters, and stories, and then collaborated with the Mac on *Just This Once*, a steamy pseudo-Susann novel updated for the 1990s.

French picked apart Susann's writing and then, using the AI software, distilled her prose and plot lines into several hundred formulas. These told the computer how to write, shape the plot, and develop characters. After French

THE ARTIFICIAL ARTIST

BY GREGG KEIZER

made some suggestions, the computer gushed out copy that would make the late author proud—or ashamed.

Just This Once is no fiction-by-silicon fiat. "It's really a collaboration," says French. "I like to think we did it together." French estimates that he wrote about 10 to 15 percent, while the computer cranked out another 25 percent on its own. The rest was a back-and-forth between authors, much as in any other writing tag team.

How good is *Just This Once*? How good was Jacqueline Susann?

Susann, in *Valley of the Dolls*: "She went into the house and grabbed a bottle of Scotch off the bar. Then she went into her bedroom, pulled the blinds to shut out the daylight, shut off her phone and swallowed five red pills. Five red ones hardly did anything now."

French/Macintosh in *Just This Once*: "Lisa picked up the large propane torch and cracked the valve open a hair. The compressed air hissed out like an angry rattlesnake. She snapped the flint wheel on her lighter and the

pull up some titles, proverbs, and idioms with rhyming words, and you'll end up with something like the headline at the beginning of this section.

Corporate Voice, a souped-up grammar and style checker, tries to mold your text to a standard you set. For companies that want all outgoing material to reflect a single style, *Voice* can twist words to sound as if they came from Raymond Chandler or Mark Twain.

Strangest of all, a computer went undercover on UseNet, an online network that links corporate, academic, and government research labs, and spewed out bizarre messages. Never challenged, Mark V. Shaney, the computer's nom de plume, sent back nonsensical ditties like "I am afraid of it becoming another island in a nice suit." No one suspected it was software. They thought it was just another electronic nut.

Sculpt-O-Matic

Computers can help artists visualize 3-D works, but they can't put hands to clay to execute the dream. Not yet.

the moment, they'll stay in high-profit manufacturing where they're used to create ceramic molds and heart valve prototypes. But if prices drop, on-the-edge artists may grab the technology to build works of art at their desks without getting their hands dirty.

It's Pretty, but Is It Art?

"Is it possible for computers to be a great aid in expression?" asks Grimes. "Yes. Is it possible for the computer to be an integral part of that process? Yes. Can computers replace artists? No."

No? Artificial intelligence is still in its infancy, even after years of research. Artists and nonartists will continue refining electronic efforts that ape our ability to express ourselves in words, paint, and music if only to prove that it can be done. "The computer suggested changes that I couldn't see," claims French. "No human could do it; it's simply overwhelming."

If computers can create something pretty, something *art*, it's our fault. We taught them everything they know. □

IN SEARCH OF ART

Computers not only make art, they sell it, too. ArtSearch, a Denver art information and marketing company, plans by year's end to wield its custom database of nearly 100,000 contemporary works of art like a broad brush, painting a quick picture for corporate and private collectors, art galleries, and even the occasional novice.

Now up and running on Macintoshes, soon to make it to 386 PCs, the ArtSearch database shows digitized images of each work, displays a photo and biographical sketch of the artist, and plays the brief audio remark taped by a few artisans. Art lovers can search the database by price, artist, subject, title, size, and color, all for a quarterly membership fee of \$49. Fruitful online searches produce a color printer-produced image that's sent to the user. Future plans depend on CD-ROM technology making the massive database more affordable.

ArtSearch even helps rookies refine their artistic inclinations. As you scroll through randomly selected images, you tell the database which ones you like and which ones you hate. "The Personal Curator starts forming hypotheses about what people like and then tunes in to what their tastes are," says John Graham, president of ArtSearch.

With works that range in price from a few hundred to hundreds of thousands of dollars, ArtSearch's inventory gives people a far greater choice than they can have any other way, Graham says.

Imagine the world's biggest art gallery. Imagine it on your desktop. "ArtSearch is a natural extension [of a common database] but with the added dimension of multimedia," Graham says.

The computer makes. The computer sells. All that's left is the appreciation.

stream of invisible gas flashed into an iridescent blue streak."

French has signed with a New York agent and hopes to see *Just This Once* in bookstores soon. If so, it will be the world's first fiction written primarily by a computer. But French isn't ready to rest on just one novel—or one writer. "It's possible to take two separate writers, in the same genre perhaps, and combine them to come out with a synergistic product. You're making a third person out of it."

Other artificial writers are less ambitious. *Headliner* helps write advertising slogans but is more of a brainstorming tool than anything else. Give this PC program a word—say, *art*—and ask it to

Advances in desktop manufacturing foreshadow a future where artists sit at the screen, create a sculpture with something akin to CAD (Computer Aided Design), and then build it on their desktop, all under computer control.

Several competing technologies that range from solidifying liquid plastic with an ultraviolet laser to hardening a powder with a jet of silica, deliver small-sized replicas of computer-generated designs. The computer scans a design in superthin slices and then translates the image into just-as-thin cross sections of the object.

The high cost of such desktop manufacturing machines—they go for up to half a million dollars—means that, for

PRODUCT INFORMATION

CameraWork

\$395.00
John Grimes
Institute of Design
IIT Center
Chicago, IL 60616
(312) 567-3250

Chaos: The Software

\$59.95
AutoDesk
2320 Marinship Way
Sausalito, CA 94965
(800) 688-2344

SimAnt

\$59.95
Maxis
Two Theatre Sq., Ste. 230
Orinda, CA 94563
(415) 254-9700

Headliner

\$195.00
Salinon
7424 Greenville Ave., Ste. 115
Dallas, TX 75231
(214) 692-9091

Corporate Voice

\$249.95
Scandinavian PC Systems
6 Nelson St.
Rockville, MD 20850
(800) 487-7727
(301) 294-7450

ArtSearch

1625 Larimer St., Ste. 3207
Denver, CO 80202
(303) 825-2787
\$49.00 per quarter for membership with
three free searches; additional searches
\$8.00 each
\$25.00 each for nonmember searches

THE 1991 DEMO Powerpak

A NEW SOFTWARE DEMO EXPERIENCE!

PREVIEW-AND PLAY-OVER \$200 WORTH OF THE LATEST GAMING SOFTWARE!

The 1991 Demo Powerpak is no ordinary software sampler. It lets you **experience each game by playing it!** Play-not just watch- the opening levels of the hottest new software releases. Get the "feel" of how each game plays, and decide which games you prefer **before** you buy!

The 1991 Demo Powerpak includes playable previews of:



MISSION: IMPOSSIBLE*

Enter the world of spies and intrigue in this new adventure offering from Konami Software. Create your own agents, set up wiretaps, and don disguises, as you try to stop an underworld plot to topple the government!



DANGER ZONE-HEAD TO HEAD AGAINST TOP GUN'S BEST*

A new flight simulation experience from Konami. Learn jet fighter tactics from three veteran war aces, thrill to multiple target views including "missile cam," and fly missions solo or in simultaneous, two-player split screen!



MARTIAN MEMORANDUM

Private eye Tex Murphy is back in a hilarious new interactive movie adventure from Access Software. For the first time, players will be able to interact with full motion video characters on a disk-based product, as they help Tex face murder, romance, deception, and prophecy from present day San Francisco to the year 2039.



WORDTRIS

A new challenge from the TETRIS people at Spectrum HoloByte. The fast action, falling blocks now have letters on them, which players try to form into words. Time is of the essence as you try to maneuver letter tiles to spell words, as they fall from the top of the screen into the well. If you like TETRIS, you'll love WORDTRIS.



FACES...TRIS III

You'll meet some pretty strange characters playing this addicting Soviet mind-teaser from Spectrum HoloByte. Falling block pieces of famous and not-so-famous faces must be stacked in the proper order (mouth to chin, eyes to nose) to form complete faces. Remember there are no points for "double chins" in this game!

You'll also receive a complete, ready-to-run version of "Best PC Games" as a special bonus. This disk contains 9 challenging games! There are also discount coupons enclosed with each 1991 Demo Powerpak to use toward the purchase of your favorite PC products.

YES! Send me the 1991 Demo Powerpak, so I can experience the hottest new releases from the best commercial software houses! Send me the disk format checked below.

5-1/4" Disks(Set of 7)-\$9.95 3-1/2" Disks(Set of 4)-\$11.95

Name _____

Address _____

City _____ State _____ Zip _____

Check Money Order MasterCard VISA

Signature _____

Acct. # _____ Exp. Date _____

I've ordered _____ 1991 Powerpaks and have enclosed \$9.95 (\$11.95 for 3-1/2" version) for each.

_____ Amount
 _____ Sales Tax*
 _____ Add \$2.00 shipping
 _____ and handling for each Powerpak ordered.
 _____ Total

Mail your personal check or money order to:

Special Demo Disk Offer

324 W. Wendover Avenue, Suite 200, Greensboro, N.C. 27408

*New York residents add 8-1/4 percent sales tax. North Carolina residents add 5 percent. All orders must be paid in U.S. funds by a check drawn on a U.S. bank. Please allow 4 weeks for delivery. Offer expires March 1, 1992

MULTIMEDIA PC

David English

COLOR VIDEO ON THE RUN

High-quality color LCD laptops have finally arrived, and I've got good news and bad news. The good news is that these latest color LCD screens are sharper and have less distortion than standard color monitors. The bad news is that the International Trade Commission plans to slap a heavy tariff on this promising new video display technology.

With improvements in technology, modem manufacturing, and intense competition, the price of color LCD screens, like the one on this Dolch portable, is coming down. Or is it?



First, the good news. Toshiba, Sharp, NEC, and Dolch all offer color laptops—though they're currently expensive and run on AC power only. Fortunately, prices are dropping quickly (Toshiba's T3200SCX slid from \$8,995 to \$7,249 in just three months), and battery-operated versions should start popping up within the next six to nine months (Dell hopes to have one out by the end of the year, but that's a real long shot).

If you saw a color LCD screen in 1990 or 1989, look again. You probably saw a passive-matrix color screen using the same technology as the passive-matrix gray-scale screens that are so popular on today's laptops. Passive-matrix screens—either color or gray-scale—have only a 4:1 to 12:1 contrast ratio, so graphics and text appear to be

washed out when compared to regular monitors.

Screens using active-matrix technology have a 100:1 contrast ratio, which is about the same as that of a regular color monitor. In addition, active-matrix screens switch their pixels on and off as much as ten times faster than passive-matrix screens (or about the same speed as a regular monitor), so you don't have those ghost images that make it hard to follow a moving cursor or find it in a field of text.

Best of all, because these new color LCD screens are immune to pin-cushioning, color bleeds, mis-convergence, and magnetic interference, they actually provide a sharper image with better color saturation than a standard cathode-ray tube (CRT) monitor. (You can expect to see wall-mounted color televisions based on this same technology by the end of the decade. Eventually, color LCD screens will replace our current CRT-based monitors and televisions.)

The current generation of active-matrix color LCD laptops offers various VGA graphics modes, including 320 × 200 with 256 simultaneous colors and 640 × 480 with 16 simultaneous colors. However, each system varies in the number of possible colors that are available for these modes.

The Dolch screen increases the palette for a color LCD screen from 512 colors to 24,389 colors by using a proprietary combination of pulse-width modulation and dithering. The Toshiba T3200SCX expands the palette to more than

185,000 possible colors. The Sharp PC-8501 offers a 256,000-color palette for 320 × 200 with 256 simultaneous colors and a palette of 4,096 colors for 640 × 480 with 16 simultaneous colors. The NEC Pro-Speed 486SX/C goes further, offering a Super VGA 640 × 480 mode with 256 simultaneous colors while limiting the available palette to 4,096 colors.

Expect 1992 to bring more available colors and more modes. Passive-matrix color screens may make a comeback on the low end as manufacturers grapple with the problems of making active-matrix color screens battery compatible (at present these screens use 1000 times more power than black-and-white passive-matrix screens). I wish I could say that prices will keep dropping, but that brings us back to our bad news.

At the time of this writing, the International Trade Commission has slapped a 62.67-percent tariff on Japanese active-matrix screens. A group of domestic LCD screen manufacturers has argued that Japan is dumping these screens on the American market at less than fair market value. IBM, Apple, Tandy, Compaq, and other computer makers have countered that American companies lack the necessary manufacturing facilities and expertise.

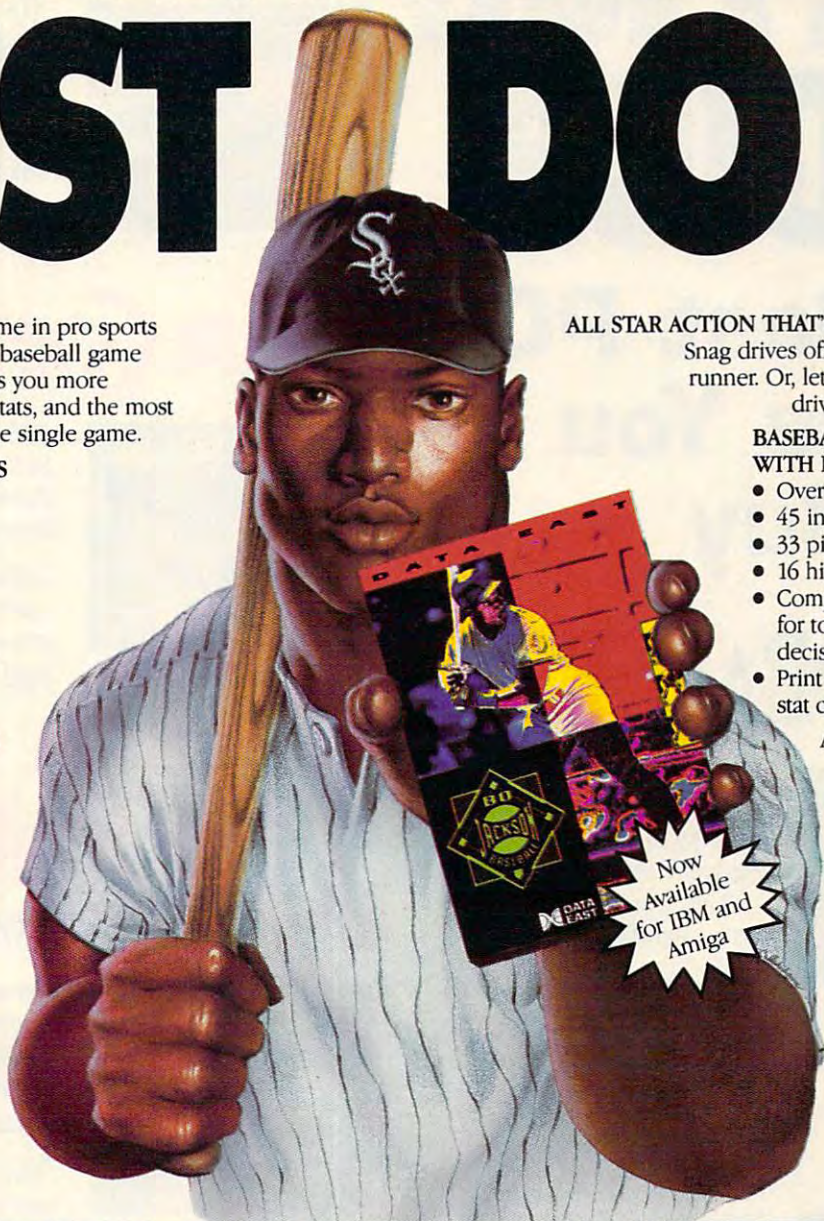
If the tariff is imposed, it will make it nearly impossible for American computer manufacturers to offer active-matrix screens over the next 6 to 12 months—unless they manufacture their computers outside this country. Most will simply move their manufacturing plants offshore. Presumably, the Japanese companies that are currently in the forefront of active-matrix color technology—including Toshiba, Sharp, and NEC—will be able to work around the tariff by manufacturing their laptops in Japan. □

BO JACKSON BASEBALL JUST DO IT.

Now, from the biggest name in pro sports today, comes the greatest baseball game ever assembled! Bo brings you more realistic action, far more stats, and the most impressive graphics in one single game.

CATCH THESE FEATURES

- Authentic lifelike player animations
- Digitized sound and atmospheric effects
- Arcade style 256-color VGA graphics
- Create your own team of righthanders and southpaws
- Edit players for batting and pitching, by arm strength, running speed, and much more
- Make play by play decisions
- Go head-to-head or against the computer with as many as 26 players
- Authentic 162 game series, play-off series and championship play



ALL STAR ACTION THAT'S JACKSON PACKED!

Snag drives off the wall and nail the runner. Or, let Bo show you how to drive one over the fence.

BASEBALL STRATEGY WITH BONA FIDE STATS!

- Over 100 recorded ratings
- 45 individual stats
- 33 pitching categories
- 16 hitting categories
- Complete player control for tough fielding decisions
- Print stats for every major stat category

All this is baseball the way it's supposed to be—What are you waiting for?

JUST DO IT.



Complete view of all the action on the bases when you are at bat.



Detailed, crisp graphics.

Rotation											
	T	IP	H	ER	SO	W/L	SU	ERA	HR	AVG	
1	ROSTO	P	32	31	45	245	3-3	0	3.52	13	245
2	SCOTT	P	205	194	19	245	3-13	0	3.32	37	245
3	VALASQUEZ	P	196	187	20	523	11-10	0	3.53	35	245
4	GULLONSO	P	193	221	20	514	10-14	0	3.45	35	245
5	DARWIN	P	162	135	27	430	11-4	2	3.33	30	245

Bullpen											
	T	IP	H	ER	SO	W/L	SU	ERA	HR	AVG	
1	SHANKS	L	203	185	20	555	7-12	0	3.73	23	222
2	CLANDY	P	76	100	19	202	2-8	1	3.33	13	222
3	ANDERSON	P	96	73	33	355	5-2	7	3.66	17	222
4	SMITH	P	60	45	23	153	6-6	23	3.45	11	182

More than 100 stats that you can track on an authentic 162 game schedule.

Circle Reader Service Number 165

Bo Jackson Baseball: © and TM 1991
Data East USA, Inc. All rights reserved.
Manufactured by Data East USA, Inc.
under license from Tiger Electronics, Inc.
IBM PC is a registered trademark of IBM.

Data East USA, Inc.,
1850 Little Orchard St.,
San Jose, CA 95125
(408) 286-7074



© 1991 Data East USA, Inc. All rights reserved. www.dataeast.com

CRITICS CHOICE

The Best PC Games You Can Buy

HARDBALL II™



"Until recently there have been few baseball simulations worth \$50. I've changed my mind after playing HardBall II ... it hits a grand slam." — Boston Herald

ELVIRA™ Mistress of the Dark



"Adventure of the Year" — Enchanted Realms Magazine

"If you're looking for an intriguing introduction to the world of role-playing gaming, you won't go wrong with Elvira." — CompuServe

Visit your favorite software retailer.

ACCOLADE™
The best in entertainment software.™

Test Drive III: The Passion, HardBall II, and Star Control are trademarks of Accolade Inc. Elvira and Mistress of the Dark are trademarks of Queen "B" Productions. Sega and Genesis are registered trademarks of Sega Enterprises Ltd. Accolade, Inc. is not associated with Sega Enterprises Ltd. All other product and corporate names are properties of their respective owners.

© 1991 Accolade, Inc.

Test Drive III THE PASSION™



Rating: 10.0 "The most exciting and realistic automobile road racing simulation available. As much fun for adults as it is for kids." — Chicago Sun Times

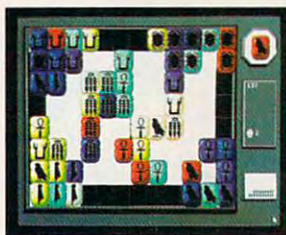
STAR CONTROL™



"Best Computer Science-Fiction Game" — Video Games & Computer Entertainment

"This is not just another space game... it's a space game with everything done right." — Compute Magazine

ISHIDO™ The Way of Stones



Named one of the 1991 Games 100. "A stimulating mental challenge of rare beauty and quality." — Games Magazine

"Five stars, magnetic... well worth the money." — Boston Herald

SPECIAL OFFER

Save \$25!

Want to see for yourself how good an Accolade game can be? Buy **Ishido** direct from Accolade for \$29* (Retail \$54.95). 30-day money back guarantee.

To order **Ishido** direct, call us toll free:

800-245-7744

*For PC, Mac, and Amiga. (Sega® Genesis® version - \$20.)

The Games:
Winter Challenge

"HE HATED THE AUSTRILIANS.



THEY WERE FEARLESS, CUNNING AND FAST. FIVE GOLD MEDALS WERE ALREADY GOING BACK TO KITZBÜHEL. BUT HE VOWED TO DENY THEM A SIXTH. ON THE TRAM, HE TOLD THE REPORTERS. HE WOULD BE THE FASTEST MAN DOWN THE MOUNTAIN THIS DAY." INTENSE RIVALRY. GRUELING COMPETITION. WORLD CLASS SPEED. ALL PART OF THE GAMES: WINTER CHALLENGE™ GO FOR THE BRONZE, SILVER OR GOLD AS YOU EXPERIENCE THE

TOTAL RUSH OF COMPETING IN EIGHT CHALLENGING EVENTS AGAINST THE BEST ATHLETES ON EARTH. THE LIST OF FEATURES IS STRICTLY WORLD CLASS: ♦ 256-COLOR VGA GRAPHICS ♦ A STUNNING BLEND OF DIGITIZED, 3-D POLYGON-FILL AND BIT-MAPPED IMAGES ♦

UNIQUE ATHLETE'S-EYE PERSPECTIVE COMBINED WITH SMOOTH, TRUE-TO-LIFE ANIMATION ♦ 8 AUTHENTIC WINTER EVENTS ♦ VCR-LIKE INSTANT REPLAY ♦ TRAINING RUNS OR FULL MEDAL COMPETITION ♦ DIGITIZED SOUND EFFECTS WITH FULL MUSIC & SOUND BOARD SUPPORT ♦ AND IF YOU'RE TIRED OF ONE OR TWO-PLAYER GAMES, THIS ONE LETS YOU COMPETE AGAINST NINE PEOPLE—THE ULTIMATE PARTY GAME. ♦ THE GAMES. FROM THE SHEER EXHILARATION OF THE DOWNHILL TO THE RAZORS EDGE OF THE LUGE, IT'S THE MOST REALISTIC SIMULATION OF ITS KIND. TO ORDER, VISIT YOUR FAVORITE RETAILER OR CALL 1-800-245-7744.

ACCOLADE™



THE DOWNHILL ♦ GIANT SLALOM ♦ SKI JUMPING
SPEED SKATING ♦ CROSS COUNTRY SKIING
BOBSLED ♦ LUGE ♦ BIATHLON



THE BEST IN ENTERTAINMENT SOFTWARE™

The Games: Winter Challenge is a trademark of Accolade, Inc. © 1991 Accolade Inc. All Rights Reserved. Actual Game screens from IBM PC VGA version of the game. All other product and corporate names are properties of their respective owners. Neither Accolade nor this product is associated with, or authorized by, the International Olympic Committee, The United States Olympic Committee or any similar organization for any other country.

Circle Reader Service Number 200

www.commodore.ca

ENTERTAINMENT

COMPUTE CHOICE. Assume the role of Jake "Lucky" Masters, a wise-cracking American ace flyer.

Richard O. Mann

HEART OF CHINA

After the Great War, the old ways of life in China changed forever. During this era of turmoil, American ace flyer Jake "Lucky" Masters, slightly down on his luck, flies trade goods such as silks and paper parasols from the interior to Hong Kong.

As Lucky's alter ego, you immerse yourself in a part of history that Americans consider romantic, and, as any red-blooded American would, you rise to the challenge to become a wisecracking hero.

Beautiful nurse Kate Lomax nobly works to save downtrodden Chinese children, until she's kidnapped by an evil warlord. Kate's father, ruthless American tycoon E. A. Lomax, determines that you, Lucky Masters, must rescue her. E. A. Lomax's clever plot forces you to accept the assignment, and he assigns an impossible deadline.

Once free of E. A. Lomax and the introductory sequence, you begin actual play on a dock in Hong Kong, alone (except for a friendly and later useful seagull) and in charge of your fate again. Thus starts your dynamic crusade to recruit a ninja, rescue the girl, and escape to the safety of Paris.

Along the way you'll visit the back alleys of Hong Kong, the warlord's palace in Chengdu, the primitive village of Kathmandu, and the bazaars of Istanbul. You'll ride the Orient Express to Paris, and—if you do everything exactly right—win the heart of saucy Kate Lomax. You haven't won the game until you're married.

The plot intrigues with its attendant puzzles and mysteries but lacks great inspiration.



The game's gorgeous graphics and the near-cinematic look and feel push *Heart of China* to the cutting edge. Most adventure games, including the Sierra line (Dynamix is a division of Sierra), amount to little more than animated cartoons.

Though excellent drawings to be sure, the screens and characters of such games remain, nevertheless, just artwork.

More movie than cartoon, *Heart of China* includes still pictures with small moving parts added, but it approaches realism. Shot like a movie with actors and sets (although, as in a real movie, many of the exteriors are paintings), the images were then digitized and, in some cases, animated.

These sequences of what Dynamix calls full-motion video—movielike animations of video footage—consume vast quantities of hard disk space. Don't expect to see a lot of it in the game, which already takes up a full eight megabytes of disk space.

This visual treat does, however, remind us that the day when computer games and movies will integrate fully isn't that far away.

Easy to master, the interface works best with a mouse, since it allows you to point at anything on the screen. Click the right button to get a description of the object under the pointer and click the left button to see if there's anything you can do to the object or with it.

Click on the character icons in the lower corners of the screen to view the objects you carry. Once you learn to drag the gun from the inventory to Lucky's hand to arm him and to drag the ninja hood over Chi's picture to have him change into his ninja garb, you're well on your way to controlling the situation.

You can also change your viewpoint character. Click on the Chi icon to become Chi, a necessity in certain parts of the game. Later, you'll need to play the part of Kate to spring Lucky from a Turkish prison,

where he's incarcerated for committing certain unspecified acts with the nabob's daughter (before he met Kate, of course).

As you confront the characters, you may choose to talk to them. Usually, a series of ornate dialog boxes provides the first part of the conversation without any action from you.

After these necessary preliminaries, a dialog box offers you three or more choices for your reply to what the character said. The choices you make will either get you what you want (if you happen to know) or eventually get you killed.

You'll need to save the game frequently, as you will die innumerable times on your way to your wedding in Paris.

The dialogs with the characters provide challenging fun. Some conversations give you a series of five or more consecutive sets of possible comments, depending on what you say each time.

There are many ways through this conversational maze to your objective, some quicker than others. Some paths lead to unfortunate dead ends. I particularly enjoyed the romantic verbal jousting on the Orient Express, played from either Lucky's or Kate's viewpoint.

If you select the right series of comments, you'll end up in wedded bliss. Say the wrong thing, and you'll end up in a Paris bar trying to impress a new girl.

These conversations add depth to the game through characterization. To get what you want, you must deal with characters' motivations and personalities as revealed through dialogue.

Your relationship with Kate, which leads to the ultimate goal of the game, serves as the primary example, but in other situations, understanding the distinctive personalities of each character can assist you significantly.

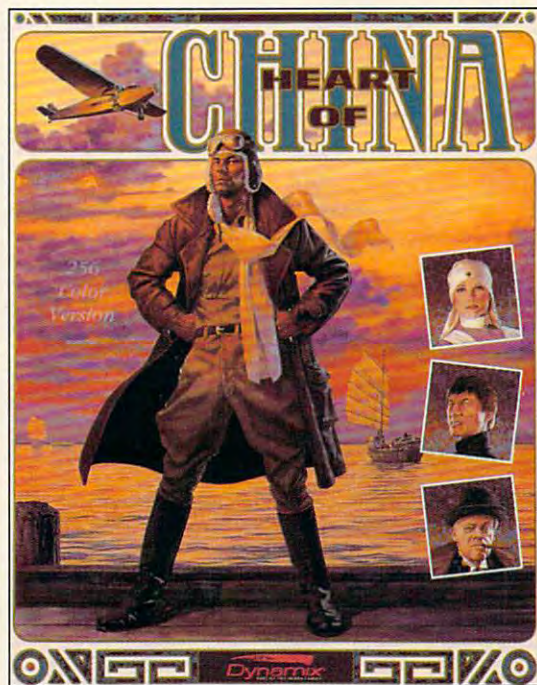
On the other hand, the preset paths through the conversations limit your choices. At times you want to scream something at a character, but it's never one of the choices. You have to have faith that somewhere in all that conversational blather something useful will emerge.

In an effort to please everyone, Dynamix threw in a couple of essentially gratuitous arcade sequences, but then, don't most movies include gratuitous violence these days?

As you escape the warlord's stronghold, you thunder away in an old army tank. As the arcade sequence begins, you have the option of skipping it entirely. If you opt to play, you'll work through a tank chase presented in simple filled-polygon video. After a while, if you haven't found your plane, a dialog box pops up asking if you're tired of playing tank and if you want to move directly to the plane.

Another arcade sequence on the Orient Express has Lucky and a thug brawl on the top of the train as it roars through a series of low-clearance tunnels—a traditional cartoon-character game. I suspect most of us will skip these parts after playing them once or twice.

Dependable overall, the documentation contains some frustrating minor inaccuracies. For example, the explanation of how the mouse works will slow you down as you puzzle



it out; it should have been clearer. In reality, the mouse and the interface won't give you the least trouble; the manual just makes it appear that way.

Heart of China represents another step forward in game technology. Its exciting (if somewhat limited) full-motion video sequences and romantic elements make for fresh and pleasant gaming. If you have the 286 or 386 computer with a VGA monitor and eight megabytes of free hard disk space—by all means—lose your heart to China. *Heart of China* might not offer enough challenge to fervent adventure game veterans, with its readily solvable puzzles and mysteries and its involved but not wearisome story line. For the rest of us though, the visual experience alone should have us clamoring to climb the Great Wall, if need be, to buy our own copies. □

IBM PC and compatibles with 286 or better microprocessors; 640K RAM; EGA, VGA, or Tandy 16-color; 8MB hard disk space; supports Ad Lib, Sound Blaster, PS/1, Roland sound; supports mouse and joystick—\$59.95

**DYNAMIX
99 West 10th, Ste. 337
Eugene, OR 97401
(503) 343-0772**

GAMEPLAY

Denny Atkin

FILES UNDER PRESSURE

You've finally figured out the complexities of downloading a file. That neat shareware game you read about in *COMPUTE* now sits on your hard drive ready to play. Or so you think. You type the name of the file and are rewarded with BAD COMMAND OR FILE NAME. What's wrong?

Either your download wasn't successful, or the file you transferred was stored in a compressed format and requires processing before it can be put to use.

Just about all the files you'll find online, games or other kinds of files, have been compressed. You'll recognize these files by their extensions—such as ARC, BXY, LZH, SIT, and ZIP—which help you identify the program that was used to compress the files. Some compressed files are self-extracting; they have a tiny decompression program appended to the beginning of the compressed file. These files can be hard to identify, since they end with a standard EXE extension on MS-DOS machines. (They're even harder to identify on Macs and Amigas.) While it can be disconcerting to type a program name and have it create lots of smaller programs on your disk, at least self-extracting files don't require a separate program to decompress.

Why are program files compressed in the first place? Compressed files are generally about half the size of their uncompressed counterparts, so they can be downloaded in about half the time. On commercial online services or BBS systems where you have to call long-distance, time truly is money. Even on local bulletin boards, where time isn't as much of a consideration, com-

pressed files speed you along so someone else can log on.

Another benefit is that you can transfer a group of related files in a single step. Compressed files are called archives because they can contain more than one file; you can archive a set of related files together. Many programs require a set of data files to run. If you had to download each necessary file individually, not only would you have to spend more time picking downloads, but you'd risk missing vital data files. Also, most modern compression programs will save the original subdirectory structure for all of the files; if your file needs separate directories for data files, keeping its directory structure intact will save you from having to type a series of COPY, MD, and DEL commands.

The final benefit of archiving a file or series of files is that the archiving programs will check each file's integrity as it's decompressed. If a file has errors in it due to a download problem, the archiving program will alert you to the problem. The programs generally don't provide a method to fix the errors, however.

Compression programs also provide a sort of file-transfer standard, allowing you to transfer files intact between different computer platforms. For instance, the Macintosh, the Amiga, and OS/2 PCs don't suffer from the MS-DOS eight-character-plus-three-character-extension filename length limitation. But if you wanted to transfer a Mac file named PostScriptOutput to an Amiga using a PC-based BBS as an intermediary, your filenames would be truncated to POSTSCRI.PTO when the file was stored on the PC. By "encapsulating" the file in the safety of an archive, only the archive filename would be truncated; when you finally decompress

the original file on the Mac, its filename will be intact.

There is a downside, though—compatibility. Different archive programs are more popular on different platforms. And each platform has more than one archiving format available; you'll find that you need more than one decompression program even if you don't have to deal with files from foreign computers.

The most popular format on MS-DOS computers is the shareware *PKZip*, by Phil Katz. Katz created the ZIP format, which was faster, more versatile, and better at storing directory structures than ARC, a precursor. ZIP has become the de facto standard on MS-DOS machines.

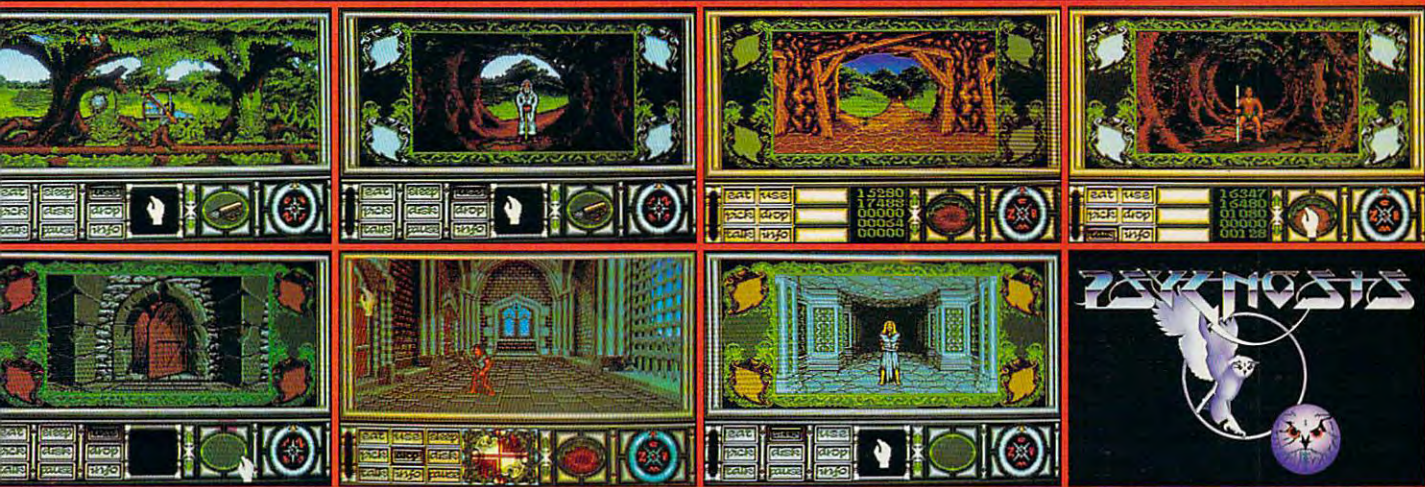
The only serious challenger has been *LHarc*, a freeware program from Japan. It offers compression similar in speed and efficiency to *PKZip*'s, but at a lower price—free. Because of the poor implementation of *PKZip* on the Amiga, *LHarc* has emerged as the Amiga standard.

Mac files are usually compressed with *StuffIt* (SIT) or *Compactor* (CPT). I could devote an entire column to the intricacies of decompressing Mac files on other platforms—you have to deal with Resource and Data Forks, fun stuff—but *UnSit* will let knowledgeable users extract Mac files on their platforms.

If your file is going to be used by Mac, Amiga, and Atari ST users in addition to MS-DOS folks, your best bet is to use *LHarc* to compress the file. If the file is of interest to MS-DOS users only, though, stick with *PKZip*. Avoid self-extracting files if possible. Not only are they potential virus carriers (some virus programmers hide the virus in the extraction code), but they prevent your file from being used on incompatible platforms. □

**Guest columnist
Denny Atkin:
Just about all the
game files
you'll find on bulletin
board systems
have been compressed
in some manner.**

OBITUS



BEHOLD THE VIRTUAL WORLD OF OBITUS!

Obitus brings adventure role-playing to your computer like you've never seen it before!

Waking up lost and alone, you are trapped in the medieval world of Middlemere until you solve the ancient mystery of the Tower. It will be a perilous quest. Breathtaking graphics scroll smoothly by as you explore this rich adventure tableau creating an eerie feeling of "being there". You'll encounter 400 diverse, intriguing characters and you'll have to equip yourself with hundreds of weapons, talismans and magic spells necessary for the completion of your trek.

Three entirely different player interface perspectives combine to make *Obitus* a uniquely engaging gaming environment. *Obitus* takes full advantage of your system's capabilities, utilising state-of-the-art graphics and sound support to create the complete fantasy experience as only Psygnosis can.

SEEING IS BELIEVING!

Available for IBM Compatibles, Amiga & ST Computers.

Psygnosis: 29 Saint Mary's Court, Brookline MA 02146. Telephone: (617) 731-3553. Fax: (617) 731-8379

Circle Reader Service Number 163



CONDUCTORS USING ROBOTIC
GLOVES, AN AUDIENCE THAT INTERACTS
WITH THE ORCHESTRA—THE FUTURE
OF MUSIC IS JUST AROUND THE CORNER.

THE INFINITE CRESCENDO

BY CHANTELLE OLIGSCHLAEGER



The ear changes with the generations, and what is cacophony to me may well draw iron tears down the cheeks of my nieces and nephews.

Sir Edward Marsh, an English art patron, was referring to Georgian poetry when he penned those words, but you could easily say the same about music. Since Leon Theremin invented the first electronic instrument in 1920, music has changed in ways never before imagined. And the movement that computers began is still playing its overture.

The electronic music revolution is turning science fiction into science reality in the labs of Stanford University's Hugh Lusted and San Jose State University's Ben Knapp. In 1987, the two researchers brought together their visions of a device that would produce music from the electrical activity in muscles. Their creation: the Biomuse, an apparatus that uses a headband and a muscleband to sense bioelectrical activity, which, in turn, is sent to a computer to produce musical signals.

The headband eye controller detects the direction in which your eyes are moving, and a muscleband controller, which you wrap around your arm or leg, detects muscle tension. For example, if you're playing a keyboard with both hands, you can send additional commands to the computer or create other instrumental sounds with the headband by moving your eyes or by flexing the banded muscle. The computer is programmed to interpret the information and send a command to the synthesizer, which results in music.

The Biomuse could be a godsend for physically disabled musicians. Lusted and Knapp introduced it to patients last March at Loma Linda Hospital in Southern California. One man, a former computer programmer without full use of either his arms or legs, was able to play the violin using the remaining control of his upper arm.

Virtual Biomime

Musician Galen R. Brandt sees other possibilities for the Biomuse. She plans to use it and Vivid Effect's virtual reality software, *Mandala*, in her multimedia show, *Let Us Consider the Rising of Dreams*. During a performance, a mime might wear a Biomuse band to trigger changes in light and sound while *Mandala* allows the performers to interact with preprogrammed graphics.

A video camera records the performers' images against a solid background, and those images are sent to a computer via *Mandala* where they're separated from the background and digitized. The images are then projected into the field

of graphics, allowing the performers to "interact" with, say, images of drums, beating them as though they were real.

To pull it all together, Brandt uses multiple MidiTaps controlled by *Virtual Studio* software. The MidiTaps use MediaLink, a multimedia LAN protocol that provides a new way of transmitting digital information, like MIDI, over a high-speed, high-bandwidth, bidirectional network. Each MidiTap, an interface between MIDI and MediaLink, acknowledges that it has received a message and translates the MIDI information for the electronic instrument.

Brandt's show will also be an experiment in audience interaction. You might see yourself on the screen interacting with performers in a story line. Or you could interrupt an infrared beam, triggering an audible response, or you might interact with the show from your wired seat with your own Biomuse device. Brandt hopes audiences will be able to experience and interact with her show in one to two years.

Super Conductor

While the Biomuse interprets a muscle flinch that can help the physically disabled create music or allow an audience to interact with a show's performers, the Radio Baton, developed by Max Mathews of Stanford University, monitors arm gestures, which it uses to conduct

music electronically. As he waves a Radio Baton, it sends radio signals to a flat surface below him that senses the location of his hand in space. Once the computer receives the messages, it sends them to a synthesizer called Sound Canvas, or SC-55, "telling" it how he wants the melody to sound.

Cellist Ami Radunskaya, who worked with Mathews at Stanford and is now at Rice University, has written four compositions for the Radio Baton. With her right hand controlling the tempo and her left hand influencing the expressive qualities of the music, Radunskaya can perform her music with all the drama and passion of a symphony conductor. But instead of a live orchestra, her music is preprogrammed using Mathew's *Conductor* program.

"I like the generality and freedom of it—the theatrical action and expressive capability," she says. Faculty and students at ten colleges, including Radunskaya's Rice, are experimenting and composing music with Radio Batons.

Electronic Session Man

As musical conductors, they're one thing, but computers traditionally haven't been the best accompanists. However, researchers like Roger Dannenberg, senior research computer scientist at Carnegie-Mellon University, are developing software that lets the com-

THE FUTURE OF MUSIC—IMAGINE IT

We're only beginning to discover what dynamic reverberations occur when music and computers converge. Acoustic instruments will still have their place in the future, but what will computers bring to your listening pleasure?

Roger Dannenberg, who has created a computer-accompaniment program (not yet available on the market), sees interactive software in music's future. Programs will be able to respond differently to different musicians.

Although a piece will still have a recognizable melody, it won't be the same each time it's played. Instead of repeatedly banging the notes of "Chopsticks," your children's children will play the tune in different ways.

Tunes won't be the same if light and color are added. Imagine flashes of green, blue, and teal, and then an explosion of color, all radiating to the beat of "Chopsticks," monopolizing your entire field of vision. Walt Disney fiddled with such a concept in *Fantasia*, but future musicians will play the video images as if they were playing the piano. Images will respond to music, and music will respond to images.

While you're surrounded by color and light, you'll also be surrounded by sound. Tod Machover of MIT's Media Lab says the concert hall of the future will feature hundreds of loudspeakers in the walls, floor,

and ceiling. You'll listen to 15 or 20 musicians playing instruments that are partially acoustic and partially electronic. They'll make a united sound, but their distinctive parts will be heard all around you—like a holographic image, only the sound will occupy physical space.

Machover also envisions sound galleries in which several miniconcerts take place simultaneously. You'll move from one to the other just as you would from picture to picture in an art museum. The only music you'll hear, though, will be the concert you choose for the moment.

As in Mozart's time, even opera won't remain unchanged, and it could be very different from the black-tie affair you now know. Somewhere in Machover's notes is a "brain opera" where you'll be able to see how your mind understands music.

Riding through the opera as if you were on a roller coaster, you'll be able to hear and see the pieces of music come together as your brain processes them. You'll experience how sound becomes a note, a melody, a rhythm—and how composers play with these elements to create music. Then you'll hear how they're all put together to compose the opera's score.

So what will the future hold? Computers now have music on the brink of changes so amazing, they'll make the present look like a future you've only imagined.

Ultima® VII

THE BLACK GATE™

ORIGIN presents A LORD BRITISH PRODUCTION
"ULTIMA VII – THE BLACK GATE"

Starring THE AVATAR, IOLO, SHAMINO, DUPRÉ, and BILL JOHNSON as "The Guardian"

Programming KEN DEMAREST III, HERMAN MILLER, ZACHARY SIMPSON, JEFF WILSON, TONY ZUROVEC

Technical Design Assistants ANDREW MORRIS, JOHN WATSON

Art Direction BOB COOK, JEFF DEE, KARL DOLGENER, GLEN JOHNSON, DENIS LOUBET, GARY WASHINGTON

Audio Director MARTIN GALWAY **Music** DANA GLOVER

Sound Effects MARC SCHAEFFGEN, NENAD VUGRINEC **Writing** JACK HERMAN, BETH MILLER

Executive Producer DALLAS SNELL **Associate Producer** ALAN GARDNER **Screenplay** RAYMOND BENSON

Producer and Director RICHARD GARRIOTT

Available in Retail Stores or call 1-800-999-4939 for Visa/MC Orders

VOLUNTARILY
RATED MP-13
(For Mature Players)

THE QUEST BEGINS CHRISTMAS 1991

Ultima, The Black Gate, Avatar, Lord British, Iolo, Shamino, Dupré, The Guardian are
trademarks of ORIGIN Systems, Inc. © 1991 ORIGIN Systems, Inc.

Released by

 **ORIGIN**
We create worlds.

puter play second fiddle. You can either improvise or play exactly what's on your sheet music instead of trying to play along with tape-recorded electronic music. The computer listens and synchronizes itself with your playing, regardless of your artistic whims. "It is a more live experience if *everything* is live," Dannenberg says.

The computer uses pattern-matching algorithms to compare your performance to its own, considering all possible matches of pitch. It listens to you through a device that converts instrumental output from pitch to MIDI and applies strategies to maintain synchrony. It can anticipate what you'll do next and then send commands to the synthesizer to play any chosen instrumental sound.

Dannenberg is enhancing the program so it can handle more arbitrary musical patterns and stay synchronized with each member of an ensemble. He hopes to market his program soon.

Hypermelodies

One man who knows what it's like to perform with computers is Tod Machover, associate professor of music and media at MIT. Machover brought his hyperinstruments to the studio with the recording *Flora* and even to the Paris stage with the opera *VALIS*. You may have seen him with a conducting

PRODUCT INFORMATION

For more information about the products mentioned in this article and other essentials for the computer-inclined musician, contact the companies listed below.

<p>Mandala \$495.00 Vivid Group 317 Adelaide St. W, Ste. 302 Toronto, ON Canada M5V 1P9 (416) 340-9290</p> <p>MidiTap System \$1,595.00 Lone Wolf 1509 Aviation Blvd. Redondo Beach, CA 90278 (213) 379-2036</p> <p>Dexterous HandMaster \$15,000.00 for one full hand, accompanying computer boards, and software EXOS 8 Blanchard Rd. Burlington, MA 01803 (617) 229-2075</p>	<p>SampleCell Soundboard \$1,995.00 without RAM \$2,995.00 with 8MB RAM Audio Media Soundboard \$995.00 Digidesign 1360 Willow Rd., Ste. 101 Menlo Park, CA 94025 (415) 688-0600</p> <p>MIDI Interfaces and Software \$39.95-\$995.00 Opcode Systems 3641 Haven Dr., Ste. A Menlo Park, CA 94025 (415) 321-8977</p> <p>Sound Canvas \$795.00 Roland 7200 Dominion Cir. Los Angeles, CA 90040 (213) 685-5141</p>
--	---

glove—a mess of wires called Dexterous HandMaster that looks more like a prop for *Terminator 2*.

Hyperinstruments enhance your performance by adding "color" to your music. The computer listens to MIDI and

other information from your traditional instrument or conducting glove and decides what to do with the sound. It takes the information to a synthesizer to add more notes, for example, or to make the rhythm very precise. The louder you play, the more a hyperinstrument will add. You might be playing one yourself before too long. Machover expects hyperinstruments to hit the market within two years.

Music Above All

One concern about computer-generated music has been that less skillful artists might use it as a crutch. But the idea behind hyperinstruments is to put the musician in control, not to make up for shortcomings. "Computers should take what you do very well and make that special," Machover says.

Others say that while a computer's precision helps musicians manage complex rhythms, creating music still requires an ear and imagination. "[Computers] are good for a person who doesn't have years and years of practice and technique, but who still wants to enjoy playing," Radunskaya says.

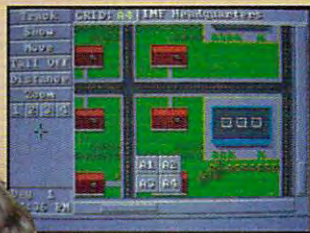
Playing a duet with a computer or conducting with a robotic glove may seem just as alien to us as the electric guitar did to our parents 40 years ago. But with the strides computer music is making, future generations may not be able to imagine a concert without seeing the sweep of Radio Batons, without interacting with the performers, and without expressing themselves with a Biomuse.

Indeed, the ear *and* the instrument change with the generations. □



ATTEMPT TO DEFUSE A HIGHLY CHARGED PLOT OF MURDER, CORRUPTION AND INTRIGUE.

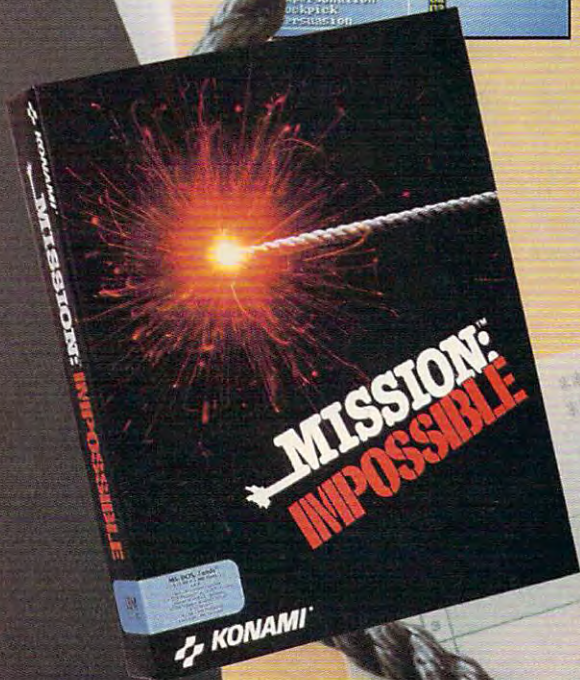
- Your mission in this adventure role play, should you choose to accept it, is to delve into a dangerous world of espionage and uncover a large scale plot that could lead to crime riddled government.
- Create a team of four agents from a pool of 20, each with a range of character profiles to choose from, based on attributes and skills such as stamina, charisma, will power, persuasion, impersonation, armed and unarmed combat, and more.
 - Equip your agents with the devices necessary to find clues, gather vital intelligence and survive crucial encounters.
 - Send all four agents on assignment simultaneously, going undercover, probing suspicious events and spying on unsavory characters.
 - Engage numerous spy tactics including wire tapping, surveillance, lock picking, computer operation, disguises, tracking, and many others.
 - Make contacts at a variety of locations such as an airport, golf course, beach house, restaurant, yacht club, and IMF Headquarters.
 - Comprehensive grid map of entire mission setting lets you track agents and members of the underworld.
 - Agents can acquire new skills and improve on others throughout the mission.
 - Digitized graphic scenes and original music from the Mission: Impossible television series.



KONAMI

TM & Artistic Copyright © 1991 Paramount Pictures. All Rights Reserved. Mission: Impossible is a trademark of Paramount Pictures, Konami, Inc. Authorized User. Konami is a registered trademark of Konami Co., Ltd. ©1991 Konami, Inc. (708) 215-5111 All Rights Reserved.

Circle Reader Service Number 136



Barbie™

PC
FASHION DESIGN
& COLOR



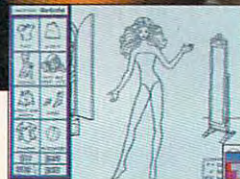
Introducing a whole new world of fun!



Now, you can enhance your child's creative potential with the new Barbie™ PC Fashion Design & Color! It's an explosion of fashion, color, and fun!

This menu-driven software program lets your child select, then color Barbie fashions. Thousands of combinations to choose from for hours of fun. Available for IBM or IBM-compatible PCs in 3 1/2 inch and 5 1/4 inch Disk versions.

Dress up your child's imagination and enter the world of Barbie with Barbie PC Fashion Design & Color. See your local software retailer or, for the outlet nearest you, call: 1-800-537-0295.



Choose a theme, then build her wardrobe.



Zoom feature for detailed coloring.



Paint with 120 colors from the Barbie Palette.

The perfect holiday gift!



Circle Reader Service Number 199

Craft House Corporation, Toledo, Ohio 43607

An FPM Company

BARBIE is a trademark owned by and used under license from Mattel Inc. © 1991 Mattel Inc. All Rights Reserved.
IBM is a registered trademark of International Business Machines Corporation.

www.commodore.ca

64/128 VIEW

A new column that looks at Commodore activities around the world makes its debut in this issue.

Tom Netsel

Anyone who owns a 64 or 128 knows that he or she is *not* a member of an exclusive club. There are millions of the 8-biters around the globe, and if all their owners got together, they'd make one huge user group.

In fact, Commodore owners have a lot in common, no matter where they live. Teachers in Canada, Texas, and Israel use their machines to help educate youngsters. Game players in Alaska and India entertain themselves for hours with shoot-'em-ups and role-playing games. Programmers in Pakistan and New Zealand crank out code in BASIC and machine language. And everyone bemoans the fact that new releases for the 64 are as scarce as Sahara snowballs.

In an effort to bring 64 and 128 users even closer together, to share ideas and information, I am planning a new column for Gazette called "World View." It will be written by 64/128 users in different countries who'll discuss Commodore topics of interest in his or her country. Topics may include software, hardware, computer shows, user group activities, BBSs, or anything else that may interest 64 users.

We kick off "World View" in this issue with a look at Commodore activities in England as described by Steve Jarrat. Steve is the editor of *Commodore Format*, the United Kingdom's most popular Commodore 64-specific magazine. Steve touches on a variety of topics, including the ill-fated 64 Game System, the popularity of tape as a storage medium, and

something called game cheats. I hope you'll enjoy his comments about 64 and 128 happenings in the UK.

I'd like to hear from Commodore owners in other countries around the world. So if you'd care to submit a 1000-word article on disk, we'll pay for the ones we publish.

The holiday demand has caused increased production of 64s and 1541s, and Commodore reports that sales have been particularly lively in central Europe. Companies that have needed a computer but couldn't afford one or didn't have access to one until just a short time ago are now buying 64s.

Now that the Eastern nations are swapping the Iron Curtain for Blue Light Specials, low-priced computers such as the 64 and 128 could become hot items. I hope 64 owners in those countries will tell us how things are changing. Are spreadsheets becoming best-sellers, or is *Tetris* still the favorite software buy?

Those of you who own 128s should find the programs in this month's issue to be of special interest. Bruce Bowden has written a handy screen dump and a program that helps machine language programmers configure their 128's memory banking. On *Gazette Disk*, *Trig 128* from James Moore is a bonus program that will help trigonometry students with their math homework.

Another disk bonus is Don Radler's collection of traditional Christmas songs and carols. Don used a music program that we published some years ago to transcribe a number of tunes for your enjoyment. □

GAZETTE

64/128 VIEW G-1

Check out our new column from the United Kingdom and several 128 programs. By Tom Netsel.

FEEDBACK G-2

Questions, answers, and comments.

TOWARD COMPUTER LITERACY G-6

Tips on how to steer your child away from Nintendo and toward computer literacy. By Dorothy Hemme.

REVIEWS G-12

DuckTales, *Text Print*,
Dream Team: 3 on 3 Challenge.

WORLD VIEW G-18

A look at 64 activities in England. By Steve Jarrat.

MACHINE LANGUAGE G-19

Where to place program code, variables, and constants in your ML programs. By Jim Butterfield.

GEOS G-20

Tell your relatives to skip the reindeer ties; ask for what you really want. By Steve Vander Ark.

D'IVERSIONS G-22

Taste the food on the menu. By Fred D'Ignazio.

BEGINNER BASIC G-23

Deck your holiday tree with RND. By Larry Cotton.

PROGRAMMER'S PAGE G-24

Try programming in a new language. By Randy Thompson.

PROGRAMS

128 Configuration Aid	G-25
Desdemona	G-26
Screen Dump 128	G-28
Checker Command	G-29
Country Cab	G-32
Janus	G-37

Questions and answers about user group listings, 128 software, and more

It's in the Mail

Do you people read your mail up there? For eight years we've been sending you a copy of our monthly newsletter, *Syntax*, and you didn't mention us in your listing of user groups. Would you care to offer a good explanation for such an oversight?

WILLIAM O. NELSON
EL-SHIFT-OH USER GROUP
P.O. BOX 36148
MELBOURNE, FL 32936-1348

Last spring our user group coordinator sent letters to every user group in our files. We mailed hundreds of letters to groups in 50 states and dozens of countries, asking officers to verify addresses and BBS telephone numbers. We carefully explained that if the letter were not returned, we would assume that group was no longer in operation. For the convenience of U.S. groups, we even provided a stamped envelope for the letter's return. As letters came in, we checked them off our list, deleting the ones that did not respond. Your letter was not returned, so we assumed your group had disbanded.

Now, for any other group that was also omitted, here's a chance to make the updated list that we will publish soon. Send your club name, address, and any BBS telephone number to Commodore 64/128 User Group Update, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. Don't rely on your newsletter; send a note.

User Group Association

The North American Commodore User Group Association, which was mentioned in the September issue, is an organization of Commodore 64/128 user groups across the U.S., Canada, and the world. We currently have 73 member groups, representing more

than 5200 individual members. Our goal is to help user groups help users.

NACUGA was formed at the World Of Commodore in Toronto in December 1990. We have grown so fast that we now have two separate offices, one serving Canada and the other serving U.S. groups. The Canadian address is Dave Quinn, NACUGA, Box 2984, Station A, Moncton, New Brunswick E1C 8T8, Canada.

JOSH JACOBY
NACUGA
98-151 PALI MOMI ST. #110-189
AIEA, HI 96701-4332

Unscrambled Words

I once owned a TI-99 computer and had a program that unscrambled words. Unfortunately, I can't remember the name of the program, but my description speaks for itself.

I now own a 128D and was wondering if there is a program of this type for it.
GEORGE H. QUENNEVILLE
VICTORVILLE, CA

I trust you mean a program that will unscramble an anagram, which is a word that is formed by transposing the letters of another word. Enter the following program and see if it does what you want.

When you run the program, it'll ask for a word to unscramble. The program works best with words that are fewer than nine letters in length. The program counts the letters, sets up an array, and prints all the possible combinations of those letters.

The program is not too sophisticated; it merely prints combinations of every letter that you enter, even if that letter has already been used. As a result, a four-letter word will have 24 combinations printed on the screen. A five-letter word will have 120, and a six-letter word will have more than 700 onscreen words. To

make it a little easier for you to find the word you want, the program prints only 80 words at a time until it has exhausted all possibilities.

Oh, yes, if you do check a nine-letter word, you may want to have a sandwich nearby. If the program takes seven seconds to fill a screen with 80 combinations, you'll be at the keyboard for more than eight hours, watching 362,880 combinations print out. Allow for a few extra minutes if you actually read the words that are printed.

```
DF 10 PRINT "{CLR}{WHT}"
CR 20 CLR:INPUT"WORD TO
      {SPACE}UNSCRAMBLE"
      ;SS=N:LEN(SS):DIMC
      (N-1)
GS 30 I=N-1:F=F+1:PRINTS
      $,:IFF=80THENGOSUB
      100
DG 40 SS=LEFT$(SS,I-1)+R
      IGHTS(SS,N-I)+MID$(
      SS,I,1)
GX 50 C(I)=C(I)+1:IFC(I)
      <=N-I GOTO30
AD 60 C(I)=0:IFI>1THENI=
      I-1:GOTO40
KF 100 PRINT:PRINT"HIT
      {SPACE}ANY KEY WH
      EN READY"
MP 110 GETAS:IFAS=""THEN
      110
EC 120 IF F<80THEN END
JH 130 F=0:RETURN
```

128 Software Wanted

I've taken a little survey of my own, and I'm not happy with the results. In 11 issues of *Gazette* you'd published 44 programs for the 64, four for the 128, and four for both. That is not balanced programming. Come on, readers, submit more 128 programs. I plan to submit mine, myself.

ROGER W. MILLER
PEORIA, IL

Thanks for calling attention to the need, Roger. We encourage 128 submissions and pay for the ones we publish. I'm sure many programmers have good 128 and 64 programs that are just gathering dust. Remember, we can't

FOR ORDERS AND INFORMATION IN USA & CANADA CALL

1-800-759-6565

Order Hours: Mon-Thurs, 9am-7pm/Fri, 9am-3:30pm/CLOSED Sat/OPEN Sun, 9:30-6(ET)

WE CAN RECONFIGURE ANY OF OUR COMPUTER PACKAGES TO YOUR SPECIFICATIONS. CALL FOR DETAILS!

WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS - DISCOUNTS FOR QUANTITY ORDERS - RUSH, 2ND DAY & NEXT DAY AIR SERVICE AVAILABLE!

MONTGOMERY GRANT

COMPUTE GAZETTE 1291

OUTSIDE USA & CANADA CALL

(718)965-9077

ESTABLISHED 1967

OR WRITE TO:

MONTGOMERY GRANT: MAIL ORDER DEPT. 33 34th ST., DEPT. A, BROOKLYN, N.Y. 11232 FAX #7189658689 / TELEX 422132 MGRANT

FOR CUSTOMER SERVICE OR ORDER STATUS CALL: (718) 965-9285
CUSTOMER SERVICE HOURS: MON-THURS 10-5/FRIDAY 10-3/SUNDAY, 10-4



Commodore® 1084 MONITOR \$299



COMMODORE AMIGA™ 500 **\$469**



64C BACK IN STOCK

Commodore® 64C® \$149.95

Special Purchase Blowouts!

Commodore® 1802
13" COLOR COMPOSITE MONITOR w/SOUND (RECONDITIONED)
\$99.95

80 COL. THERMAL PRINTER INCLUDES COMMODORE INTERFACE
\$29.95
SPECIAL! 5 Free Games with Purchase!

SAVE BIG \$\$\$
WHEN YOU BUY ONE OF OUR ALL IN ONE PACKAGES

- 64C TEST PILOT PACKAGE**
- Commodore 64C Computer
 - Commodore 1541 Disk Drive
 - Joystick
 - Quantum Link Software

- 64C COMPLETE PACKAGE**
- Commodore 64C Computer
 - Commodore 1541 Disk Drive
 - 80 Column Printer
 - 12" Monitor
 - Quantum Link Software

- 64C COLOR PACKAGE**
- Commodore 64C Computer
 - Commodore 1541 Disk Drive
 - 80 Column Printer
 - Color Monitor
 - Quantum Link Software

5 SOFTWARE PACKAGES INCLUDED:

- Advanced Tactical Fighter
- Infiltrator II • Harrier
- Crazy Cars • Tomhawk

\$299 \$369 \$449

C-128D Computer CALL

C-1581 Disk Drive..CALL



EXCELLERATOR PLUS FSD II DISK DRIVE \$99



COMMODORE 64/128 SOFTWARE TOP HIT LIST!

Big Blue Reader.....\$31.00	Maverickv5.0.....\$29.00	Secret Silver Blades.....\$32.00
Carmen Time.....\$26.00	ML Baseball II Enhan.....\$27.00	Sim City.....\$21.00
Carmen USA.....\$28.00	Newsroom.....\$14.00	Tetris.....\$14.00
Carmen World.....\$25.00	Paperclip III.....\$40.00	Turrican II.....\$20.00
Death Knights Kyinn.....\$40.00	Pocket Writer II.....\$34.00	Ultima VI.....\$49.00
GEOS v2.0.....\$40.00		Word Writer VI.....\$34.00

PRINTER SPECIALS

STAR	PANASONIC	CITIZEN
NX-1000C.....\$199.00	KXP-1180.....\$189.00	GX-200.....\$199.00
NX-1000C Rainbow.....\$269.00	KXP-1123.....\$249.00	GX-140.....\$339.00
NX-1001.....\$179.00	KXP-1124i.....\$359.00	GX-145.....\$449.00
NX-1020Rainbow.....\$219.00		Color Option Kits.....CALL

Commodore MPS-1270 Inkjet \$129.95

PERIPHERALS FOR COMMODORE CALL

COMMODORE 1541II DISK DRIVE \$169	COMMODORE 1571 DISK DRIVE
1750 Clone RAM Expansion.....\$189	Super Snapshot 5.0.....\$59.95
Cardco G-Wiz Interface.....\$49.95	Xetec S. Graphix Jr. Interface.....\$29.95
Commodore 1660 Modem.....\$14.95	Xetec S. Graphix Sr. Interface.....\$59.95
64, 64C Power Supply.....\$29.95	

OTHER ACCESSORIES FOR YOUR COMMODORE COMPUTER AVAILABLE

NO SURCHARGE FOR CREDIT CARD ORDERS

Certified check, Bank Check Money Orders, Approved P.O.s, Visa, Mastercard, Amex, Optima, Diners Club, Carte-Blanche, COD's & Wire Transfers accepted. Please call before submitting P.O.s. Non-certified checks must wait 2-4 weeks for clearance. Prices and availability subject to change without notice. Not responsible for typographic errors. Return of defective merchandise must have prior return authorization number or returns will not be accepted. Shipping & Handling additional. Second Day & Next Day Air available at extra cost. Canadian orders please call for shipping rates. APO FPO orders please add 10% shipping & handling (minimum \$15). All APO FPO orders are shipped first class priority air. We check for credit card theft. DCA #800233.

buy it if you don't submit it.

By the way, we have published a few other 128 programs: Measurement 128 (February 1991), BX BASIC (March 1991), Typing Tutor (April 1991), and Super Cataloguer 128 (September 1991). Since these programs were too large to offer as type-ins, we included them as bonus programs on Gazette Disk. The subscription price for the disk and magazine is \$49.95 for 12 issues. Call (800) 727-6937 to order.

Frugal Plus/4

All the Plus/4s and older machines we use here in rural Alaska don't make us backwards, just frugal. In the days before laptops, the Plus/4 was the easiest to convert to 12-V DC operation for use in the bush. The situation is a bit different if you live in one of our fine cities, but rural kids have been happily blasting aliens for years with their 64s and 128s plugged into generators.

My winter hobby is rewriting 64 programs for the Plus/4. Somewhere along the way, cabin fever must have cleared up, but I was left with 1200 programs and files for the Plus/4. Does anyone still use a Plus/4? I'd be pleased to get some fresh input and share some programs for this orphaned machine.

JAMES HEHL
P.O. BOX 877466
WASILLA, AK 99687

Multiplan Wanted

I am using my 64 system in my business. Over the past several years, I have generated hundreds of data disks from various spreadsheets and other programs, but now I'd like additional software. I'd like to purchase a copy of *Multiplan*. Could you help me find a copy of this program?

TED DACE
OLATHE, KS

Try Software Support International, 2700 NE Anderson Road, Suite A-10, Vancouver, Washington 98661, (800) 356-1179. They have a used copy for \$14.95.

Skip the Folds

I'm sure you've answered this question many times, but how can I print a long program listing that skips over the folds in my computer paper?

HELEN UNSER
ORLANDO, FL

Walter Johnson, from DeKalb, Texas, included just such a tip in a recent letter. "Here's a trick I discovered in making program listings skip over the folds in the paper instead of continuously printing. It makes the program listing look nicer, and it's easier to read when there are no lines printed over the perforations." Load your program, but don't run it. Then enter the following lines in immediate mode.

```
OPEN 4,4:PRINT#4,CHR$(147):  
CMD4:LIST  
PRINT#4,CHR$(19):CLOSE4
```

BAM Aid to the Rescue

I recently had a problem when my 1581 disk drive crashed, causing me to lose a number of newly created *SpeedScript* files. The *BAM Aid* recovery program you included as a bonus on the January 1991 *Gazette Disk* proved invaluable in recovering the files. Thanks.

MARK REIDEL
LOMBARD, IL

We're glad the bonus program helped. For readers not familiar with *Gazette Disk*, it is the companion disk for each month's magazine. It contains all the programs that are featured in that month's issue, plus a bonus program or two. Often these bonuses are too large to offer as type-in programs in the magazine.

Which 64 Version?

I've spent hours searching my software for a routine that reports which version of the 64 is present and another that's capable of distinguishing between Commodore computers. Can you help?

FRANK WHITTAKER
AKRON, OH

A popular way is enter *PRINT PEEK65534*. This returns a value of 72 on a 64 (or a 128 running in 64 mode), a value of 23 on a 128 in 128 mode, a value of 114 on a VIC 20, and a value of 255 on a Plus/4 or Commodore 16.

Early models of the 64 produced different colors when the screen was poked directly. Early 64s produced a white character; revised models produced characters whose color was the same as the screen background, making them invisible. Most 64s produce characters that have the current character color.

You can test this by clearing the screen on your 64, moving the cursor down a few lines, and typing *POKE 1024,1*. Original model machines will print a white letter A in the upper left corner of the screen. Revised models will show nothing, but you'll see an interesting effect if you press the Home key. Most machines will print a letter A in the current printing color, normally a light blue.

Programs usually work around this variance by poking the color nibbles, but a program could check with a peek of address 59916. Original models will show a value of 1; revised models, 218; and current models, 145.

Send questions and comments to *Gazette Feedback*, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. □

More comments
about printer
ribbons, disk bonus
programs, and
computer versions

The Lowest Prices in the World on Commodore-Ready Printers!

TENEX Computer Express

ONLY
\$139⁹⁵

NX-1000C



ONLY
\$159⁹⁵

NX-1000C Rainbow

stair
THE COMPUTER PRINTER

NX-1000C

This is the Commodore-ready version of the NX-1000. You can just plug it in and start printing—no additional interfaces or cables are required.

NX-1000C Printer 75060 **\$179.95**
Sug. Retail \$299.00
LOWEST PRICE EVER! \$139.95

NX-1000C Rainbow

Print in full color! Near-letter quality at 36 cps and high-speed draft at 144 cps features the new paper parking function. Convenient front panel controls. Great for extra-impact graphics and text. This is the Commodore-ready version—no additional interfaces or cables are required.

NX-1000C Rainbow Color Printer, Commodore Ready 75783 **\$219.95**
Sug. Retail \$379.00
LOWEST PRICE EVER! \$159.95

Printer Accessories

Black Ribbon for NX-1000C/NX-1000C Rainbow Color Printer	75471	\$5.95
Color Ribbon for NX-1000/NX-1000C Rainbow Color Printer	75485	\$9.95
Dust Cover for NX-1000C/NX-1000C Rainbow Color Printer	77789	\$8.95

Call Today! 1-800-PROMPT-1

Don't miss out on the **Lowest Prices** on Amiga 500 and Accessories!!
Call today to receive your **FREE** catalog with the greatest prices on the most popular hardware and software!



Quality TENEX Power Supplies



From
\$34⁹⁵

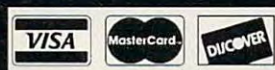
Limited Quantities!

TENEX MW 701-A. Conservatively rated at 5V and 1.8A, this unit for the C64 features a double-fused system. Its new heat-sink design allows cooler operating temperatures inside the case. Lifetime warranty.
Sug. Retail \$49.95
TENEX MW 701-A 84513 \$34.95

TENEX MW 705. Perfect for your C-128! This is a heavy-duty, switching power supply rated at 3 amps at 5VDC. Lifetime warranty.
Sug. Retail \$69.95
TENEX MW 705 90686 \$49.95

TENEX
Computer Express

P.O. Box 6578
South Bend, IN 46660
(219) 259-7051 — FAX (219) 259-0300
We gladly accept mail orders!



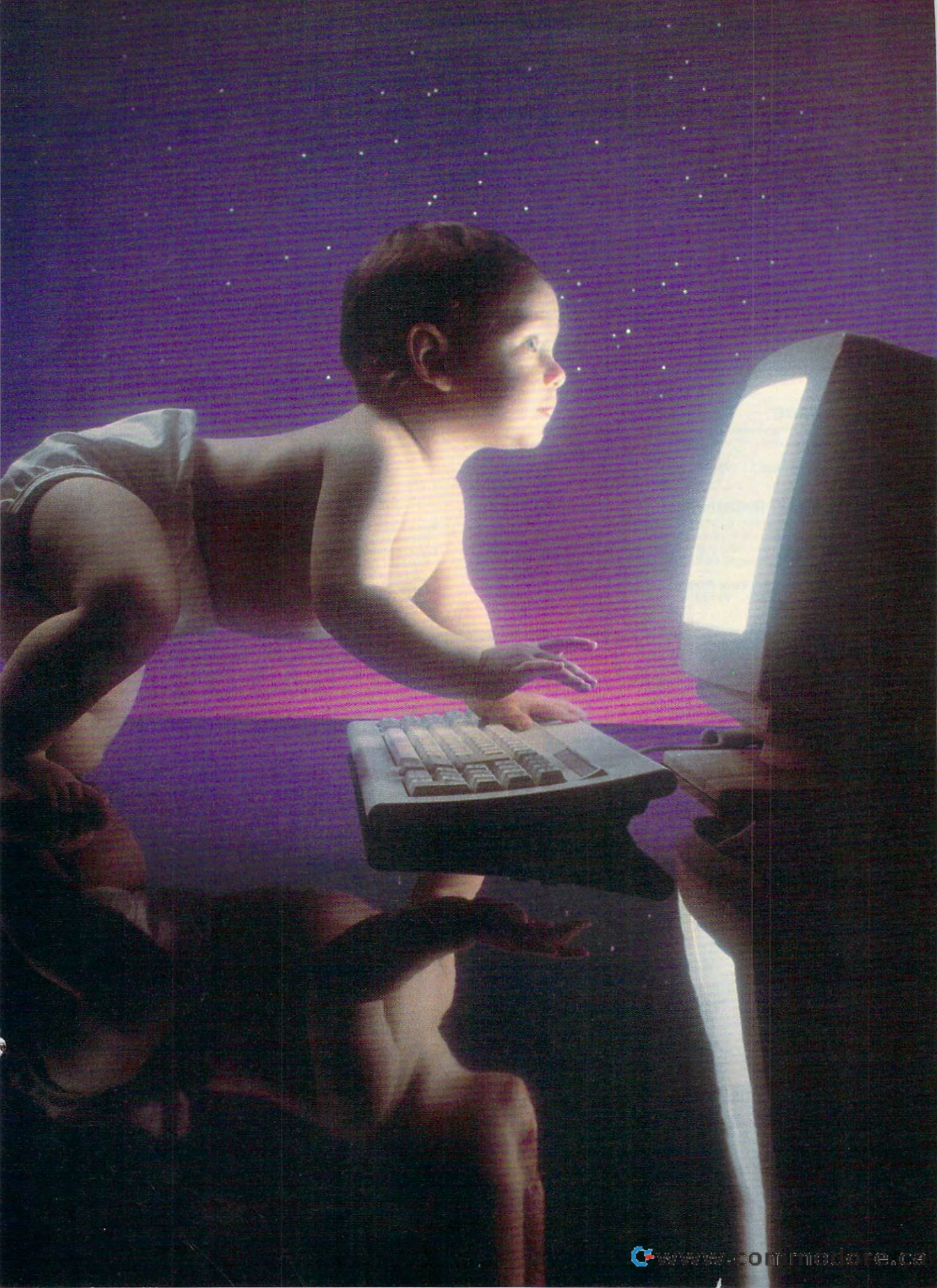
No Extra Fee For Charges!

ORDER TODAY CALL 1-800-PROMPT-1

COMMODORE 64 and COMMODORE 128 are registered trademarks of Commodore Electronics, Ltd. AMIGA is a registered trademark of Commodore Amiga Inc. NOTE: Due to publishing lead-times, product prices and specifications are subject to change without notice. * APO, FPO, AK, HI, CN, VI, GU, and foreign orders are subject to additional shipping charges.

*Shipping, Handling, Insurance	
Order Amount	Charge
less than \$19.99	\$4.50
\$20.00-\$39.99	5.75
\$40.00-\$74.99	6.75
\$75.00-\$98.99	7.75
\$99.00-\$149.99	8.75
\$150.00-\$299.99	9.75
\$300.00 & up	\$CALL

Circle Reader Service Number 170



WAYS PARENTS CAN STEER CHILDREN
FROM PLAYING NINTENDO GAMES
TOWARD DEVELOPING COMPUTER SKILLS

TOWARD COMPUTER LITERACY

So, you've decided, your youngster is a computer imbecile. The kid is interested only in manhandling a small joystick and showing images of the Super Mario Brothers around a TV screen, while his Nintendo makes the same disgusting five-tone sound after every move.

You rationalize and tell yourself that this activity is great for developing eye-hand coordination. It must be because the kid can beat you at every activity except taking out the garbage. Deep down, however, this mindless activity irritates you because you know that the kid is missing out on something. The child isn't learning.

If you have a child who spends hours with a Nintendo and if you're like me, you wonder how you can get your kid to spend more time with a computer. How can you encourage your child to become computer-literate? Aren't the schools supposed to do that? The answer, of course, is Yes. Schools do

teach classes in computer literacy, but you can help your child learn these skills—even if he or she is a teenager. Here's how.

Rely on Schools . . . Part of the Time

First, we might ask, what is computer literacy? Is it programming? Should my kid be able to write simple programs? Well, yes, computer literacy may include some programming skills, and most schools offer classes in programming these days, but there is more to literacy than programming.

My own children, introduced to computers in elementary school, learned some interesting things with little turtles and the Logo system. Making that onscreen turtle do what the child wants teaches young people some very basic programming concepts.

Even though my children forgot all about Logo in later years, the elementary course got them used to computers in general. They are not afraid

of the machine—unlike some adults—and they'll tackle any task that interests them. They know that clicking the wrong mouse button or pressing the wrong key on the keyboard won't break the computer.

In the eighth grade, my children took another literacy class. That course taught them to turn on the computer, insert a disk, and format a disk. It also taught them to write simple programs that produced some interesting graphic images. They learned to print these images on a standard dot-matrix printer. Now that was programming!

The problem was that they lost interest in computers the minute the class was over. No transfer or carryover transpired. Boredom seemed to be the main culprit. I'd taught my children these basic computer literacy skills at home, so the material they covered at school during that semester seemed old hat and a waste of time.

For my 13-year-old son, games won out. Computers meant games, and then

BY DOROTHY HEMME

games meant Nintendo. Anything else was irrelevant.

Find Their Interests

So how did I regenerate my kids' interest in computer learning, and how can you? First, cater to their interests. That means games. For years, my son used our Commodore for games. He learned enough to load a disk, call up a directory, and load a specific program in order to play the game. Also, fast load cartridges have their own specific procedures that he had to learn.

Some very intricate games on the 64, like *Airborne Ranger*, require him to format a data disk. This allows him to save his game at a certain place so he won't have to start over from the beginning each time he boots it up. In addition, he learns valuable note-taking

our test went to me.

Next, we compared features. Nintendo has a joystick and fire button. The 64 has those items plus a full keyboard and eight function keys that can be programmed with different features. This, he admitted, increased the wonderful complexity of the 64 games.

Finally, I asked him to quit his Nintendo game and go unload the dishwasher. He couldn't or wouldn't (I'm not sure which) because he would lose his game unless he finished. On the 64, several of his games have an option that lets him save a game to disk.

Cater to Their Needs

My high school daughter, on the other hand, cares nothing for games or the computer. In school she discovered that she had to write numerous essays,

activities encompass many computer literacy skills needed in today's society. More than programming, people today need to know how to use the machine and the various types of software. And I had her interested.

Let the Kids Talk

The greatest boon to computer literacy in our family came through a \$99 modem. QuantumLink garnered the interest of both kids when they discovered People Connection. People Connection lets them talk with dozens of other teens across the country. The conversations are live and cover a variety of subjects. To them it's sort of like the Citizens Band radio craze of a few years ago. The kids like to gab with anyone.

In the interest of saving money, I limit the time that they may chat on Q-Link. They have fun online, but at the same time they had to learn the simple computer and modem hookups and the necessary software commands in order to use the QuantumLink telecommunications service.

All of this learning, which was just a game to them, displayed what I consider to be some sneaky teaching on my part as a parent. I used their interests and sense of fun to help them become computer-literate. They learned about baud rates, downloading files and programs and saving them to disk, and printing sequential files when they wanted hardcopies of their electronic mail or a file from Q-Link's encyclopedia. They became experts using programs such as *Omega-Q*, *Lynx*, *Library*, and *Squeeze-Unsqueeze*.

More Than Literacy

Later, I downloaded terminal programs and files from Q-Link that listed BBS numbers for our area code. That clinched it. My son started evaluating all the terminal programs I had downloaded until he found just the one he liked. He had to learn about XMODEM and Punter protocols and about echoing and duplexes. He quickly found out how much the buffer would hold. He and his best friend called each other constantly to talk on the computer instead of the telephone. As a result, my son quickly learned keyboard skills. He downloaded dozens of files from local BBSs and user groups. Eventually, when the need arose and he wanted to conserve disk space, he queried me about how to scratch files he no longer wanted. He also learned the pitfalls of constantly scratching and saving without validating.

Finally, my son learned to play computer games via modem with a human being on the other end of the telephone line trying to "kill" him. He had

TEACHING THE TEACHERS

Wenden Elementary School in Wenden, Arizona, has four Commodore 64 computers. I have taught kindergarten through eighth grade for seven years with these same 64s. They are used and abused by a variety of students from 8 a.m. until 3 p.m. each school day. If there is any better computer for a school, I have yet to find it.

Convincing other teachers how great the 64 is, however, has proven to be difficult. Two of my friends purchased Apple computers this year, after I spent hours with them demonstrating the virtues of the 64. Obviously, advertising has a tremendous effect even on intelligent people.

Last year, through a supermarket's Apple for Computers program, we managed to save enough receipts for an Apple IIc+ and software. The graphics on the Apple are terrible; the educational programs boring and twice as expensive as most 64 programs. I am really frustrated that Commodore didn't advertise the 64 and get it into

schools. Schools don't need the expense of an Apple or IBM, and children don't benefit from extra memory or other expensive features.

I'd like Gazette to show me how other schools use their 64s in labs. I'd like to know that other teachers appreciate the variety of educational programs for the 64 that I do. I'd like to hear from others who use *GEOS*. It's such a fantastic program that my students always ask for it when I give them a choice of software. Students in the lower grades would spend all day with Microgram's *Big Math Attack* if I'd let them. They even choose it on game day, when they can have their choice of any software we have.

Well, I just wanted this chance to vent my feelings. I just get so irritated when people think the Apple is so great for classroom work. I'm one who knows better.

JEANNE YUELL
P.O. BOX 338
WENDEN, AZ 85357

skills when he has to write down codes, instructions, and keyboard functions and commands—this in spite of keyboard overlays. Since he loves playing games, I used that to my advantage, and he learns some important computer skills while having fun.

My son loves Nintendo, and he swears that its graphics are better than the 64's. So we did a comparison, sort of like the taste tests of the colas a few years back. I gave in on that one and admitted that perhaps he was right; the Nintendo graphics may be a little better. Since he won a point, that satisfied his adversarial urge, and he continued with the test.

Next, we compared sound. Aha! Nintendo has only a few preset tones, whereas the 64's three voices offer a wide variety of music, synthesized speech, and battle sounds. Round 2 of

and they had to be typed. The choice was clear. She could use either an old manual typewriter with erasable bond paper or the computer. When she discovered that typing errors could be corrected easily, her spelling could be checked, and her paper could look professionally printed, the computer won this contest hands down.

Even though my daughter hadn't yet taken typing in high school, she was pretty good with two fingers. All of a sudden, she became interested in a computerized typing tutor and learning keyboard skills.

With a word processing program, she learned how to call up a directory, set margins, and other skills of writing and composition.

Then, of course, she had to revise, edit, check the spelling, save her work for later drafts, and print it out. Those

INTRODUCING

COMPUTE NET



- About COMPUTE/NET
- Product Ordering
- Feedback Board
- Coming Events
- Monthly Contest



Welcome to the grand opening of COMPUTE/NET. A wealth of information awaits you. Back issues of COMPUTE, hard-to-find computer books, super software, dazzling pictures, challenging games, prizes, a complete bulletin board, and much more are here. You can even talk to the editors and authors of the magazine. Lots of surprises are planned, so keep your eyes on us.

FIND US ON Q-LINK



FREE Q-LINK STARTER KIT. FREE TIME. ORDER TODAY!

Just call our toll-free number or return the coupon, and we'll send you the Q-Link Starter Kit and software free, waive your first month's membership fee, and credit you with one hour of "Plus" time to try the service. Your \$9.95 monthly fee gives you unlimited access to all of our "Basic" services online, including a searchable encyclopedia, AND one free*hour of "Plus" services. After your free hour, you'll pay only \$4.80/hour—just 8 cents per minute—for additional use of the service.

Q-Link is a registered service mark of Quantum Computer Services, Inc.

*Long-distance charges may apply. Surcharges apply if you are a resident of Alaska, Hawaii, or Canada. Allow four to six weeks for delivery.

YES! Send me my FREE Q-Link software, waive my first month's membership fee, and credit me with one FREE* hour of Plus time to explore the service and try COMPUTE/NET.

Name _____
 Address _____
 City _____ State _____ Zip _____
 Home Phone _____



Use of Q-Link requires a VISA, MasterCard, or checking account.

MAIL TO

Q-Link

8619 Westwood Center Drive
 Vienna, Virginia 22182-9897

Call 1-800-782-2278, Ext. 2414 today

to think quickly, matching wits with a human opponent rather than a computer.

He developed time management skills: when to do his homework and household chores. He then made specific appointments he had to keep; the next game was at 8:00 p.m. As a side effect, he had to be nice to the rest of his family, since he tied up the phone and we couldn't use it while he was on the modem. He also had to accept that he had time limits for playing games and using the computer. Thus, efficiency screamed out as the watchword of this teen's day.

The Last Word

Are my children computer-literate? I think so. At least by my definition. In good time, they'll take the last high school course in computer literacy that's required by the state of Texas to get their diplomas. They may or may not turn into computer programmers or technicians, but they'll have most of the essential skills that Americans of their generation are going to need. They have the ability to work the machine and, better yet, to make the computer work for them.

Dorothy Hemme teaches English at a high school in Sugar Land, Texas. □

Gazette is looking for utilities, games, applications, educational programs, and tutorial articles. If you've created a program that you think other readers might enjoy or find useful, send it on disk to

**Gazette Submissions
Reviewer
COMPUTE Publications
324 W. Wendover Ave.
Ste. 200
Greensboro, NC 27408**

Please enclose an SASE if you wish to have the materials returned.

ONLY ON DISK

In addition to the type-in programs found in each issue of the magazine, *Gazette Disk* offers bonus programs and original 64 and 128 artwork. Here are this month's bonuses.

The Raven

Daniel Lightner
Sidney, MT

Enter this machine language adventure game, and you'll find yourself in a three-dimensional maze that's filled with valuable treasure. The object is to locate the treasure and return it to a special storage area. The only obstacles are the puzzles that you'll have to solve and a number of deadly creatures blocking your path.

You are not alone, though. A friendly Hobbit named Harvey will help you find your way through the maze.

Trig 128

James Moore
Cleveland, OK

Use this handy 128 program to help you solve any triangle, not just right triangles. The program calculates sides to four decimal places and angles to the nearest second. The program will also help you determine the area of a triangle if you know an angle and the length of its two sides or if you know the length of three sides. This program can be a real help to trigonometry students—but that's not all. *Trig 128* can also be used to find the distance between any two Cartesian coordinates.

Christmas Tunes

Don Radler
Cape Coral, FL

Enjoy these traditional Christmas songs and carols that have been collected by Don Radler. They can be played on the enclosed music program.

Gazette Gallery

Picture of the Month
"Rage"

By Jeff Boyle
Bethlehem, PA

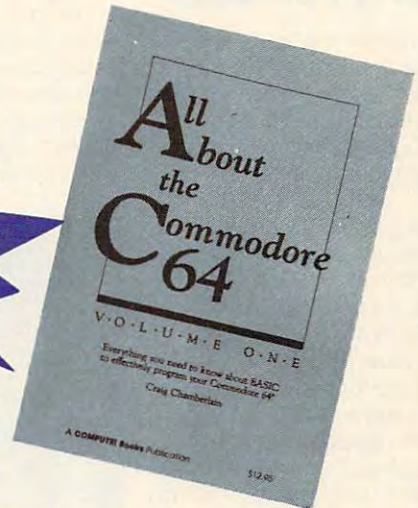
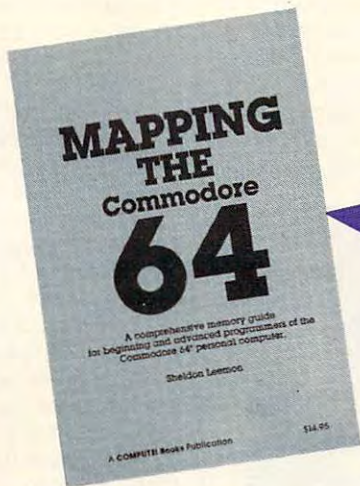
"'Twas the Night"

"Santa's Best"

By Robert Woodall
Rural Hall, NC



COMPUTE BOOKS GIANT WAREHOUSE CLEARANCE SALE



- | | |
|---|--|
| <input type="checkbox"/> First Book of Commodore 64 Games (37X) | <input type="checkbox"/> Mapping the Commodore 64 (0823) |
| <input type="checkbox"/> First Book of Commodore 64 (34X) | <input type="checkbox"/> More Machine Language Games for the Commodore 64 (0947) |
| <input type="checkbox"/> Third Book of Commodore 64 (728) | <input type="checkbox"/> Machine Language for Beginners (116) |
| <input type="checkbox"/> All About the Commodore 64, V. 1 (040X) | <input type="checkbox"/> 40 Great Submarine Simulator Adventures (1722) |
| <input type="checkbox"/> Beginners Guide to Commodore 64 Sound (54X) | <input type="checkbox"/> 40 Great Flight Simulator Adventures (0224) |
| <input type="checkbox"/> Commodore 64/128 Power Basic (0998) | <input type="checkbox"/> 40 More Great Flight Simulator Adventures (0432) |
| <input type="checkbox"/> Commodore Collection (701) | <input type="checkbox"/> Flying on Instruments with Flight Simulator (0912) |
| <input type="checkbox"/> Creating Arcade Games on the Commodore 64 (361) | <input type="checkbox"/> Official Book of King's Quest (1552) |
| <input type="checkbox"/> Machine Language Games for the Commodore 64 (0610) | |

Please place a check next to the books you want. Complete the form below and mail entire coupon to the address below. Be sure to enclose a check or credit card information.

A. _____ Total number of books ordered

B. _____ Total cost of books ordered:
 1 book—\$6 3 books—\$15 5 books—\$22
 2 books—\$11 4 books—\$19 6 books or more—\$4 each

C. _____ Shipping and Handling: Please add \$1 per book US, \$2 per book Canada, or \$6 per book foreign

D. _____ NY, NJ, NC orders please add appropriate sales tax. Canadian orders add 7% Goods and Services Tax

_____ Total Cost (B+C+D)

Enclosed is _____ Check _____ MC# _____ VISA#
 MC or VISA # _____ Expiration date _____
 Signature _____
 Name _____
 Address _____
 City _____ State _____ Code _____

Mail to: COMPUTE Books
 c/o CCC
 2500 McClellan Ave.
 Pennsauken, NJ 08109

Please allow 4 to 6 weeks for delivery.
 Offer expires December 31, 1991 or while supplies last.

CLEAR

DUCKTALES: THE QUEST FOR GOLD

Do you have what it takes to lead a band of explorers around the world searching for treasure? As Scrooge McDuck you have 30 days to earn more money than your old nemesis Flintheart Glomgold. In your search for riches you can explore any combination of caves, jungles, mountains, or forests.

Each area offers a different type of adventure and chance for wealth. You can earn extra money by photographing rare animals or barnstorming in your plane. In all, *DuckTales: The Quest for Gold* offers a wide range of possible strategies, and the game works on many interesting levels. Disney has packed several entertaining games into one story line.

The game opens in Scrooge's office where you choose from three main game activities: diving for rare coins, investing in the stock market, or exploring regions of the globe. You have no cash reserves when the game begins. Diving for coins is the simplest activity, but the one least likely to yield success. You simply enter Scrooge's vault and dive into the pile of coins, hoping to retrieve one worth \$1,000. You'll succeed often enough to make this a good first-day activity, but it's not worth staying more than a day there.

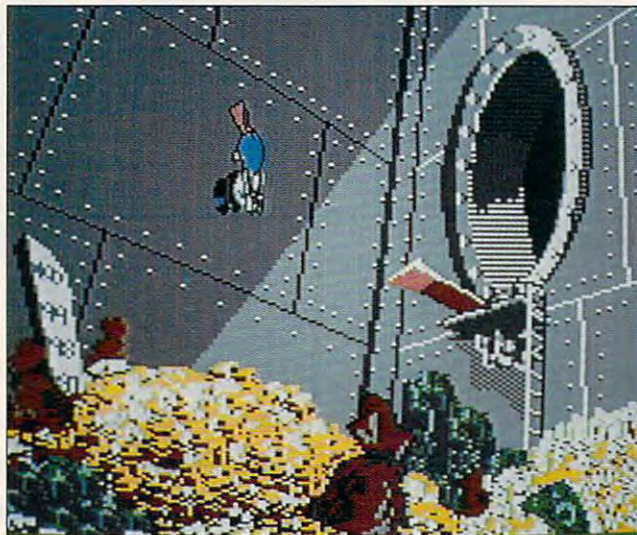
Once you have earned some money, you may choose to make it grow by investing in the stock market. The market consists of approximately 30 stocks, with prices ranging from less than \$10 to well over \$100.

As you scan the list, you'll receive more detailed information about each company and one of five chart letters.

In the documentation are five different charts which can be used to predict changes in the value of each stock. Knowing the chart letter for a stock will help you decide when to buy and sell.

Although the charts are all different, a good general strategy is to buy around the 5th

there, and the number of days required to get there. Most locations take two days of travel time and one day to explore. Once you choose a destination, you must fly your airplane there. Flying is an adventure in itself. The only controls you have are loops up, loops



Dive in Scrooge's vault and you might come up with a coin worth \$1,000, but other activities can earn you more.

or 10th day and sell on the 20th day. You may also try to hold a stock until the 30th day, when all stocks reach their top value, but this can be dangerous. Random events occur almost daily, dramatically affecting the value of individual stocks. So, if you invest, check your stock's progress frequently.

Of course, you cannot invest until you have earned some money. That means you'll have to go exploring. Scrooge's office is equipped with an electronic atlas which you use to plan your trips. The map is accurately drawn and contains approximately 30 places to explore, such as Yellerstone Park and the Whatsamatterhorn.

You can read about each location, the treasure hidden

down, and acceleration. You cannot easily make the plane fly straight.

Balloons above, mountains and power lines below, occasional falling pianos, and even clouds will impede your aerial progress. Your plane, being made of rubber, can bounce, but not often. If you can't make it all the way to the hangar and you crash, you'll still reach your destination, but you'll lose one day and a substantial part of any money you may be carrying. It is wise, therefore, to go regularly to the Scales of Macaroon to deposit your money. If you get really good at flying, you may want to try barnstorming for extra money, but the \$50 bonus it pays hardly makes it worth the effort.

The treasure locations are divided into four types. The easiest is big game hunting—with a camera. You wait at the edge of a forest to take pictures of rare animals as they peek from behind rocks, trees, or bushes. Your only limits are the clock and your roll of 12 pictures.

Each picture of an ordinary animal is worth \$50, and each unique one \$500. My three-year-old son liked this part of the program best. He loved hunting pink elephants and spotted zebras. My favorites were dolly llamas and sausage lynx.

Cave exploring has a much faster pace than photography. You are in a maze of tunnels with each screen representing a crossroad. A map of the cave is provided. The map's completeness depends on the difficulty level you chose at the beginning of the game. It is a good idea to press the P key to pause the program in order to study the map before you begin.

Once you start, avoid the green slime areas, which lead to pits, and move quickly to stay ahead of an Egyptian mummy that is pursuing you. The value of the treasure can be large, and you can pick up extra bags of cash along the way.

The other two adventures are similar to joystick-driven arcade games. In one you make your way across a swamp by climbing trees, riding on hippopotami, and swinging on vines. You must avoid an array of coconut-hurling monkeys, slithering snakes, and sinking turtles.

The other adventure takes place on a mountain where you jump on ledges and duck into caves. You must avoid goats, boulders, and other obstacles.

In each case you are allowed to send your three

PUMP UP

YOUR PRODUCTIVITY!

Harness the potential of your 64 and 128 with these powerful programs.

Get more work out of your 64 and 128 with these two new disk products from COMPUTE's Gazette – the 1992 Best of Gazette Utilities, and the Gazette Graphics Grab Bag!

The 1992 Best of Gazette Utilities

Seize control of your operating system and your world!

Here's what's on it—MetaBASIC 64, MetaBASIC 128, Quick, Sprint II, Ultrafont+, RAMDisk 64, RAMDisk 128, BASSEM, SciCalc 64, List Formatter, MegaSqueeze.

The Gazette Graphics Grab Bag

Do it all with Commodore graphics!

Here's what's on it—Starburst Graphics, Screen Designer 128, 128 Graphics Compactor, 64 Animator, VDC Graphics, Dissolve 128, Super Slideshow, 128 Animator, 1526 PrintScreen, Supratechnic, Medium-Resolution Graphics, Screen Maker, GAS!64—Special Edition, GAS!128—Special Edition.



**ORDER
THEM
TODAY!**

Extend Your Computer Power With This Powerful Software!

YES! I want to pump up my productivity! Please send me the disks checked below at \$11.95 each.

The 1992 Best of Gazette Utilities

The Gazette Graphics Grab Bag

Subtotal

Sales Tax (Residents of NC and NY please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.)

Shipping and Handling (\$2.00 U.S. and Canada, \$3.00 surface mail, \$5.00 airmail per disk.)

Total Enclosed

Check or Money Order MasterCard VISA

Credit Card No. _____ Exp. Date _____

Signature _____
(Required)

Daytime Telephone No. _____

Name _____

Address _____

City _____

State/Province _____ ZIP/Postal Code _____

MasterCard and VISA accepted on orders with subtotal over \$20.

Mail this coupon to COMPUTE's 1991 Utilities, 324 West Wendover Ave., Ste. 200, Greensboro, NC 27408.

nephews on the adventure, and your party fails if all three nephews fall off the mountain. These adventures require thoughtful planning and careful execution, as well as a dexterous touch with a joystick.

DuckTales is a thoroughly enjoyable game with many features to recommend it. The graphics are outstanding, and the sound effects complement the action. The program is best run on a system with a color monitor and a joystick, but neither is required. If the program has a flaw, it is the time required to load each screen, but this is more the fault of the Commodore's limited speed than the program itself.

As an educator I appreci-

ate the way the stock price charts, the electronic atlas, and the mazes make learning and thinking fun. Having the option to choose from a variety of game formats makes the program suitable for a wide range of abilities and interest levels. This game will appeal to kids of all ages. Best of all, the program and excellent documentation are filled with Disney's whimsical sense of humor. *DuckTales* is a treasure.

JIM SMITH

Commodore 64 and 128—\$19.95

WALT DISNEY COMPUTER
SOFTWARE
500 S. Buena Vista St.
Burbank, CA 91521
(818) 567-5360

Circle Reader Service Number 311

TEXT PRINT

If you use *geoWrite*, you know it's an excellent graphic word processor. However, even the best graphic fonts sometimes lack the quality to make them appropriate under all circumstances. Your printer probably has a near letter quality (NLQ) mode, but *geoWrite's* ability to utilize the NLQ features is limited. It allows no pitch, font, or style choices whatsoever. These limitations make it necessary occasionally to use another word processor.

If you love the WYSIWYG environment as much as I do, you probably wish there was a way around these limitations so you could make *geoWrite* your only word proc-

essor. A talented programmer named Terry Van Camp has something called *Text Print* that may do just that.

Text Print V2.5 is a piece of shareware which can be downloaded from Quantum-Link or ordered from the address below. In the *Text Print* package you'll also get additional files: *Custom Print*, *Text Print* documents, Zero Fix, and three fonts to help maintain an accurate screen display.

The excellent documentation explains how to use the *Custom Print* program to create one or more customized versions of *Text Print* for any printer. Note that the *Text Print* file you want to customize must be ahead of all other such files on the desktop.

SAVE TIME AND MONEY

Yes, save time and money! Subscribe to the *Gazette Disk* and get all the exciting, fun-filled *Gazette* programs for your Commodore 64 or 128—already on disk!

Subscribe today, and month after month you'll get all the latest, most challenging, and fascinating programs published in the corresponding issue of *COMPUTE*.

New on the *Gazette Disk*! In addition to the programs that appear in the magazine, you'll also get outstanding bonus programs. These programs, which are often too large to offer as type-ins, are available only on disk—they appear nowhere else.

As another *Gazette Disk* extra, check out

"Gazette Gallery," where each month we present the very best in original 64 and 128 artwork.

So don't waste another moment. Subscribe today to *COMPUTE's Gazette Disk* and get 12 issues for only \$49.95. You save almost 60% off the single-issue price. Clip or photocopy and mail completed coupon today.

Individual issues of the disk are available for \$9.95 (plus \$2.00 shipping and handling) by writing to *COMPUTE*, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

YES! Start my one-year subscription to *COMPUTE's Gazette Disk* right away for only \$49.95.*

Payment enclosed (check or money order)

Charge MasterCard Visa

Acct. No. _____ Exp. Date _____

Signature _____ (Required)

Name _____

Address _____

City _____

State/Province _____ ZIP/Postal Code _____

Mail to *COMPUTE's Gazette Disk*, P.O. Box 3250, Harlan, IA 51593-2430

*Residents of NC and NY, please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.

Can Your
Computer Make
YOU

\$1,000,000?

WITH LOTTERY PC YOUR NEXT TICKET
COULD BE WORTH MILLIONS!

LOTTERY uses the raw power and storage of your computer to determine and refine the number selection methods that will win the various lottery games you play. Don't be limited to the one or two methods that other programs use, they might not work in your state. There is no better system available!

Join the growing list of winners using our system.

SPECIFY:

Lottery 64(C64/128)

Lottery PC

IBM PC/XT/AT and compatibles

Commodore 64/128 & Plus/4 are registered trademarks of Commodore Int.

IBM PC/XT/AT are registered trademarks of International Business Machines Inc.

To order, send \$29.95 for each plus \$3.00 postage & handling per order to:

(Illinois residents add 6% sales tax)
(Orders outside North America add \$3.00)



C.O.D. orders call:
(708) 566-4647



Superior Micro Systems, Inc.

26151 N. Oak Ave.
Mundelein, IL 60060

Circle Reader Service Number 221

Computer Aided Engineering

Now! design custom
electronic circuits and
lay out circuit boards
with our very user
friendly software.

FREE INFORMATION

WeaselGraphics

P.O. Box 647

Sun City, CA 92586-0647

Phone (800) 356-8113

Send Today!

We need you.



American Heart
Association

You will be entering printer commands to be executed when an option is selected from the *geoWrite* Style menu. For average use, it's probably best if you stick to equivalent decimal printer commands, such as italic for italic, bold for bold. Look for these commands in your printer's manual.

Some printers use a 0 as one byte of their decimal command strings. Since *Custom Print* doesn't recognize 0 as a byte, the Zero Fix file may have to be used. However, I have found that substituting the number 128 for the 0 works just fine for me.

This program is easy to use. Just type a *geoWrite* document as you normally would, using any style changes you like. Then follow the manual's print-out instructions. Be sure to update the document just prior to printing. Updating isn't automatic as it is in a regular *geoWrite* printout.

Although the latest version has corrected earlier problems and added many excellent features, *Text Print* still isn't perfect. Here are two quirks.

Never attempt to format a paragraph indentation on the very first line of any page. Press Return to create at least one blank line at the top of a page and then put in the paragraph indentation.

Don't assign a style change to a word that extends to the last column in a line. That is, if the word were one character longer, it would wrap.

These are minor inconveniences that hardly outweigh *Text Print's* many outstanding features. For example, it accesses *geoWrite* documents from up to three drives and permits paging through all documents on each disk. Full justification, tabbing, and multiple document printouts are possible, in addition to supporting all style combinations allowed by your printer.

Since *Text Print* is a Desk Accessory, it isn't necessary to leave *geoWrite* to print a document. You should be impressed with its ease of use and flexibility. I know I am!

ROBERT NELLIST

Commodore 64 and 128—\$10

TERRY VAN CAMP
16604 Cypress
Strongsville, OH 44136
(412) 727-25342

Circle Reader Service Number 312



1991 Gazette Index

Everything's included!

Features, games, reviews, education/home applications, programming, bugswatter, feedback, and columns!

A superb interface includes pull-down menus, help screens, and keyboard, joystick, or mouse control. Features include super-fast searching and sorting capabilities. An options screen allows you to choose text colors, drive number, and input device. And there's **full documentation on disk.**

Choose from three modes of operation—*browse* for quick scanning, *view* for detailed information and descriptions, and *edit* for adding items from upcoming issues—and print to any printer. There's even a turbo-load option for maximum disk-access speed.

ORDER YOUR
1991 GAZETTE
INDEX TODAY!

(MasterCard and Visa accepted on orders with subtotal over \$20.)

To order, send \$7.95 per disk, the quantity of disks ordered, check or money order,* your name and complete street address:

1991 Gazette Index
324 West Wendover Avenue
Suite 200
Greensboro, NC 27408

* Please add \$2 shipping & handling (\$5 foreign) for each disk (residents of NC, NJ, NY please add applicable sales tax; Canadian orders, add 7% goods and services tax).

All payments must be in U.S. funds. Please allow 4 weeks for delivery.

8 BITPO Box 542
Lindenhurst NY 11757-0542**INTRODUCTORY
C-64/128
DISK OFFER!****SPECIAL # 1: 6 DISK SET FOR ONLY \$ 5.00**

- # 1: THE ART GALLERY / Beautiful Hi-Res artwork
- # 2: STAR TREK / Games, Pictures & Music from Star Trek
- # 3: ARCADE CLASSICS / Some old favorites. A+ Quality
- # 4: GEOS CLIP ART / Sample disk *GEOS NEEDED!
- # 5: BEATLES MUSIC / 32 Beatles greatest hits with words.
- # 6: HOME WORKER / Processor, Checkbook, Budget + more

SPECIAL # 2: 6 DISK SET FOR ONLY \$ 10.00

- # 1: ADULT SHOW # 1 / Contains Hi-Res Adult pictures
- # 2: ADULT SHOW # 2 / Contains Hi-Res Adult pictures
- # 3: ADULT SHOW # 3 / Contains Hi-Res Adult pictures
- # 4: ADULT SHOW # 4 / Contains Hi-Res Adult pictures
- # 5: ADULT SHOW # 5 / Contains Sexy-Hexy pictures
- # 6: GAMES & PICTURES DISK / Demos, Sex Games + more

YOU MUST STATE THAT YOU ARE 18 FOR ADULT DISK SET!
ADD \$ 2.00 SHIPPING! U.S. FUNDS ONLY! SORRY NO COD'S
A COPY OF OUR 1200+ DISK CATALOG WILL BE SENT!
OR CALL (516) 957-7893 MON-FRI 10 TO 5 FOR A FREE COPY

Circle Reader Service Number 162

2

FUNCTIONal Weekend Projects for C-64 Ultra-Users!

• **Automotive Dwell/Tach Diagnostics**
Program with Interface Schematics \$5.00

• **Home Sentry - Residential Security**
On Disk with Interface Schematics \$20.00

Send Check or Money Order to:

CREATIVE SPECIALTIES
P. O. Box 7361
Richmond, VA 23221

• Allow 3-4 Weeks for Delivery •

Circle Reader Service Number 125

Standing Together



Sharing Is Caring.

REVIEWS

DREAM TEAM: 3 ON 3 CHALLENGE

If it's too cold to go outside and shoot a few hoops with your buddies and there are no basketball games on television at the moment, then pump up your Nikes and head for your trusty 64. Players who want an exciting and quick basketball game have had their prayers answered with Data East's latest addition to its MVP Sports line, *Dream Team: 3 On 3 Challenge*.

Dream Team, a pure arcade game, offers one-on-one and two-on-two games in addition to the three-on-three mode in the title, practice modes, and demo games. There are 26 players in the game's roster, but only 3 of them are NBA players: Patrick Ewing, Dominique Wilkins, and Joe Dumars. The rest of the players on the roster possess the names of the designers and producers of *Dream Team*. The challenge of *Dream Team* is to take on these 3 stars with a team of your own.

Player selection is very liberal in *Dream Team*. You could put together two teams with the same players for an even match up. If you want to go even further than this, you can have one team with all three players the same. This flexibility allows physically impossible fantasy games as well as games of varying difficulty.

The game selection menu offers one-on-one, two-on-two, three-on-three, practice games for one or two players, and a demo game. After game selection, scroll through the players you want for the teams, select one of three courts, choose three-on-three or standard rules, pick winners or losers outs, and the game begins. You can return to the main menu at any time by pressing the Run/Stop key and responding at the prompt with Y to confirm.

Gameplay is very quick in *Dream Team: 3 On 3 Challenge*. Player control is easy to pick up, so you can keep up with the opposition after a game or two. Move the joystick to direct the currently selected player. Hold down the button to shoot the ball. Quickly press the button to pass the ball to another team member or switch players. Press the button under the basket to try to grab a rebound. In no time at all you'll be able

to take on the "dream team" of Dumars, Ewing, and Wilkins!

Dream Team games follow the rules of basketball, with violations resulting in change of possession except in the case of personal fouls. Three-on-three game rules result in quicker games than those played with a full team of five players, and it is often more difficult to win games under these conditions. There's just no breathing room. Three-on-three games differ from the standard game in a variety of interesting ways. There are no free throws, the clock doesn't stop, games are played to 25 points or 20 minutes, the shot clock and 3-seconds-in-the-key violations aren't in effect, and players abide by losers outs.

To make the game more interesting, the designers have included four rotation plays. You select a play before you pass the ball inbounds. Unfortunately, the manual doesn't describe or provide information about the plays. You have to figure them out on your own.

The players on the roster in *Dream Team* each have their own statistics. Rebounds and shot percentages really make a difference in a game. You'll notice this particularly when you shoot the ball. A lot of times, you may have let the ball go at the top of the player's jump, but the ball misses the basket. That's a result of the player's statistics. You'll learn very quickly that three guards might make an interesting team, but it's not a practical team if you want to score big. This touch of realism makes the game more difficult and frustrating. It is even more difficult to control the ball or steal it when the teams are under the basket in three-on-three games. You just can't see the ball because of the crowd of players. The designers should have remedied this situation. Other than these problems, you'll find that *Dream Team* is a capable game, full of challenge and basketball action.

Dream Team graphics are not the best. Although the animation of the characters is nice, colors for the players and the backgrounds are not very good. This leads to a problem with player identification under the basket in three-on-three games.

Although *Dream Team* looks somewhat drab, other features aid in game-

play. Messages pop up occasionally at the bottom of the screen to update the players, such as STEAL, CHARGING, and TAKE BALL OUT. Also, the shot clock and game clock are right in your face on the sides of the screen. Sound effects and music are nothing special.

Without bells and whistles, *Dream Team* manages to pull through with the gameplay and novel idea of the "dream team" of Dumars, Ewing, and Wilkins. The game is a lot of fun, and it's even better with two players because the computer sometimes runs right over you in one-player games.

Watch the computer demo first to get an idea of how to approach the game and

to learn the rotation plays for a further advantage. As one of the few software companies still supporting the 64, Data East occasionally manages to bring down a game from the high-end computers. Although other conversions have been cleaner, *Dream Team* is still worth the money. Despite the lack of pretty graphics and impressive sounds and music, *Dream Team: 3 On 3 Challenge* should keep basketball fans happy for hours.

RUSS CECCOLA

Commodore 64 or 128—\$29.95
DATA EAST
1850 Little Orchard St.
San Jose, CA 95125
(408) 286-7074

Circle Reader Service Number 313

Big Blue Reader 128/64 Read & Write IBM PC Disks!

Big Blue Reader 128/64 is a fast, easy-to-use, menu driven program for novice and expert alike. Transfers word processing, text, ASCII, and binary files between Commodore 64/128 and IBM PC compatible 360K 5.25" and 720K 3.5" disks. Includes both C64 & C128 programs. Requires 1571 or 1581 Disk Drive. Does not work using 1541. BBR 128 Version 3.1 upgrade, \$18+ original BBR disk.

Big Blue Reader 128/64 only \$44.95

Bible Search 3.1

The only Bible Study Program with:

1. The Entire Old and New Testament on (4) 1541/71 or (2) 1581 disks.
2. An Exhaustive English Concordance on (2) 1541/71 or (1) 1581 disks; includes more than 700,000+ references.
3. Incredible five (5) second look-up time, per/word, per/disk.
4. Instant, automatic spell checking of more than 12,800 words.
5. Boolean search options, including AND, OR & NOT logic.
6. Search entire Bible in 5 seconds with 1581 or Hard Drive (v3.5).
7. A Money Back Guarantee!

Includes: Easy-to-use, C64 and C128 (40/80 column) programs; printer and disk output; users guide, disk case, and more.

Available on (7) 1541/71, or (4) 1581 disks. (Demo disk \$5)

KJV \$49.95 ☆☆☆☆☆ NIV \$59.95

☛ Any questions? Call or write for more information.

Now Available! AMIGA, Bible Search

Order by check, money order, or COD. US Funds only.

☛ **FREE shipping** in North America. No Credit Card orders.

Foreign orders add \$5 S/H (\$12 whole Bible)

SOGWAP Software ☎ (219)724-3900

115 Belmont Road; Decatur, Indiana 46733

COMPUTE's SpeedScript Disk

**ONLY
\$11.95**

A powerful word processing package for Commodore 64 and 128 owners

A Great Deal for Commodore Users!

- *SpeedScript* for the 64
- *SpeedScript 128*—80-column version
- Spelling checkers
- Mail merge
- Date-and-time stamp
- 80-column preview for the 64
- Turbo save and load
- Plus more than a dozen other *SpeedScript* support utilities all on one disk (including full documentation)

YES! Send me _____ copies of COMPUTE's *SpeedScript* Disk.

I've enclosed \$11.95 plus \$2.00 postage and handling. (Outside U.S. and Canada add \$1.00 for surface mail or \$3.00 for airmail.)

ORDER NOW!

_____ Amount
_____ Sales Tax*
_____ Total

Name _____

Address _____

City _____ State _____ ZIP _____

Mail personal check or money order to

Commodore *SpeedScript* Disk
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408

Residents of North Carolina and New York, add appropriate tax for your area. Canadian orders, add 7% good and services tax.

Please allow 4-6 weeks for delivery. Program available only on 5¼-inch disks.

WORLD VIEW

Steve Jarratt

VIEW FROM THE U.K.

Believe it or not, the 64 is still one of the best-selling computers in Europe. Tumbling prices, plus the fact that competing 8-bit machines—Sinclair Spectrum and Amstrad CPC—are pretty much on their last legs, mean that the 64 is the only really viable computer in the sub-100-pound (\$170) range. The next step is to an Amiga, which, at 400 pounds (\$680), is a hell of a jump. So, against all the odds, Commodore's ten-year-old machine refuses to breathe its last.

After four or five years of leaving the machine to wander in the 8-bit wilderness, Commodore finally recognized the possibilities of the beast and decided to do something with it. Great, we thought. Enter the 64 Games System (GS). Ah, not so great. Basically, they took the 64 circuit board minus its keyboard, twisted the cartridge port so that it sat on top, shoved it all into a gruesome beige case resembling a twenty-first century coffin, and—bingo—a game console!

The UK is, at the moment, in the grip of console mania. The Sega Master System and Mega Drive have taken off in a big way, while Nintendo's Entertainment System and Game Boy are starting to make waves (at last). Sega's Game Gear is now available, and people like me spend huge amounts of money on Super Famicoms (Super NES) imported directly from Japan. So, in a bid to take a share of this burgeoning market, Commodore unleashed its GS on the game world. Publishing houses across Britain started producing cartridges for the machine, and the 64 magazines all tried to make it sound

like a good really thing.

It bombed—horribly. Practically no one bought it, and within six months of its release last year, it could be found in high street retail stores slashed to around 20 quid (\$34). However, all was not lost.

As everyone knows, the majestic isle known as Britain resides on a small planet orbiting the Earth. That's why we get movies a year after you guys in the States and game machines ten years after the Japanese. It's also the reason why the majority of 64 owners load in games from tape. Yep, you heard me right: audio tape—on cassette. (You may laugh, but some tape-based fast load systems can actually get games into memory faster than Commodore's old 1541 disk drive.) As you can imagine, tapes are starting to look a little dated; they're wonderful for budget games (titles produced cheaply and quickly for sale around the 3-pound [\$5] mark), but pretty awful for big, multiload titles.

The legacy of the 64GS is that occasionally we get games for it on cartridge. This means instant loading, loads of memory, and wonderful reliability. The best of the bunch so far have been *Robocop 2*, *Pang*, *Plotting*, and *Navy Seals* from Ocean, plus *Myth* and *The Last Ninja 3* from System 3. These cartridges (at around 20 pounds or \$34) are more expensive than normal 64 games on tape or disk, but if you're after some decent titles, you could do worse than plugging these into your machine. They may or may not find their way into the U.S.

I hear that game cheats in the U.S. are almost unheard of, which really surprises me. A major part of our 64 mags are given over to POKES which enable players to alter the game code itself, providing infinite lives, infinite time,

no collision detection, or whatever's needed to make the game completable (or in some cases, playable). You simply poke a number into a specific memory location, replacing the original variable with one of your own. In most cases it gets rid of a paltry three lives in favor of, well, lots and lots.

You can either install the new variable before the game loads or break into the game while it's running. The former involves a listing which is typed in and loaded beforehand that interferes with the game loader. The latter resorts to cold starting the 64. The simplest way to do this involves the employment of a special tool called a metallic stationery binding system—or paper clip, as it's known over here.

To hot wire a 64 you have to contact the two pins labeled A and C on the cartridge expansion slot (as you look at it, they're on the bottom row, first on the right and the next but one along). The 64 will reset to the blue boot-up screen. If you have a 128, hold the Commodore key down so you can enter said POKE.

For instance, if you have that old Brøderbund title, *Stealth*, reset the machine, type POKE 30590,173, press Return, then type SYS 53055. You'll now have an infinite supply of Stealth craft at your disposal. (NOTE: Brave 64 owners who dare to try this at home do so at their own risk. Don't blame us if you hit the wrong pin and blow a fuse!)

Steve Jarratt is the editor of Commodore Format, the best-selling 64-specific magazine in the U.K. (and probably all of Europe). He can be reached in care of his magazine at Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW, England. □

**After ten years,
the 64 is
still one of the
best-selling
8-bit computers in
Europe**

MACHINE LANGUAGE

Jim Butterfield

PROGRAMS, CONSTANTS, VARIABLES

Programs consist of code; constant values or strings; and the variables that count, add, subtract, buffer, or whatever. The first two parts rarely change.

Generally, you'll find that program code comes first, then constants, and finally variables. Programs and constants are usually close to each other. If they are widely separated, you would need either two separate loads or a lot of "dead bytes" between the two. Some programmers leave a small amount of space between the program code and the area set aside for constants to fit in late program changes (or patches).

Variables can sit anywhere in memory. There's no reason to put them in any particular place, as long as variables are kept far from code and constants. The contents of this area are not loaded from disk. Since you won't know what's in the variable space when the program starts, it's important to initialize such variables by putting data in before you take data out.

Most programmers try not to mix constant values and program code. Keeping them separate makes it easier to disassemble code. When constants are mixed in with code, the disassembler tries to read the constants as if they were instructions. Also, since program branches can reach only a limited distance, keeping all your code together can make your program more efficient.

Though these are not fixed and unbreakable rules, organizing your program is in your best interest. Like all generalities, there are exceptions, but it's usually the case that neat

programmers are troubled by fewer bugs than their spaghetti-code cousins.

We'll write a simple program here to illustrate this kind of organization. Program ECHO will print a title, accept a line of input, and then print the line back three times.

A quick first run indicates that the code will stretch from about \$2000 to \$2045. Let's leave a little space and put our constant values starting at address hex 2050. In this case, we have only the title, *ECHO!*, and the repeat signal ("ECHO:"). Including the following Return characters, that's only a dozen bytes.

As I mentioned, finding a location for the variables is much less critical. Although you have the whole of memory to choose from, it's common to pick a nearby location for variables. Perhaps your program or subroutine will share the computer with other code, in which case it's a good idea to keep the whole action (code, constants, and variables) within a bounded area.

In this case, we have a Y-Save variable—one byte—and the input buffer which will hold the message to be echoed. I've picked nearby locations \$2060 and \$2068 to hold these. We might make a mental note that the input buffer area is, say, 80 characters long. That would make it reach from \$2068 to \$20B7. But since we have no other variables, we won't need to count too carefully.

Here's the code:

```
2000 A2 00 LDX #$00
2002 BD 50 20 LDA $2050,X
2005 20 D2 FF JSR $FFD2
2008 E8 INX
2009 E0 06 CPX #$06
200B D0 F5 BNE $2002
200D A0 00 LDY #$00
200F 8C 60 20 STY $2060
2012 20 CF FF JSR $FFCF
2015 AC 60 20 LDY $2060
```

```
2018 99 68 20 STA $2068,Y
201B C8 INY
201C C9 0D CMP #$0D
201E D0 EF BNE $200F
2020 20 D2 FF JSR $FFD2
2023 A2 00 LDX #$00
2025 BD 56 20 LDA $2056,X
2028 20 D2 FF JSR $FFD2
202B E8 INX
202C E0 06 CPX #$06
202E D0 F5 BNE $2025
2030 A2 00 LDX #$00
2032 A0 00 LDY #$00
2034 B9 68 20 LDA $2068,Y
2037 20 D2 FF JSR $FFD2
203A C8 INY
203B C9 0D CMP #$0D
203D D0 F5 BNE $2034
203F E8 INX
2040 E0 03 CPX #$03
2042 D0 EE BNE $2032
2044 60 RTS
```

The program needs to be followed by the constants. In this case, the two strings used by the program. There's a little empty space before our constants appear. Remember that these are DATA values: don't try to assemble them!

```
2050 45 43 48 4F 21 0D 45 43
2058 48 4F 3A 0D
```

Here's the BASIC version:

```
100 DATA 162,0,189,80,32,32,
210,255,232,224,6,208,245
110 DATA 160,0,140,96,32,32,
207,255,172,96,32
120 DATA 153,104,32,200,201,13,
208,239,32,210,255,162,0
130 DATA 189,86,32,32,210,
255,232,224,6,208,245
140 DATA 162,0,160,0,185,
104,32,32,210,255,200
150 DATA 201,13,208,245,232,
224,3,208,238,96
160 DATA 0,0,0,0,0,0,0,0,0,0
170 DATA 69,67,72,79,33,13,
69,67,72,79,58,13
200 FOR J=8192 TO 8283
210 READ X:T=T+X
220 POKE J,X
230 NEXT J
240 IF T<>10324 THEN STOP
300 SYS 8192
```

**Neat
programmers
usually put
program code
first in
memory, followed
by constants,
then variables.**

ATTENTION, GEOS SHOPPERS

All right, let's talk seriously. When it comes to Christmas, we don't put things like dictionaries or underwear on our lists, right? What we really want is computer stuff—*GEOS* stuff, if possible.

But that's not always easy. You can't send people out to the mall to the *GEOS* store to fill your stocking with *geoGoodies*. Most really good software coming out for *GEOS* is from independent programmers who sell their work themselves or upload it as shareware to places like QuantumLink. Unless your family is unusually computer-literate, they won't have the foggiest idea how to find *GEOS* items. It's easier for them to buy you violet socks or musical reindeer ties.

Don't despair. There actually is such a thing as a *geoStore*, and while it's not at the mall, it's about as user friendly as you could want. It's a mail-order outfit run by a talented artist named Susan Lamb.

She realized that many *GEOS* users don't have access to the new and exciting software that independent programmers are producing, so she decided to bridge that gap. At the same time, she offered her own clip art. If you haven't seen Lamb Art & Design clip art before, you owe yourself a look; the quality will blow you away.

Lamb got into *GEOS* early, beta testing for Berkeley and demonstrating what *geoPaint* could do. She spent some time as the editor of *geoWorld* magazine, editing and writing many how-to articles. She's now among the more knowledgeable users of the system's graphics programs.

To share some of this expertise, she's working on a book that deals with *geoPaint* and

geoPublish. When she was asked to produce some artwork for the new *GeoWorks Ensemble*, she acquired an IBM computer; now she's rapidly becoming addicted to *geoDraw*, which is included in *Ensemble*. More than a drawing program, its text-handling capabilities place it in the category of *geoPublish* but take advantage of the added speed and memory capabilities of the IBM machines.

So, has Susan Lamb abandoned Commodore *GEOS* for Big Bluer pastures? Not at all. If anything, her IBM gives her a new resource for Commodore *GEOS* graphics. The wide variety of scanners and digitizers available at a reasonable cost for the IBM help her to create graphics which she ports to Commodore *GEOS*. Using all of these tools, the *geoStore* offers not only clip art and page templates but also personal clip art—artwork created to order, including original art, photos, hand lettering, logos, and so on.

Besides Lamb's excellent graphics, *geoStore*'s catalog includes some of the best products and services from elsewhere in the *GEOS* community. RAM expansion upgrades are advertised at good prices from Melvin Montgomery, (CMDR FIXER on Q-Link). Other *GEOS* art is featured in the *geoStore* catalog, including cartoons by Dale Beach and *GeoWorks Ensemble* clip art by Jay Degn. Some of the more exciting *GEOS* software coming out from the independent programmers is also available, including *geoPrint*, a *Print Shop*-style application, and scads of user disks filled with public domain's best.

The *geoStore* catalog is the perfect thing to leave lying around under the noses of those who will be buying you Christmas presents. To get a copy, write to *geoStore*, 3575

East County 18th Street, Yuma, AZ 85365.

All the great Christmas presents aren't public domain or shareware, of course. There are a number of commercial products which no *GEOS* aficionado should be without. All of these are available through mail-order firms that advertise in this and other magazines; many might still be stocked at places like Electronics Boutique as well. (We'll get your family into the mall yet!) Here's a list of some of my favorites *GEOS* goodies.

Maverick is a must for any *GEOS* user. The *GEOS* bootmaker routine allows you to make your own boot disks for any kind of drive. And if you've ever fallen victim to Berkeley's copy protection trap with a wrong answer during installation thereby losing the use of an application forever, *Maverick*'s ability to strip the protection from files will be an answer to your prayer. Added bonuses are a fast file copier and a sector editor designed to read *GEOS* disks as well as Commodore-formatted disks.

Graphics Bundle is a collection of programs from Free Spirit now available for one amazingly low price through Solutions Unlimited. Commodore graphics come in a wide variety of formats, of course, and it takes a little manipulation to get them into the *GEOS* environment. The software in this package gives you the tools to do the necessary conversions and a program called *Graphix Link* to port them into *GEOS*. The programs run in native 64 mode, not *GEOS*, so larger projects could require excessive mode-switching unless you plan ahead a little bit.

Send your *GEOS* questions to Steve Vander Ark, in care of this magazine. He can also be reached on QuantumLink. His handle is SteveV14. □

Tell your
friends and relatives
to skip ties
and socks this year.
Ask for what
you really want.

The Gazette Productivity Manager

(Formerly PowerPak)

Harness the productivity power of your 64 or 128!

Turn your Commodore into a powerful workhorse, keep track of finances, generate reports in a snap, manage your money in minutes—all with the new 1991 *Gazette Productivity Manager!* Look at all your 64/128 *Productivity Manager* disk contains.

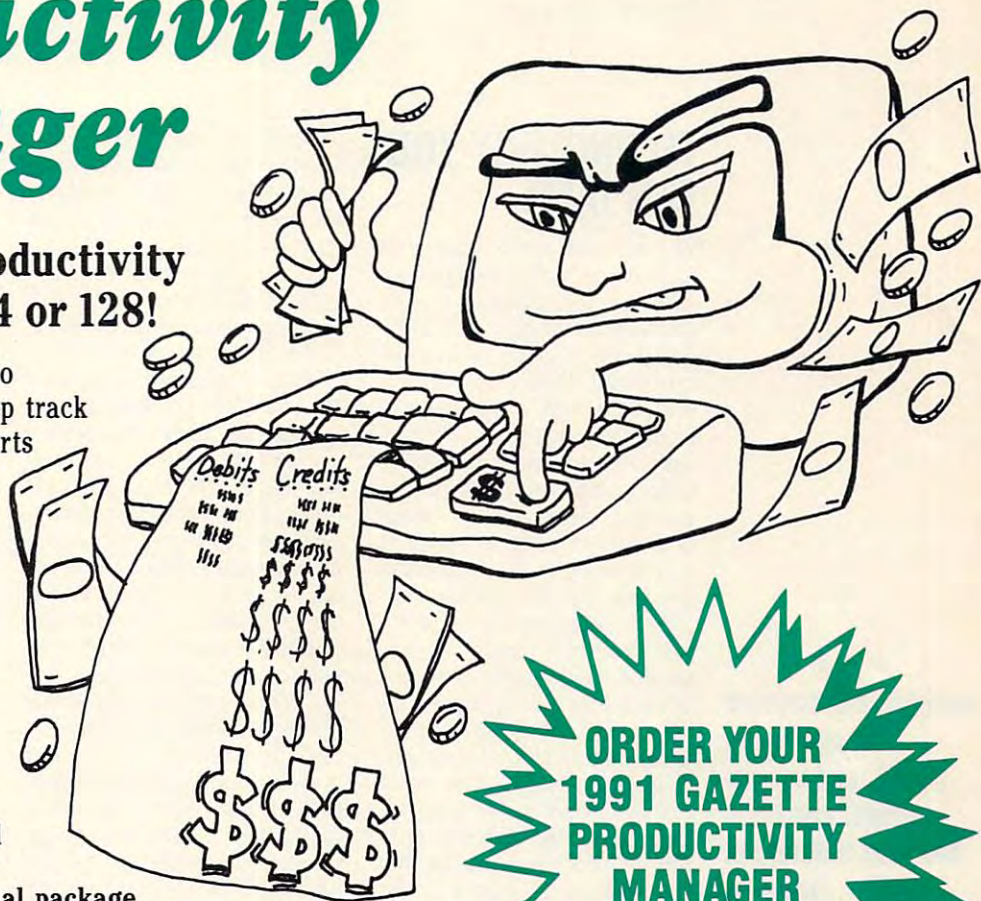
GemCalc 64 & 128—

A complete, powerful, user-friendly spreadsheet with all the features you'd expect in an expensive commercial package (separate 64 and 128 versions are included). Most commands can be performed with a *single* keypress!

Memo Card—Unleashes the power of a full-blown database without the fuss! **Nothing's easier**—it's a truly simple computerized address file. Just type in your data on any one of the index cards. Need to edit? Just use the standard Commodore editing keys. Finished? Just save the data to floppy. What could be easier?

Financial Planner—Answers all of those questions concerning interest, investments, and money management that financial analysts charge big bucks for! You can plan for your children's education and know exactly how much it will cost and how much you need to save every month to reach your goal. Or, decide whether to buy or lease a new car. Use the compound interest and savings function to arrive at accurate estimates of how your money will work for you. **Compute the answer at the click of a key!**

DON'T MISS OUT ON THIS POWERFUL WORKHORSE!



**ORDER YOUR
1991 GAZETTE
PRODUCTIVITY
MANAGER
TODAY!**

(MasterCard and Visa accepted on orders with subtotal over \$20).

YES! Please send me ___ *Productivity Manager* disk(s)
(\$14.95 each).

___ Subtotal

___ Sales Tax (Residents of NC and NY please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.)

___ Shipping and Handling (\$2.00 U.S. and Canada, \$3.00 surface mail, \$5.00 airmail per disk.)

___ Total Enclosed

___ Check or Money Order ___ MasterCard ___ VISA

Credit Card No. _____

Signature _____ (Required)

Daytime Telephone No. _____

Name _____

Address _____

City _____

State/Province _____ ZIP/Postal Code _____

Send your order to Gazette 1991 Productivity Manager,
324 W. Wendover Ave., Ste. 200, Greensboro, NC 27408.

D'IVERSIONS

Fred D'Ignazio

TECHNOLOGY YOU CAN TASTE

When I was a kid, I used to work at my dad's Italian restaurant near Philadelphia. I was a dishwasher, short-order chef, salad boy, busboy, prep chef, bartender, bread boy, and finally cashier. My favorite place to work was the kitchen, with its baskets of hot garlic bread, steaming cups of minestrone, pasta fagioli, plates of manicotti, lasagna, spaghetti, and wooden bowls of salad swimming in Italian dressing.

Food delights my senses. I can touch it, taste it, and smell it. I'm happiest when preparing and eating meals. My unhappiest times are when my face is stuck in a menu, trying to decide what food to order. For me, menus are abstract places full of words without pictures. And the pictures that the words conjure up are often confusing, fuzzy, and wrong.

What I'd like to see is a new kind of menu—a multimedia menu with digital sounds, pictures, and movies. The menu would be a computer touchscreen, with tiny meal icons and their accompanying names. You could place your finger over an icon, and the meal window would expand to fill the screen.

You could see animations that would rotate in three-dimensional space, photographs and drawings, and full-motion videos of your meal's being created. There would even be stereo sound of its being prepared and cooked.

What I'm talking about is a full-blown WYSIWYG menu: What You See on the menu Is What You Gobble when your meal arrives. A meal with no unpleasant surprises.

This would be a boon for us lowbrows who find ourselves in Chinese, Italian, Greek, or French restaurants unable to

decipher the menu. With a multimedia menu, we wouldn't have to speak the language; we could see images of the meal before we ordered.

In the 1950s kids were entranced with a new technological innovation called Smell-O-Vision. You hooked the Smell-O-Vision transformer to your TV, and when you saw a movie about the ocean, the device would waft smells of salt water, fish, clams, seagulls, and drying driftwood across your living room. Or if you watched a documentary about a chocolate factory, your room would become saturated with the heavenly aromas of chocolate, cocoa, and fudge.

I think we should add Smell-O-Vision to the menus of the future. In addition to offering images, they could provide aromas as well. When you ask to look at a meal—let's say eggplant parmigiana—a little fan on the Smell-O-Vision device would blow the scent of the meal your way. As you see colorful animated images of your meal, you could sample its delightful aromas as well.

After multimedia menus and Smell-O-Vision menus became old hat, it would be time to introduce yet another innovation, virtual reality menus. When customers sit down in a restaurant, they could open a drawer in their table and take out a pair of menu "reading glasses," which would be tiny stereoscopic computer monitors, and a "Touch-N-Feel" power glove. They could slip on the glove and the glasses and immediately see a door with the word *kitchen* above it. Customers would be in a virtual reality restaurant!

They could point at the door and feel themselves floating into the kitchen. They could fly up and down aisles in the virtual kitchen and point at the meals being prepared. If they point at a meal, it

zooms to life-size. Customers could pick up the plate, rotate it, smell it, and even touch it for freshness and texture.

For the ultimately picky customer, even the glove and the glasses may not be enough. For these people restaurants would offer a third sensor—a small wad of plastic that has the consistency of chewing gum. Actually the "gum" would be a cleverly disguised disposable composite of timed-release particles. Controlled by the computer, it would release a taste that matched the food item that the customer was previewing.

The gum would also conceal an ingeniously sensitive strain gauge, a device used to measure the pressure of the customer's teeth as he or she chewed on the plastic sensor. If the customer chewed a virtual slab of steak, the gum would become rigid and take on the consistency of steak; if the customer ate tender flakes of broiled flounder, the gum would simulate the softness of fresh fish.

After customers sampled several items by previewing their virtual counterparts, they could place an order by signaling the virtual cashier in the virtual kitchen. Voilà! Within minutes a real meal would be on its way to the customer's real table and real tummy.

The whole system could become so advanced that virtual meals might replace real meals. Dining out could become so virtually realistic that preparing real food would become unnecessary.

People who have tight budgets would appreciate this innovation. Virtual meals would be cheap! Also, a virtual meal that featured 12 courses of the most sinful yet scrumptious delights would be calorie free. Dieters and weight-loss maniacs would flock to restaurants that feature "lite" virtual cuisine. □

Imagine a restaurant whose menu would let you see, smell, and taste the food before you ordered.

BEGINNER BASIC

Larry Cotton

TRIM A TREE WITH RND

Happy holidays! We'll continue our investigation of random numbers and RND this month by writing a short program that keeps the seasonal spirit.

The 64's screen (or the 128's in the 64 mode) consists of 40 vertical columns by 25 horizontal rows. Each column or row is one character wide and one character tall. Therefore, there are 1000 (40 × 25) locations for characters on the screen. Carefully enter the following in immediate mode and then press Return:

```
POKE1024,42:POKE1024+54272,1
```

You should now see a white asterisk pop into the upper left corner of your television or monitor screen. Now try this:

```
POKE2023,42:POKE2023+54272,1
```

This should light up an asterisk in the lower right corner of the screen. Memory registers 1024 and 2023 correspond to the first and last locations on the screen.

The second POKE ensures that the character gets a color—in this case white. For each screen memory register from 1024 to 2023, there is a corresponding color memory register (from 55296 to 56295) which controls the color of the character at that particular location. Both the memory register and its corresponding color memory register are offset by 54272.

The characters that can be poked to the screen have the same appearance as the ones which can be printed but may use different codes. For instance, to print a white asterisk on the screen requires PRINT CHR\$(5) CHR\$(42) or POKE1024,42: POKE1024+54272,1.

To get a green inverted T symbol to appear in the same spot, however, one would have to use either PRINT CHR\$(30) CHR\$(177) or POKE 1024,113: POKE 1024+54272,5. (Note that when printing characters on a screen, the color must come first; the order doesn't matter when poking characters.)

Screen Display Codes and CHR\$(ASCII) codes for the 64 and 128 are published in separate appendices in the appropriate *User's Guide* or *Programmer's Reference Guide*. Another appendix contains screen and color memory register charts.

Now, let's begin the program. We'll illustrate how RND is useful in creating a graphic display—a twinkling Christmas tree. I will concentrate my explanations in this lesson on lines that pertain to the RND statement or to screen codes.

```
10 DIML(121)
20 PRINTCHR$(147)
30 POKE53280,0:POKE53281,0
40 C=54272:CH=42:Y=1
50 FORT=0T014:READL
60 FORJ=0T0T:L=L+1:GOSUB150
70 NEXT:NEXT
```

Notice the 42 in line 40; that's our screen code for the asterisk. The color is the variable Y. We've set up two nested FOR-NEXT loops to read in the screen memory registers. Let's skip ahead to the data lines and the subroutine:

```
130 DATA 1203,1242,1282,1321,
1361,1400,1440,1479,1519,1558,
1598,1637,1677,1716
140 DATA 1756,1804
```

The above memory registers correspond to the screen locations of the Christmas tree's left edge. The rest of the tree is drawn by poking locations offset from these.

If you want to poke some

other picture to the screen, you can plot screen positions on a chart like the ones shown in the *Guide's* Screen and Color Memory Map Appendices. Trial and error often serve as well.

```
150 POKEL,CH:POKEL+C,Y
160 K=K+1:L(K)=L
170 RETURN
```

Line 150 pokes an asterisk CH to screen location L and color memory register L + C (C is the color offset 54272) in color Y. At the same time, we fill a one-dimensional array L(1) to L(120) with all the memory registers which are used to draw the tree. You'll see why in a minute. Now, let's go back to the program.

One more character, a green inverted T symbol (the Christmas tree stand), needs to be poked to the screen.

```
80 READL:CH=113:Y=5:GOSUB150
```

Run the program at this point. You should see a white asterisk-studded Christmas tree perched on a rather small stand. Now, let's make the lights twinkle. Here's where RND comes in.

```
90 K=INT(120*RND(1))+1
100 CO=INT(14*RND(1))+1
110 POKEL(K)+C,CO
120 GOTO90
```

We want to paint the asterisks with randomly chosen colors. Lines 90 and 100 pick random numbers from 1 to 120 and from 1 to 14 respectively. The first is the index to the array we loaded in line 160; the second is the color itself. Line 110 pokes the random screen location with random color. Line 120 causes the program to loop indefinitely, giving the tree the appearance of being filled with dozens of colored twinkling lights.

Merry Christmas! ☐

Poke random numbers to your TV or monitor screen to create a colorful holiday decoration.

PROGRAMMER'S PAGE

Randy Thompson

MULTILINGUAL COMPUTERS

Ask several Commodore 64 and 128 programmers what computer language they use the most, and you're likely to get only two distinct answers: BASIC and machine language. Broaden your poll to include Amiga, Macintosh, and MS-DOS programmers, and suddenly the range of answers fills a page.

Much of the Amiga's operating system was written in C. Combine this with the fact that there are two excellent C compilers available for that computer, and it's not too surprising to discover that most Amiga hackers prefer to work in C.

While the Amiga favors C, the Macintosh prefers Pascal. The Macintosh's Toolbox (a set of routines similar to the 64's ROM Kernal) was originally written in Pascal. As a result, Pascal would probably lead your Macintosh poll, with C and then assembly language following closely behind.

BASIC still has a strong grip on MS-DOS machines. It would undoubtedly top the IBM PC programming poll. And even though the number of available languages is quite large on MS-DOS computers, C would place a strong second. Pascal and machine language would come in third, with FORTRAN, COBOL, and a slew of other ancient dialects filling the list.

If you don't mind adding another page to your poll, you might take authoring languages as an acceptable answer. Authoring languages differ from traditional programming languages (you get more done through mouse clicks than you do with keystrokes), but the results can be quite similar. And it's authoring programs like *HyperCard* and *AmigaVision* that are to blame for

BASIC's decline in popularity on the Macintosh and Amiga, especially now that Amiga Basic won't run on newer Amigas and *AmigaVision* ships free with each Amiga sold.

Learning a new computer language can be fun and exciting—and you don't need to buy a new computer to do it. Abacus sells 64 and 128 versions of COBOL and C, a 64-only version of FORTRAN, and a 128-only version of Pascal. (All of these can be ordered from the mail-order company Software Support International.) While somewhat limited, these versions are a way to experiment with some of the languages that dominate much of the computing world.

C is the hottest computer language right now, and it's one of my personal favorites. It has several BASIC-like commands, but its structure is different. For example, take a simple FOR loop that prints the numbers from 1 to 10:

```
for ( i=1; i<11; i++ )
  {printf( "The number is %d\n",
    i );}
```

All arguments in a FOR command must be enclosed in parentheses. You may also note the lack of a NEXT instruction. The end of the FOR loop is denoted by the final curly brace. The first curly brace defines the start of the loop.

Within the parentheses you'll find three items, each separated by a semicolon. The first is an instruction that you want the computer to execute before it enters the loop for the first time. In this case, we assign the value 1 to the variable *i*. The second item specifies a condition that must remain true in order for the loop to repeat (*i* must be less than 11). The loop ends when this test condition proves false. The third item in parentheses is an instruction

that the computer executes after every pass through the loop. While we could have used a more familiar looking *i=i+1* instruction, the command *i++* is shorter and does the same thing. Of course, *i+=1* would also work.

The print command for C is `printf`. It looks strange but it's flexible. It's a supercharged PRINT USING command. In our FOR loop, the `%d` specifies that we want to print a decimal number at that location in the print string. The value we want to print follows the print string. The `\n` is `printf`'s code for a carriage return. To leave it out would be like adding a semicolon to the end of a PRINT string in BASIC.

Pascal is much more like BASIC than C. For example, a FOR loop in Pascal would look like this:

```
for i:=1 to 10 do begin
  writeln('The number is ', i);
end;
```

In Pascal, you precede an equal sign with a colon when assigning a value to a variable. The only time you drop the colon is when you test a variable's value, as in `if i=10`. The loop instructions are braced by the statements `begin` and `end`. And instead of a PRINT command, Pascal uses `writeln`. To print something without forcing a carriage return, use the shorter version, `write`. The optional `ln` stands for linefeed. Both Pascal and C use the semicolon to mark the end of an instruction.

If you'd like to experiment with a new language, stop by your library or bookstore and pick up a book on the topic.

Due to a printing error, the listing for Flood in last month's "Programmer's Page" was omitted. You can find it in this issue on page G-38. □

Learning a new computer language can be fun—and you don't need to buy a new computer to do it.

128 CONFIGURATION AID

Bruce M. Bowden

A major concern of 128 programmers, particularly when writing machine language routines, is how to configure the various memory banking arrangements. Wrong banking can leave critical RAM or ROM routines unavailable. The 128 has a configuration register within its memory management unit for doing banking. This program, *128 Configuration Aid*, makes calculating the configuration register value quick and easy.

Banking on the 128

The 128 uses two 64K RAM areas, a 28K BASIC interpreter, a 4K machine language monitor, a 4K screen editor, an 8K Kernal, 4K of character patterns, and another 4K for hardware chip registers. In addition, the 128 can also support 64K of cartridge ROM and another 128K of expanded memory. Although the 128 is capable of dealing with 372K of address space, the 8502 microprocessor can directly access only 64K at a time. How does the 128 do it?

The answer is banking. This means that only portions (up to 64K) of the entire arrangement are available to the microprocessor at any one time. The actual portions seen by the 8502 are coded by the value which resides in the configuration register at address 65280 (\$FF00). The value in this register has a specific pattern of eight bits, with different bits corresponding to special features of the configuration.

Bit 0 decides whether the input/output (I/O) block, RAM, or ROM will be in place from 53248 to 57343 (\$D000-\$DFFF). Bit 1 decides whether low BASIC ROM or RAM resides at 16384-32767 (\$4000-\$7FFF). Bits 2 and 3 determine whether BASIC and ML monitor ROM, internal cartridge ROM, or external cartridge ROM or RAM appears at memory locations 32768-49151 (\$8000-\$BFFF).

Bits 4 and 5 determine whether Kernal and character ROM, internal cartridge ROM, external cartridge ROM, or RAM appears in the range 49152-65535 (\$C000-\$FFFF). Bits 6 and 7 determine which RAM block is in use, ranging in number from 0 to 3.

The program will calculate the combination of bits required for the kind of arrangement you need and present the result in decimal, hexadecimal, and binary notation. This number can then be poked into the configuration register found at 65280 (\$FF00).

Typing It In

Written entirely in BASIC, *128 Configuration Aid* should be entered with *The Automatic Proofreader*. See "Typing Aids" elsewhere in this section. Be sure to save a copy of the program to disk before you run it.

Calculate Configuration

The program runs in either 40- or 80-column mode. You'll first be asked if you want the output sent to your printer. Press Y or N according to your preference. You'll then be presented with the option of either calculating the configuration register value based on the most suitable banking arrangement or displaying the banking arrangement based upon a specific configuration register value. For purposes of demonstration, let's choose the first option by pressing the A key.

Let's say we want to run a machine language program which resides in RAM 1 and uses the Kernal routines and I/O, but not BASIC or the character set. The first query is where to get RAM. Unless your system setup has had some very special custom work done to it, options C and D are meaningless, so let's select B for RAM 1.

Next we need to decide how the region from 49152 to 65535 (\$C000 to \$FFFF) is banked. This is where Kernal ROM resides, so we need to press A to choose system ROM.

We must next make a choice of how to use the address space from 32768 to 49151 (\$8000 to \$BFFF). Because we don't need BASIC, which is choice A on the current screen, three choices remain. Let's just go with RAM, by pressing key D.

Similarly, the range 16384-32767 (\$4000-\$7FFF), excluding BASIC, leaves B as our choice on the next screen. Press the B key.

Finally, at addresses 53248-57343 (\$D000-\$DFFF), we need to keep I/O in place, so select option A.

The report shows that, in order to

achieve the configuration we want, a decimal value of 78 (1001110 in binary or 4E in hexadecimal) must be placed in the configuration register found at 65280 (\$FF00).

Display Configuration

Let's check out the other option. Run the program again, and this time choose option B. This will display the configuration which results from a specific value. If you enter 78, you should see the configuration just selected.

For another example, suppose we input a value of 234. We'd discover that we're using the high part of expansion RAM and the entire address space of external cartridge ROM, that BASIC isn't engaged, and that the character ROM is knocked out. This arrangement corresponds to using the command BANK 11 from BASIC 7.0.

If you program in machine language, give *128 Configuration Aid* a try. It greatly simplifies the task of managing the 128's possibilities.

128 CONFIGURATION AID

```

GD 10 REM COPYRIGHT 1991 - COMPUTE PUBLICATIONS INTL LTD - ALL RIGHTS RESERVED
PB 20 COLOR 6,1:FAST:PRINT CHR$(14)CHR$(147)CHR$(17)CHR$(17):RESTORE 120:FOR X=1 TO 5:READ NB(X):NEXT:DIM BE(15,2)
MM 30 FOR X=1 TO 4:READ BYTES(X):NEXT:FOR X=1 TO 5:FOR Y=1 TO NB(X)+1:READ BMB$(X,Y):NEXT:NEXT:FOR X=0 TO 15:READ BE(X,1):READ BE(X,2):NEXT
QH 40 PR=50:M$="THE COMMODORE {SPACE}128 CONFIGURATION AID":GOSUB 540
QR 50 M$="COPYRIGHT 1991":GOSUB 540:M$="COMPUTE PUBLICATIONS INTERNATIONAL, LTD.":GOSUB 540
FJ 60 M$="ALL RIGHTS RESERVED":GOSUB 540:PRINT:PRINT
SC 70 PRINT:PRINT:M$="USE COMMODORE PRINTER ROUTINE? (Y OR N)":GOSUB 540
PC 80 GETKEY M$:PRINT CHR$(147)CHR$(17)CHR$(17):IF M$="Y" THEN PR=33:OPEN 3,4,7
PH 90 M$="PLEASE SELECT FROM THE OPTIONS BELOW":GOSUB {SPACE}550:PRINT:PRINT:M$="(A) CALCULATE CONFIGURATION REGISTER VALUE":GOSUB 550
    
```

```

XG 100 M$="(B) DISPLAY CONFIGURATION FROM CONFIGURATION REGISTER VALUE":GOSUB 550:BIT$="" :GOSUB 300 :X=VAL(BIT$)+1:BIT$="":ON X GOTO 220,390
PH 110 :
CB 120 DATA 4,4,4,2,2,"00","01","10","11","$0000 TO $FFFF","RAM 0 (NORMALLY {SPACE}USED FOR PROGRAMS)"
PX 130 DATA "RAM 1 (NORMALLY USED FOR BASIC VARIABLE {SPACE}STORAGE)","FUTURE EXPANSION RAM LOW","FUTURE EXPANSION RAM HIGH"
HR 140 DATA"$C000 TO $FFFF","SYSTEM ROM","HIGH INTERNAL (USER EPROM) ROM","HIGH EXTERNAL (CARTRIDGE) ROM","EXPOSED RAM"
BF 150 DATA"$8000 TO $BFFF","SYSTEM ROM","MID INTERNAL (USER EPROM) ROM","MID EXTERNAL (CARTRIDGE) {SPACE}ROM","EXPOSED RAM"
HC 160 DATA"$4000 TO $7FFF","SYSTEM ROM","EXPOSED RAM"
FB 170 DATA"$D000 TO $DFFF","I/O DEVICES","CHARACTER {SPACE}GENERATOR ROM OR RAM"
CG 180 DATA 0,63,1,127,2,191,3,255,4,22,5,86,6,150,7,214,8,42,9,106,10,170,11,234,12,6,13,10,14,1,15,0
PR 190 :
RJ 200 REM CALCULATE CONFIGURATION REGISTER VALUE
QR 210 :
EX 220 PRINT CHR$(147)CHR$(17)CHR$(17)CHR$(17)
MR 230 FOR XX=1 TO 5:M$="PLEASE INDICATE YOUR CHOICES BELOW":GOSUB 540:PRINT:M$="THE SPACE FROM "+BMB$(XX,1)+" WILL CONTAIN":GOSUB 540:PRINT
EM 240 FOR YY=1 TO NB(XX):M$=CHR$(YY+192)+" "+BMB$(XX,YY+1):GOSUB 540:NEXT:PRINT:PRINT
QX 250 M$="WHICH WILL IT BE?":GOSUB 540:IF NB(XX)=4 THEN GOSUB 310:ELSE GOSUB 300
CK 260 NEXT:M$="THE VALUE TO BE PLACED IN THE":GOSUB {SPACE}540:M$="MEMORY MANAGEMENT UNIT CONFIGURATION REGISTER (MMU CR) IS":GOSUB 540:PRINT:PRINT
HS 270 DC=0:M$="BINARY VALUE = "+BIT$:GOSUB 540:FOR X=0 TO 7:DC=DC+INT(VAL(MID$(BIT$,8-X,1))*2^X+.5):NEXT:PRINT:M$="DECIMAL VALUE = "+STR$(DC):GOSUB 540:PRINT
DP 280 M$="HEXADECIMAL VALUE = "+HEX$(DC):GOSUB 540:GOTO480
RD 290 :
RS 300 C$="B":GOSUB 330:BIT$=BIT$+RIGHT$(STR$(XZ),1):GOTO 320
QP 310 C$="D":GOSUB 330:XZ=XZ+1:BIT$=BIT$+BYTES(XZ)
JJ 320 PRINT CHR$(147)CHR$(17)CHR$(17)CHR$(17):RETURN
BS 330 GETKEY A$:IFA$<"A" OR A$>C$ THEN 330:ELSE XZ=ASC(A$)-65
CP 340 IF PR=33 THEN M$="*****":M$=M$+"{2 SPACES}"+A$+"{2 SPACES}"+M$:GOSUB 540
PQ 350 RETURN
QH 360 :
FA 370 REM CONFIGURATION FROM {SPACE}REGISTER VALUE
EK 380 :
XG 390 PRINT CHR$(147)CHR$(17):M$="PLEASE ENTER THE VALUE HELD IN THE CONFIGURATION REGISTER":GOSUB 540
CB 400 M$="(USE A "+CHR$(34)+"$"+CHR$(34)+" IN FRONT {SPACE}OF A HEXIDECIMAL ENTRY.)"
RJ 410 GOSUB 540:PRINT:PRINT:INPUT A$:PRINT CHR$(147)CHR$(17):M$="USING THE {SPACE}VALUE "+A$:GOSUB 540:PRINT
DR 420 IF LEFT$(A$,1)="$" THEN DC=DEC(RIGHT$(A$,LEN(A$)-1)):ELSE DC=VAL(A$)
RH 430 DM=DC:BIT$="":DO UNTIL {SPACE}DM=0:DL=INT(DM/2):A$=STR$(2*(DM/2-DL)):BIT$=RIGHT$(A$,LEN(A$)-1)+BIT$:DM=DL:LOOP
DG 440 ZR$="00000000":IF LEN(BIT$)>8 THEN BIT$=RIGHT$(BIT$,8):ELSE IF LEN(BIT$)<8 THEN BIT$=LEFT$(ZR$,8-LEN(BIT$))+BIT$
RG 450 FOR XX=1 TO 5 STEP 2:YX=(1+XX)/2:A$=MID$(BIT$,XX,2):YY=1:DO UNTIL BYTES(YX)=A$:YY=YY+1:LOOP:M$="THE SPACE FROM "+BMB$(YX,1)+"":GOSUB 540
DQ 460 M$=BMB$(YX,YY+1):GOSUB {SPACE}540:PRINT:NEXT:FOR XX=7 TO 8:YX=XX-3:A$=MID$(BIT$,XX,1):YY=VAL(A$)+1:M$="THE SPACE FROM "+BMB$(YX,1)+"":GOSUB 540
BK 470 M$=BMB$(YX,YY+1):GOSUB {SPACE}540:PRINT:NEXT
JM 480 FOR X=0 TO 15:IF DC=BE(X,2) THEN M$="THIS CORRESPONDS TO BANK"+STR$(BE(X,1)):GOSUB 540
QG 490 NEXT:PRINT CHR$(27)+"G"+CHR$(7)
GX 500 IF PR=33 THEN PRINT#3:CLOSE3
AF 510 END
RB 520 :
SC 530 REM MESSAGE CENTERING ROUTINE
CF 540 IF PR=33 THEN LN=80:MY$=M$:GOSUB 590:PRINT#3,M$:M$=MY$
GM 550 IF PEEK(215)=0 THEN BEGIN
JC 560 LN=40:SLOW:GOSUB 600:M$=MY$:GOSUB 590:PRINTM$
FE 570 IF MZ$<>" " THEN M$=MZ$:GOSUB 590:PRINTM$:RETURN
RK 580 BEND:ELSE LN=80:GOSUB 590:PRINTM$:RETURN
XJ 590 Y=INT((LN-LEN(M$))/2):FOR X=1 TO Y:M$=" "+M$:NEXT:RETURN
XG 600 IF LEN(M$)<40 THEN MY$=M$:MZ$=" ":RETURN
XQ 610 X=36
EQ 620 IF MID$(M$,X,1)=" " THEN MY$=LEFT$(M$,X-1):MZ$=RIGHT$(M$,LEN(M$)-X):RETURN:ELSE X=X-1:GOTO620
FR 630 IF M$="" THEN RETURN:ELSE PRINTM$:RETURN

```

Bruce M. Bowden is Gazette's technical editor. He lives in Greensboro, North Carolina.

DESDEMONA

Matt Morgan

Desdemona, also known as Othello or Reversi, is a popular strategy board game that uses black and white markers or disks. Its rules are simple, but its many possibilities of play make it challenging and complex. This sophisticated version features sound effects, sprites, and redefined multicolor characters.

Desdemona is written in BASIC. To avoid typing mistakes, use *The Automatic Proofreader* to type it in. See "Typing Aids" elsewhere in this section. When you've finished, save the program to disk before you run it.

Black and White

When you run *Desdemona*, the title screen appears, and then the program asks for the number of players—0, 1, and 2 are accepted values. Entering a 0 causes the computer to play itself; this mode is useful when you're learning the rules of the game and want to see a demonstration.

The main screen shows an 8 x 8 game board with four playing pieces (two black disks and two white ones) arranged symmetrically at the center. If you are playing against the computer (one-player mode), you have the white pieces and the 64 plays black.

Players alternate turns placing pieces on the board until every square is filled or neither player can make a move. If you cannot make a legal move, you must pass your turn to your opponent. Press P to do so.

The object of *Desdemona* is to have more pieces on the board at the end of the game than your opponent does. Each player has a box on the screen that shows the number of pieces he or she currently has in play. White's box is on the left; black's is on the right. A flashing check mark in one of the boxes shows whose turn it is.

When it's your turn, a blue square appears on one of the board's squares. To make a move, use the joystick in port 1 (port 2 for player 2) to move the square to the spot where you wish to place a piece and then press the fire button. If the move is illegal, the computer will buzz, and you will have to select another square. You may quit the game at any time by pressing Q.

To make a legal move, you must place your piece so that one or more of your opponent's pieces lie in a straight line between your new piece and another of your pieces. When you enclose your opponent's pieces, the computer will beep, and the enclosed pieces will change to your color. You may enclose pieces in any direction (up, down, left, right, or diagonally), and you can make multiple enclosures with one play. Scores can change dramatically with careful play. You may want to watch the computer play itself a few times to get the hang of it.

At the end of the game, the winner is announced, and you are asked if you want to play again.

Strategy

The computer makes a good opponent, but an experienced player can beat it rather easily. Why? Because the computer uses no strategy; it just chooses the move that will get the most pieces. The best move is not necessarily the one that wins the most pieces.

A good *Desdemona* player goes after the corner squares because they can't be changed. Corner pieces are the most valuable spots on the board. Edge squares are next in importance. They can only be changed in one direction, and they are unchangeable if connected by a row of your pieces to a corner square that you occupy.

DESDEMONA

```
PK 10 POKE56,140:CLR:DIMGB(9,9
),DX(7),DY(7),P(7)
KF 20 DEF FN PS(C)=55221+3*X+1
20*Y
CS 30 DEF FN XS(X)=61+X*24
HS 40 DEF FN YS(Y)=31+Y*24
PP 50 POKE53281,3:POKE53280,6
ER 60 POKE53280,6:PRINTCHR$(14
2)"{CLR}{WHT}{4 DOWN}";
EK 65 PRINTTAB(5)"{A}CCI
EA 70 PRINTTAB(5)"B{K}B
{8 SPACES}B
RB 80 PRINTTAB(5)"B{K}BUCIUCI
UCBUCIUIIUCIUIUCI
MX 90 PRINTTAB(5)"B{K}BBCKJCI
B BBCKBBBB BBBB B
AJ 95 PRINTTAB(5)"{Z}CCKJCKJCK
JCKJCKBBBBJCKBBJCK
MJ 110 PRINTTAB(12)"{BLU}{T}
{Y}{U}{RVS}{I}{O}{Y}
{6 U}{Y}{P}{O}{I}{OFF}
{U}{Y}{T}"
RP 120 PRINTTAB(19)"{DOWN}
{RED}BY MATT MORGAN
{3 DOWN}"
MA 125 INPUT"{UP}
{10 SHIFT-SPACE}HOW MAN
Y PLAYERS{2 SPACES}1
{3 LEFT}";AS:IFAS>"2"OR
AS<"0"THEN 125
DX 130 POKE53270,PEEK(53270)OR
16:POKE53282,7:POKE5328
3,9:C=-1:GOSUB 850
QA 150 PL=VAL(AS)
AB 180 POKE53265,11:PRINT"
{CLR}";:FOR=1TO25:A=35
839+40*Y:POKEA,160:POKE
A+19456,6:NEXT
AA 190 PRINTTAB(7)"{8}{OFF}{A}
**{R}**{R}**{R}**{R}**
{R}**{R}**{R}**{S}":FOR
T=1TO8:FORU=1TO2
PA 200 PRINTTAB(7)"-{2 SPACES}
-{2 SPACES}-(2 SPACES)-
{2 SPACES}-(2 SPACES)-
```

```
{2 SPACES}-(2 SPACES)-
{2 SPACES}-":NEXT
KX 210 PRINTTAB(7)"{Q}**+***
+***+***+***+***{W}";:IF
T<>8THENPRINT
PB 220 NEXT:PRINT"{UP}":PRINT
AB(7)"{Z}**{E}**{E}**
{E}**{E}**{E}**{E}**{E}
**{X}{HOME}"
DK 230 LS="{DOWN}{7 LEFT}":PRI
NTWSS"{2 LEFT}{2 UP}
{OFF}#{RVS}{5 SPACES}
{OFF}%"LS"{RVS} WHITE "
LS"{7 SPACES}"LS"{OFF}$
{RVS}{5 SPACES}{OFF}&"
KC 240 PRINTBSS"{2 LEFT}{2 UP}
{OFF}#{RVS}{5 SPACES}
{OFF}%"LS"{RVS} BLACK "
LS"{7 SPACES}"LS"{OFF}$
{RVS}{5 SPACES}{OFF}&":
POKE36203,122
AC 250 POKE36235,122:WS=0:BS=0
:X=4:Y=4:C=1:GOSUB670:Y
=5:C=0:GOSUB670
SG 260 X=5:C=1:GOSUB670:Y=4:C=
0:GOSUB670:PT=1:POKE532
65,27:SX=1:SY=1
CR 270 PRINTWSSWS"{LEFT} "BS$B
S"{LEFT}":T=WS+BS:IF P
T=1 THENPRINTWSS"{2 UP}
{RIGHT}";:GOTO290
CH 280 PRINTBSS"{2 UP}{RIGHT}"
;
RA 290 IFT=640RT=WSORT=BSORFP=
20RNT=2THEN560
GF 300 POKE647,PT:POKE204,0:IF
(PT=0ANDPL=1)ORPL=0THEN
POKEV+21,0:GOSUB490:GOT
0450
BM 310 POKEV+21,1:J=56321:IFPT
=0ANDPL=2THENJ=J-1
XH 320 GOTO420
KR 330 IF(PEEK(J)AND16)=0THEN4
30
QD 340 AS="":GETAS:IFAS="P"THE
NPF=1:GOSUB490:IFLLTHEN
440
RH 350 IFAS="P"THEN450
XG 360 IFAS="Q"THENPOKEV+21,0:
PRINT:FQ=1:GOTO470
HF 370 O=15-(PEEK(J)AND15):IFO
=0THEN330
JG 380 IFO=1ANDSY>1THENSY=SY-1
PF 390 IFO=2ANDSY<8THENSY=SY+1
QJ 400 IFO=4ANDSX>1THENSX=SX-1
GF 410 IFO=8ANDSX<8THENSX=SX+1
GQ 420 POKEV,FN XS(SX):POKEV+1
,FN YS(SY):GOTO330
HH 430 X=SX:Y=SY:GOSUB740:IFLL
THEN450
HR 440 POKESS+1,7:POKESS+4,33:
FORQ=1TO500:NEXT:POKES
+4,0:GOTO330
KJ 450 POKESS+1,99:POKESS+4,17
:FORQ=1TO99:NEXT:POKES
+4,0
EA 460 IFAS<>"P"THENNT=0:GOSUB
820
```

PROGRAMS

```

SK 470 PT=1-PT:POKE204,1:POKE3
6203,122:POKE36235,122:
IFEQTHENFQ=0:GOTO620
ED 480 GOTO270
MA 490 BM=0:BX=0:BY=0:QP=2-PT:
A=9:FORX=1TO8:FORY=1TO8
:IFGB(X,Y)<>QPTHEN540
BQ 500 Z=X:R=Y:FORQ=.TO7:X=Z+D
X(Q):Y=R+DY(Q):IFGB(X,Y
)ORX=AORY=AORX=.ORY=.TH
EN530
SJ 510 GOSUB740:IFTT>BMOR(TT=B
MANDRND(1)>.5)THENBM=TT
:BX=X:BY=Y
CA 520 IFLANDPFTHENQ=A:Z=A:R=
A:PF=.
HK 530 NEXT:X=Z:Y=R
GD 540 NEXT:NEXT:IFBM=0THENA$=
"P":LL=0:NT=NT+1:RETURN
KQ 550 A$="":X=BX:Y=BY:GOSUB74
0:RETURN
XM 560 POKEV+21,0:WN=1:IFBS>WS
THENWN=0
CH 570 IFBS=WSTHENWN=2
ER 580 ON WN+1 GOSUB640 ,650,6
60
QA 590 PRINT"{10 DOWN}ANOTHER
{DOWN}{6 LEFT}GAME?
{DOWN}{5 LEFT}{Y/N}"
CC 600 GETAS:IFA$<>"N"ANDA$<>"
Y"THEN600
XE 610 IFA$="N"THENSYS64738
GH 620 POKE49,PEEK(47):POKE50,
PEEK(48):DIMGB(9,9),DX(
7),DY(7),P(7)
JE 630 POKE65,DL:POKE66,DH:FOR
A=0TO7:READX(A),DY(A):
NEXT:GOTO10
DG 640 PRINT"{HOME}{OFF}"TAB(3
3)"{2 DOWN}{BLK}BLACK
{2 DOWN}{5 LEFT}WINS!":
PRINTTAB(32);:RETURN
MS 650 PRINT"{HOME}{OFF}
{2 DOWN}{WHT}{RIGHT}WHI
TE{2 DOWN}{5 LEFT}WINS!
":RETURN
MA 660 PRINT"{HOME}{OFF}
{2 DOWN}{RED}{3 RIGHT}A
{2 DOWN}{2 LEFT}TIE{UP}
{TAB(32)}A{2 DOWN}
{2 LEFT}TIE":RETURN
JQ 670 A=FN PS(C):B=GB(X,Y)-1:
POKEA,C:POKEA+1,C:POKEA
+40,C:POKEA+41,C:A=A-19
456
BB 680 POKEA,35:POKEA+1,37:POK
EA+41,38:POKEA+40,36:GB
(X,Y)=C+1
DS 690 IFB=1THENWS=WS-1
FF 700 IFB=0THENBS=BS-1
GB 710 IFC=1THENWS=WS+1:GOTO73
0
QS 720 BS=BS+1
BF 730 RETURN
PE 740 TT=0:LL=0:IFGB(X,Y)THEN
RETURN
QC 750 P=PT+1:O=2:IFPTTHENO=PT
FQ 760 FORL=0TO7:P(L)=0:IFGB(X

```

```

+DX(L),Y+DY(L))<>OTHEN8
10
JB 770 TX=X+DX(L):TY=Y+DY(L):C
O=0
RP 780 CO=CO+1:TX=TX+DX(L):TY=
TY+DY(L):IFGB(TX,TY)=0T
HEN810
FQ 790 IFGB(TX,TY)=PTHENLL=1:P
(L)=CO:TT=TT+CO:GOTO810
AP 800 GOTO780
KJ 810 NEXT:RETURN
CH 820 QX=X:QY=Y:C=PT:GOSUB670
:FORL=0TO7:IFP(L)=0THEN
840
SK 830 X=QX:Y=QY:FORT=1TOP(L):
X=X+DX(L):Y=Y+DY(L):GOS
UB670:NEXT
RS 840 NEXT:RETURN
JF 850 PRINT"{CLR}{N}{BLU}
{10 DOWN}"TAB(13)"PLEAS
E WAIT..."
AX 860 FOR X=0TO32:READ J:POKE
49152+X,J:NEXT:POKE5633
4,PEEK(56334)AND254
GF 870 POKE1,PEEK(1)AND251:SYS
49152:FORT=584TO607:POK
E40960+T,PEEK(53248+T):
NEXT
CB 880 FORT=68TO687:POKE40960
+T,PEEK(53248+T):NEXT:P
OKE1,PEEK(1)OR4
FH 890 POKE56334,PEEK(56334)OR
1:POKE56578,PEEK(56578)
OR3
MB 900 POKE648,140:PRINT"{CLR}
{BLU}{10 DOWN}"TAB(13)"
PLEASE WAIT..."
BA 910 POKE56576,(PEEK(56576)A
ND252)OR1:POKE53272,56
KQ 920 FOR T=28TO311:READA:PO
KE40960+T,A:NEXT:FORT=4
3011TO43070:POKET,255:N
EXT
QP 930 FORT=43008TO43010:POKET
,0:NEXT:DN$="{DOWN}":RT
$="{RIGHT}":FORT=1TO6:D
N$=DN$+DN$:NEXT
QC 940 WSS="{HOME}"+"LEFT$(DN$,
11)+"{2 RIGHT}{RVS}
{WHT}"BS$="{HOME}"+"LEF
T$(DN$,12)+"{6 LEFT}
{RVS}{BLK}"
JK 950 Q=FRE(0)+RND(-TI/37):FO
RT=41936TO41943:POKET,2
55:NEXT:V=53248:POKEV+3
9,14
AE 960 POKEV+27,1:POKE36856,16
0:DL=PEEK(65):DH=PEEK(6
6):FORA=0TO7
SJ 970 READDX(A),DY(A):NEXT:SS
=54272:FORT=SSTOSS+23:P
OKET,0:NEXT:POKESS+24,1
5
MJ 980 POKESS+5,15:POKESS+6,24
0:RETURN
BK 990 DATA 169,0,133,253,133,
251,169,216,133,252,169
,160,133,254,162,8,160,

```

```

0
EF 1000 DATA 177,251,145,253,1
36,208,249,230,252,230
,254,202,208,240,96,0,
3,15,31
BB 1010 DATA 63,127,127,255,25
5,127,127,63,31,15,3,0
,0,192,240,248,252,254
,254
GC 1020 DATA 255,255,254,254,2
52,248,240,192,0
DP 1030 DATA 0,-1,1,-1,1,0,1,1
,0,1,-1,1,-1,0,-1,-1

```

Matt Morgan attends college in Texas. His home is in New Plymouth, Idaho.

SCREEN DUMP 128

Bruce M. Bowden

Get a printout of your 128 text screens with this handy one-call utility. There aren't any fancy bells or whistles with this program. It does just one job, but *Screen Dump 128* works with both 80-column and 40-column screens. A simple SYS call is all it takes to activate.

Typing It In

Screen Dump 128 is written entirely in BASIC. To help avoid typing errors, use *The Automatic Proofreader* to enter it. See "Typing Aids" elsewhere in this section. Save a copy of the program before exiting *Proofreader*.

Dumping

Load and run *Screen Dump 128* as you would any BASIC program. The loader places machine code at address 4864 (\$1300). After the code is in place, you are then free to run any other BASIC program.

To obtain a copy of a directory or program listing, game results, or any text that appears on your screen, enter SYS 4864. This will dump the current 40- or 80-column screen to your Commodore-compatible printer.

SCREEN DUMP 128

```

GD 10 REM COPYRIGHT 1991 - COM
PUTE PUBLICATIONS INTL L
TD - ALL RIGHTS RESERVED
HE 20 REM "SCREEN DUMP LOADER
{SPACE}FOR THE COMMODORE
128"
PC 30 REM "THIS ROUTINE, ONCE
{SPACE}ACTIVATED, WILL D
UMP THE CURRENT"

```

```

RB 40 REM "SCREEN TO THE PRINT
ER (DEVICE 4). IT IS ACT
IVATED BY A SYS 4864."
SD 50 PRINTCHR$(147)CHR$(14)CHR
R$(17)CHR$(17) "SETTING U
P..."
EJ 60 RESTORE130:Y=DEC("1300")
:IF PEEK(215) THEN FAST
HE 70 READB$:IF B$="EOF" THEN
{SPACE}SLOW:PRINT"A SYS
{SPACE}4864 WILL RUN THE
SCREEN DUMP":END
QA 80 IF LEFT$(B$,1)<>"@" THEN
120
RF 90 A$=B$:N=0:FOR X=0 TO 15:
READ B$:POKEY+X,DEC(B$):
N=N+DEC(B$):NEXT
XH 100 READB$:IF N<>VAL(B$) TH
EN 120
KJ 110 Y=Y+16:GOTO70
AM 120 PRINT"THERE IS A DATA E
RROR IN THE LINE BEGINN
ING WITH ";A$:END
JD 130 DATA @1,A5,D7,F0,03,4C,
3E,13,4C,0F,13,00,00,00
,00,00,A0,1050
MG 140 DATA @2,00,84,FB,A9,04,
85,FC,A0,27,B1,FB,99,76
,14,88,10,2011
FK 150 DATA @3,F8,A0,28,20,AB,
13,18,A5,FB,69,28,85,FB
,90,02,E6,2015
HJ 160 DATA @4,FC,A5,FC,C9,07,
D0,E0,A5,FB,C9,E8,D0,DA
,60,A9,00,2849
MC 170 DATA @5,8D,0E,13,A2,0C,
20,76,13,85,FC,E8,20,76
,13,85,FB,1687
SQ 180 DATA @6,A9,00,8D,0D,13,
20,8E,13,A5,FF,AC,0D,13
,99,76,14,1450
JC 190 DATA @7,EE,0D,13,C8,C0,
50,D0,ED,20,AB,13,EE,0E
,13,AD,0E,1867
AE 200 DATA @8,13,C9,19,90,DB,
60,8E,00,D6,2C,00,D6,10
,FB,AD,01,1759
EF 210 DATA @9,D6,60,8E,00,D6,
2C,00,D6,10,FB,8D,01,D6
,60,A2,12,1823
QM 220 DATA @A,A5,FC,20,82,13,
A5,FB,E8,20,82,13,A2,1F
,20,76,13,1789
QE 230 DATA @B,85,FF,E6,FB,A5,
FB,D0,02,E6,FC,60,88,B9
,76,14,C9,2733
RS 240 DATA @C,20,D0,03,88,D0,
F6,C8,A9,FF,99,76,14,A2
,00,8E,0A,2062
XR 250 DATA @D,13,8E,0B,13,A9,
00,8D,0C,13,AE,0A,13,BD
,76,14,C9,1263
XQ 260 DATA @E,FF,D0,03,4C,35,
14,C9,80,90,0C,C9,FE,B0
,08,A0,BB,2086
JP 270 DATA @F,8C,0C,13,18,29,
7F,C9,22,D0,02,A9,27,C9
,20,B0,06,1431

```

```

GJ 280 DATA @G,18,69,40,4C,01,
14,C9,41,90,07,C9,7F,B0
,03,18,69,1343
DC 290 DATA @H,80,AC,0C,13,C0,
BB,D0,1E,AE,0B,13,8D,0B
,13,A9,12,1510
JR 300 DATA @I,9D,C7,14,E8,AD,
0B,13,9D,C7,14,E8,A9,92
,9D,C7,14,2110
HB 310 DATA @J,8E,0B,13,4C,2C,
14,AE,0B,13,9D,C7,14,EE
,0A,13,EE,1397
AM 320 DATA @K,0B,13,4C,C4,13,
AE,0B,13,9D,C7,14,A9,00
,8D,0A,13,1240
CF 330 DATA @L,A9,03,A2,04,A0,
07,20,BA,FF,A9,00,20,BD
,FF,A9,00,1792
JX 340 DATA @M,A2,00,20,68,FF,
20,C0,FF,A2,03,20,C9,FF
,AE,0A,13,1888
PF 350 DATA @N,BD,C7,14,C9,FF,
F0,06,20,D2,FF,E8,D0,F3
,A9,0D,20,2504
AC 360 DATA @O,D2,FF,20,CC,FF,
60,00,00,00,00,00,00,00
,00,00,00,1052
CH 370 DATA EOF

```

Bruce M. Bowden is a programmer at COMPUTE Publications. He lives in Greensboro, North Carolina.

CHECKER COMMAND

Michael Sedlezky

Checker Command is a solitaire strategy board game for the 64 that is similar to checkers. Instead of red and black disks as pieces, however, the program uses heavily-armed hoverjets. They are animated and have appropriate sound effects. This is not your grandfather's game. A joystick for port 2 is required.

Typing It In

Checker Command is written entirely in machine language, but loads and runs like a BASIC program. The program uses sprites, customized characters, and an interrupt timer. To enter it, use *MLX*, our machine language entry program; see "Typing Aids" elsewhere in this section. When *MLX* prompts, respond with the following values.

Starting address: 0801

Ending address: 1918

Be sure to save a copy of the program before you exit *MLX*.

Playing the Game

Checker Command rules are similar to those used in checkers, but with a few twists. There are two levels of difficulty to allow for training and for playing against a serious opponent. You'll find play at the advanced level is intense because the computer's only objective is to win, and it seldom strays from that path of action.

To start the game, load the program and type RUN. When the title screen appears, press the space bar if you wish to play the easy level or press the joystick fire button for the advanced version. Both versions follow the same rules, but the computer doesn't try as hard to beat you on the easy level.

You command a fleet of 12 yellow hoverjets, and your mission is stop the enemy from breaching your defenses. You want to move forward, capturing as many pieces as you can, while blocking the enemy's determined advance.

Playing the game is simple. Just follow the onscreen commands, and make your moves with your joystick. Place the square highlighter on the piece you wish to move and press the fire button. This action will make your game piece come to life. If you change your mind and select another piece, just highlight the same square and press the fire button again. The onscreen command will turn green if the move is a legal one. The computer will not allow any illegal moves.

Once you have selected a piece to move, you must set its destination. Highlight the target square and press the fire button. Pieces move diagonally forward one square at a time. If you encounter an enemy piece with an empty space on its other side, you don't just jump it as you would in checkers; you engage the enemy jet in battle. The 64 handles the action for you.

Unlike checkers, *Checker Command* allows only one jump per turn. Jumps are mandatory, though. If one of your pieces has the opportunity to jump an opponent and you elect not to, you'll be penalized by having your jet destroyed.

After you make a move, the 64 takes over. You must sit and bite your nails as it tries to outwit you. The computer is good. It never misses an opportunity to have a good fight, but it

PROGRAMS

avoids a conflict whenever possible by sticking to its main objective. That objective is your bottom row.

Your pieces move up the screen until they reach the top row; then they may attack in the opposite direction. They may move back down the board until they reach the bottom row, and then they switch to up again. A piece that can move down has an indicator dot in its center.

There are five game-ending scenarios. First, you win if all the enemy jets are destroyed or boxed in and unable to move. Likewise, you lose if all your jets are destroyed or are unable to move. Finally, the last—and most frustrating—ending is when just one of the enemy jets slips by your defenses and reaches the bottom row of the checkersboard. This signifies a breach of your defenses and is the most humiliating way you can lose a game.

A timer is shown to see how long you can last against the master. An average game lasts between 10 and 15 minutes, but there is no time limit. The timer stops when the game ends. Lightly tap the fire button to restart the game if you wish to play again.

CHECKER COMAMND

```
0801:0C 08 01 00 9E 20 33 31 46
0809:33 37 00 00 00 00 00 00
0811:00 00 00 00 00 00 00 21
0819:00 00 00 18 00 00 3C 00
0821:00 18 00 00 00 00 00 37
0829:00 00 00 00 00 00 00 39
0831:00 00 00 00 00 00 00 41
0839:00 00 00 00 00 00 07 57
0841:00 00 00 00 00 00 00 51
0849:00 00 00 00 00 00 00 6A
0851:40 02 6E 60 02 AE A0 02 E3
0859:AE A0 02 AA A0 02 AA A0 D6
0861:01 AA 90 00 66 40 00 00 E2
0869:00 00 00 00 00 00 00 79
0871:00 00 00 00 00 00 00 81
0879:00 00 00 00 00 00 47 00 18
0881:00 00 00 00 00 00 00 91
0889:00 00 00 00 08 00 00 08 E1
0891:00 00 6E 40 02 6E 60 02 FF
0899:AA A0 02 AA A0 02 AA A0 15
08A1:02 AA A0 02 AA A0 00 6A D3
08A9:40 00 04 00 00 00 00 5A
08B1:00 00 00 00 00 00 00 00 C1
08B9:00 00 00 00 00 00 47 00 58
08C1:00 00 00 00 00 00 08 00 E1
08C9:00 08 00 00 08 00 00 2E 4A
08D1:00 00 2E 00 00 6E 40 02 E3
08D9:AE A0 02 AA A0 0A AA A8 7F
08E1:0A AA A8 0A AA A8 01 A6 F7
08E9:90 00 04 00 00 00 00 00 C2
08F1:00 00 00 00 00 00 00 00 02
```

```
08F9:00 00 00 00 00 00 47 00 98
0901:00 00 00 08 00 00 08 00 A3
0909:00 08 00 00 2E 00 00 2E BC
0911:00 00 6E 40 00 6E 40 00 2F
0919:6E 40 02 AA A0 02 AA A0 60
0921:0A AA A8 0A A6 A8 05 A6 21
0929:94 00 04 00 00 00 00 00 06
0931:00 00 00 00 00 00 00 00 43
0939:00 00 00 00 00 00 47 00 D9
0941:00 00 00 00 00 00 00 00 53
0949:00 00 00 00 00 00 00 00 5B
0951:08 00 00 20 00 06 F0 02 65
0959:9B E0 0A AF 80 1A AE 40 B7
0961:1A AA 40 02 6A 80 01 6A 15
0969:80 01 AA 80 00 2A 00 00 02
0971:0A 00 00 05 00 00 00 00 D8
0979:00 00 00 00 00 00 47 00 1A
0981:00 00 00 00 00 00 00 93
0989:00 00 06 00 00 06 80 88
0991:00 0A 80 00 0A 94 00 0A E2
0999:A8 00 0A AA 80 16 AF E8 90
09A1:16 AF E8 0A AA 80 0A A8 7C
09A9:00 0A 94 00 0A 80 00 06 29
09B1:00 00 06 00 00 00 00 84
09B9:00 00 00 00 00 00 47 00 5A
09C1:00 00 00 00 00 00 00 D3
09C9:00 05 00 09 00 00 29 8E
09D1:00 00 2A 00 00 AA 00 01 D4
09D9:AA 00 01 6A 00 02 6A 40 25
09E1:0A AE 40 0A AF 80 1A AB AC
09E9:C0 1A 5A E0 04 10 A0 00 DD
09F1:00 08 00 00 00 00 00 06
09F9:00 00 00 00 00 00 47 00 9A
0A01:00 00 00 00 00 00 00 15
0A09:00 00 00 00 00 00 00 1D
0A11:00 00 04 00 05 A6 94 0A 9B
0A19:A6 A8 0A AA A8 02 AA A0 D9
0A21:02 AA A0 02 6E 60 00 6E 78
0A29:40 00 6E 40 00 2E 00 00 E7
0A31:2E 00 00 08 00 00 08 00 EC
0A39:00 08 00 00 00 00 47 00 DD
0A41:00 00 00 00 00 00 00 55
0A49:00 00 00 00 50 00 00 60 40
0A51:00 00 68 00 00 A8 00 00 15
0A59:AA 40 00 69 40 01 A9 80 43
0A61:01 BA A0 02 FA A8 03 EA 44
0A69:A9 03 AA A9 0A 96 04 08 BD
0A71:10 00 00 00 00 00 00 8D
0A79:00 00 00 00 00 00 47 00 1C
0A81:00 00 00 00 00 00 00 95
0A89:00 00 00 00 00 00 02 E1
0A91:90 00 02 A0 00 16 A0 00 D1
0A99:2A A0 02 AA A0 2B FA 94 12
0AA1:2B FA 94 02 AA A0 00 2A BE
0AA9:A0 00 16 A0 00 02 A0 00 24
0AB1:02 90 00 00 90 00 00 00 6F
0AB9:00 00 00 00 00 00 47 00 5C
0AC1:00 00 00 00 00 00 00 00 D5
0AC9:00 00 08 00 00 0A 84 F6
0AD1:00 02 E9 A9 02 FA A9 02 8F
0AD9:BE A9 01 AE A8 00 6A 60 3D
0AE1:00 6A 50 00 2A 80 00 2A 18
0AE9:80 00 2A 00 00 2A 00 00 2C
0AF1:18 00 00 14 00 00 00 00 53
0AF9:00 00 00 00 00 00 47 00 9C
0B01:00 00 00 00 00 00 00 17
0B09:00 00 00 00 00 00 00 27
0B11:00 02 20 20 00 00 00 00 B0
0B19:3B 00 01 22 10 00 22 00 D3
0B21:08 A2 80 02 0E 00 01 20 A6
```

```
0B29:80 00 08 20 00 80 40 00 05
0B31:00 00 00 00 00 00 00 47
0B39:00 00 00 00 00 00 47 00 DD
0B41:00 00 00 00 00 00 20 80 18
0B49:00 00 08 02 08 00 00 E0 A1
0B51:08 08 00 C0 04 10 62 00 9E
0B59:04 04 02 15 00 10 04 42 8E
0B61:00 10 20 08 00 00 00 02 02
0B69:00 20 2C 08 04 00 00 00 AD
0B71:80 00 08 08 60 00 00 00 4C
0B79:00 00 00 00 00 00 47 22 40
0B81:00 20 00 01 02 03 60 88 15
0B89:84 08 40 20 80 32 14 05 E7
0B91:00 80 41 12 01 14 00 90 F9
0B99:41 04 04 41 10 20 14 00 0F
0BA1:00 41 04 04 01 02 01 10 EA
0BA9:04 84 00 40 00 0C 02 10 2B
0BB1:00 00 00 00 40 40 00 08 F5
0BB9:00 00 00 00 00 00 47 04 62
0BC1:00 60 80 44 02 00 00 10 64
0BC9:01 40 00 10 04 40 00 00 92
0BD1:00 04 00 10 00 00 00 10 F9
0BD9:28 04 04 00 00 00 00 85
0BE1:80 40 04 04 01 00 01 10 23
0BE9:04 04 00 40 80 00 00 10 1B
0BF1:00 00 00 40 40 00 00 00 0E
0BF9:00 00 02 00 20 00 47 00 DF
0C01:00 00 00 00 00 00 00 00 19
0C09:00 00 00 00 00 00 44 65
0C11:40 00 04 00 00 11 00 00 0E
0C19:04 00 00 40 40 00 04 00 41
0C21:00 00 00 00 00 00 00 39
0C29:00 00 00 00 00 00 00 41
0C31:00 00 00 00 00 00 00 49
0C39:00 00 00 00 00 00 47 00 DF
0C41:A9 FF 85 FE 85 FC 8D 15 1F
0C49:D0 A9 D2 85 FF A9 22 85 57
0C51:FD A0 00 8C 0E DC A9 33 C3
0C59:85 01 B1 FE 91 FC C6 FC A5
0C61:C6 FE D0 F6 C6 FD C6 FF E1
0C69:A5 FF C9 CF D0 EC A9 37 4F
0C71:85 01 A9 01 8D 0E DC A9 D9
0C79:18 8D 18 D0 A2 64 BD 1E 51
0C81:00 9D 07 21 CA D0 F7 A9 AD
0C89:93 20 D2 FF A9 0B 8D 20 82
0C91:D0 8D 21 D0 8D 35 CD 8D 11
0C99:36 CD A2 0F 8E 08 CD BD 73
0CA1:77 CD 9D 74 05 BD 87 0D EE
0CA9:9D EC 05 A9 07 9D 74 D9 78
0CB1:9D EC D9 A9 00 9D 00 08 28
0CB9:8D 00 CD 8D 09 CD 8D 0B D0
0CC1:CD 8D 26 D0 CA 10 D8 AD EB
0CC9:00 DC 29 10 F0 0F 20 E4 28
0CD1:FF C9 20 D0 F2 A9 01 8D 3B
0CD9:54 CD 4C E6 0C A9 00 8D 1C
0CE1:54 CD 20 DA 0D 20 D5 0E EB
0CE9:A9 E5 8D 1C D0 A9 09 8D 90
0CF1:25 D0 20 EE 0D A2 06 BD 80
0CF9:77 D0 9D 21 04 BD 7F 0D F9
0D01:9D 49 04 A9 00 9D 60 CD 5C
0D09:9D 21 D8 9D 49 D8 CA 10 82
0D11:E6 20 9C 13 20 9A 0F 20 15
0D19:DA 0D 4C 41 0C AA 55 AA E1
0D21:55 AA 55 AA 55 AA 55 AA 90
0D29:55 AA 55 AA 55 AA 55 AA 98
0D31:55 AA 55 AA 55 AA 00 1F 6A
0D39:3F 3F 3F 3F 1F 00 00 F8 90
0D41:FC FC FC FC F8 00 00 1F 6F
0D49:3F 3F 3F 3F 1F 00 00 F8 A0
0D51:FC FC FC FC F8 00 00 1F 7F
```

0D59:3F 3E 3E 3F 1F 00 00 F8 50 0F89:03 8D 71 CD 78 A9 C9 8D 23 11B9:00 CB CD 39 CD D0 10 AD 9B
0D61:FC 7C 7C FC F8 00 00 1F 5F 0F91:14 03 A9 0F 8D 15 03 58 BF 11C1:09 CD C9 01 F0 09 AD 00 2C
0D69:3F 3E 3E 3F 1F 00 00 F8 60 0F99:60 78 AD 70 CD 8D 14 03 92 11C9:CD 18 69 EE 8D 04 CC AD B8
0D71:FC 7C 7C FC F8 00 03 08 5E 0FA1:AD 71 CD 8D 15 03 58 60 4B 11D1:09 CD C9 FE F0 25 AD 00 8C
0D79:05 03 0B 05 12 20 03 0F AE 0FA9:00 02 04 06 09 0B 0D 0F C6 11D9:CD 18 69 F9 8D 01 CC 8D 4D
0D81:0D 0D 01 0E 04 20 02 19 24 0FB1:10 12 14 16 29 2B 2D 2F BF 11E1:09 CC AA BD 00 CB CD 39 F0
0D89:20 0D 09 0B 05 20 13 05 9C 0FB9:30 32 34 36 39 3B 3D 3F D6 11E9:CD D0 10 AD 09 CD C9 02 19
0D91:04 0C 05 1A 0B 19 00 00 AF 0FC1:FF 01 00 00 00 00 02 FE 23 11F1:F0 09 AD 00 CD 18 69 F2 19
0D99:08 0A 07 07 0F 0F 07 07 55 0FC9:CE 1A 10 F0 03 6C 70 CD 5F 11F9:8D 05 CC AD 09 CD C9 FF AB
0DA1:0F 0F A2 06 B9 F9 10 9D 2F 0FD1:A9 3C 8D 1A 10 EE 64 CD F9 1201:F0 2D AD 00 CD 18 69 07 47
0DA9:61 05 B9 0E 11 9D 89 05 E4 0FD9:A2 03 BD 61 CD 1D 16 10 F9 1209:C9 40 B0 23 8D 02 CC 8D 06
0DB1:A9 0F 9D 61 D9 9D 89 D9 60 0FE1:D0 08 A9 00 9D 61 CD FE AC 1211:0A CC AA BD 00 CB CD 39 A2
0DB9:88 CA 10 E8 60 A2 06 B9 AE 0FE9:60 CD CA 10 ED A0 01 B9 B3 1219:CD D0 14 AD 09 CD C9 01 C9
0DC1:23 11 9D 01 06 B9 4D 11 38 0FF1:61 CD 09 30 99 9A 04 A9 41 1221:F0 0D AD 00 CD 18 69 0E 66
0DC9:9D 29 06 AD 06 CD 9D 01 3C 0FF9:0F 99 A9 D8 99 9D D8 99 75 1229:C9 40 B0 03 8D 06 CC AD 54
0DD1:DA 9D 29 DA 88 CA 10 E7 0B 1001:9C D8 B9 63 CD 09 30 99 9F 1231:09 CD C9 FE F0 2D AD 00 0E
0DD9:60 AD 00 DC 29 10 D0 F9 82 1009:9D 04 88 10 E2 A9 3A 8D CA 1239:CD 18 69 09 C9 40 B0 23 DB
0DE1:AD 00 DC 29 10 F0 F9 CE 08 1011:9C 04 6C 70 CD 0A 0A 06 C5 1241:8D 03 CC 8D 0B CC AA BD FD
0DE9:01 CD D0 FB 60 A9 74 85 E9 1019:0A 01 20 EE 0D AE 00 CD 62 1249:00 CB CD 39 CD D0 14 AD 35
0DF1:FF A9 00 85 FE A2 17 A9 29 1021:BD 80 CA 85 FF BD C0 CA 35 1251:09 CD C9 02 F0 0D AD 00 DD
0DF9:02 8D 02 CF A9 21 8D 01 A3 1029:85 FE A2 02 A0 03 A9 23 C7 1259:CD 18 69 12 C9 40 B0 03 6C
0E01:CF A0 1F A9 03 8D 00 CF C9 1031:91 FE 88 10 F9 A5 FE 18 68 1261:8D 07 CC AD 4A CD D0 29 D6
0E09:AD 01 CF 91 FE CE 00 CF 52 1039:69 28 85 FE A5 FF 69 00 B8 1269:AD 1C CD D0 05 AD 26 CD 2B
0E11:10 0D AD 01 CF 49 03 8D 75 1041:85 FF CA 10 E7 4C 45 0E 87 1271:F0 11 A9 FF 8D 00 CC 8D 1B
0E19:01 CF A9 03 8D 00 CF 88 A3 1049:20 06 10 A0 06 AD A3 0D 44 1279:01 CC 8D 04 CC 8D 05 CC B6
0E21:10 E6 CE 02 CF 10 D0 A9 7B 1051:A0 06 20 BE 0D AD 00 DC 2F 1281:4C 92 12 A9 FF 8D 02 CC 54
0E29:02 8D 02 CF AD 01 CF 49 41 1059:29 10 D0 10 AE 00 CD 8E CC 1289:8D 03 CC 8D 06 CC 8D 07 D
0E31:03 8D 01 CF A5 FE 18 69 12 1061:07 CD BD 00 CB C9 21 D0 C8 1291:CC 60 A9 3F 8D 31 CD A9 D3
0E39:28 85 FE A5 FF 69 00 85 30 1069:03 4C DA 0D 20 8A 10 AE 44 1299:00 8D 32 CD AE 31 CD BD D7
0E41:FF CA 10 BD A9 3F 8D 0F 62 1071:00 CD BD 00 CB C9 21 F0 75 12A1:00 CB CD 33 CD D0 5F 8E A4
0E49:CD AE 0F CD BD 80 CA 85 C1 1079:08 A9 0F 8D 06 CD 4C 87 4A 12A9:00 CD BD 80 CB 8D 1C CD 9B
0E51:FF BD C0 CA 85 FE BD 00 45 1081:10 A9 0D 8D 06 CD 4C 4C DA 12B1:20 8B 11 A0 07 B9 00 CC E0
0E59:CB F0 29 C9 21 F0 0F BD 02 1089:10 AD 00 DC 8D 02 CD AD A8 12B9:30 28 8D 34 CD AA BD 00 89
0E61:80 CB F0 05 A9 2A 4C 7B 29 1091:00 CD AE 00 CD BD C0 CB AD 12C1:CB D0 1A A9 01 8D 32 CD 4E
0E69:0E A9 26 4C 7B 0E BD 80 90 1099:AA AD 02 CD 29 04 D0 0A 9C 12C9:AD 34 CD 8D 30 CD AD 00 78
0E71:CB F0 05 A9 28 4C 7B 0E 62 10A1:E0 FF F0 39 CE 00 CD 4C 42 12D1:CD 8D 40 CD 98 29 03 8D 22
0E79:A9 24 A0 29 91 FE 18 69 3C 10A9:DE 10 AD 02 CD 29 08 D0 07 12D9:42 CD 4C E3 12 A9 FF 99 2B
0E81:01 C8 91 FE CE 0F CD 10 D0 10B1:0A E0 FE F0 06 EE 00 CD B7 12E1:00 CC 88 10 D0 A2 03 BD 20
0E89:C0 A9 00 85 FE 85 FC A9 7A 10B9:4C DE 10 AD 02 CD C9 7E ED 12E9:04 CC 30 17 8D 41 CD AD 75
0E91:04 85 FD A9 74 85 FF A9 CE 10C1:D0 0B AD 00 CD E9 08 8D 76 12F1:31 CD 8D 3F CD A9 01 8D 6C
0E99:17 8D 10 CF A0 1F B1 FE 87 10C9:00 CD 4C DE 10 AD 02 CD DD 12F9:3E CD 8E 43 CD BD 08 CC 38
0EA1:91 FC 29 0F AA A5 FD 85 49 10D1:29 02 D0 14 AD 00 CD 18 83 1301:8D 44 CD CA 10 E1 CE F1 C
0EA9:FA 18 69 D4 85 FD BD 97 FA 10D9:69 08 8D 00 CD AD 00 CD 55 1309:CD 10 91 60 A0 0D 20 BE 8A
0EB1:0D 91 FC A5 FA 85 FD 88 25 10E1:29 3F 8D 00 CD 20 1B 10 4D 1311:0D AD 00 DC 29 10 D0 4B 6D
0EB9:10 E4 A5 FE 18 69 28 85 F7 10E9:A9 14 8D 05 CD CE 04 CD 65 1319:AD 00 CD CD 12 CD F0 0A 60
0EC1:FE 85 FC A5 FD 69 00 85 D3 10F1:D0 FB CE 05 CD D0 F6 60 A3 1321:AD 06 CD C9 0D F0 03 4C 74
0EC9:FD 18 69 70 85 FF CE 10 F8 10F9:20 19 0F 15 12 20 20 0D 02 1329:0D 13 AD 00 CD C9 08 B0 A6
0ED1:CF 10 C9 60 A9 07 8D 18 B5 1101:19 20 14 15 12 0E 07 01 63 1331:05 A9 01 8D 1C CD C9 38 21
0ED9:CD A9 36 8D 16 CD A9 74 96 1109:0D 05 20 09 13 03 0F 0D 57 1339:90 05 A9 00 8D 1C CD AE 45
0EE1:85 FF A0 00 84 FE A9 1B 63 1111:0D 01 0E 04 14 0F 20 0D 26 1341:00 CD AD 1C CD 9D 80 CB 04
0EE9:8D 17 CD A2 07 AD 16 CD 5F 1119:0F 16 05 20 0F 16 05 12 D7 1349:A9 00 8D 1D CD AD 11 CD DC
0EF1:99 00 CA AD 17 CD 99 40 72 1121:20 20 13 05 0C 05 03 14 9C 1351:C9 04 90 05 A9 01 8D 1D 49
0EF9:CA 18 69 20 8D 17 CD A5 BA 1129:20 13 05 0C 05 03 14 20 FD 1359:CD A0 14 A9 0E 8D 06 CD 2C
0F01:FE 99 C0 CA 18 69 04 85 BD 1131:10 0C 05 01 13 05 20 20 1C 1361:4C BE 0D 20 8A 10 A2 07 E1
0F09:FE A5 FF 99 80 CA 69 00 AB 1139:20 19 0F 15 20 20 09 20 98 1369:BD 00 CC CD 00 CD F0 0B 09
0F11:85 FF A9 00 99 00 CB 99 25 1141:08 01 16 05 20 0A 15 0D 1B 1371:CA 10 F5 A9 0F 8D 06 CD E2
0F19:40 CB 99 80 CB 99 C0 CB 97 1149:10 09 0E 07 06 09 07 08 52 1379:4C 0D 13 8E 11 CD AD 11 80
0F21:C8 CA 10 C9 AD 16 CD 18 6E 1151:14 05 12 14 01 12 07 05 A5 1381:CD 29 03 AA BD 08 CC 8D 19
0F29:69 18 8D 16 CD A5 FE 18 30 1159:14 20 13 14 01 0E 04 02 7B 1389:1E CD AE 00 CD BD 00 CB 39
0F31:69 58 85 FE A5 FF 69 00 BA 1161:19 20 20 17 09 0E 20 20 6E 1391:D0 05 A9 0D 8D 06 CD 4C D3
0F39:85 FF CE 18 CD 10 A7 A2 16 1169:20 20 17 0F 0E 20 20 10 B8 1399:0D 13 00 A9 00 8D 26 CD F5
0F41:0B BD A9 0F A8 A9 25 99 4A 1171:05 0E 01 0C 14 19 20 7D 3D 13A1:8D 3E CD 8D 3B CD A9 01 16
0F49:00 CB A9 0F 99 40 CB BD A3 1179:11 4C 0D 13 AE 00 CD BD D8 13A9:8D 3D CD A9 21 8D 33 CD AD
0F51:B5 0F A8 A9 21 99 00 CB F8 1181:80 CB 8D 1C CD A9 00 9D FC 13B1:A9 25 8D 39 CD 20 93 12 6E
0F59:A9 07 99 40 CB CA 10 E1 D0 1189:80 CB A2 07 A9 8F 9D 00 2C 13B9:AD 32 CD D0 03 4C 8B 14 7E
0F61:A2 07 9D C1 0F 9D C0 CB A2 1191:CC 9D 08 CC 89 2F CD CA D6 13C1:AD 36 CD 30 F8 20 49 10 F3
0F69:9D C8 CB 9D D0 CB 9D D8 A5 1199:10 F2 AE 00 CD 8E 12 CD F0 13C9:20 23 16 20 EE 0D 20 99 13
0F71:CB 9D E0 CB 9D E8 CB 9D 7B 11A1:BD C0 CB 8D 09 CD C9 FF 38 13D1:16 20 77 11 AD 12 CD CD 2A
0F79:F0 9D 9D F8 CB CA 10 E2 D2 11A9:F0 25 AD 00 CD 18 69 F7 DC 13D9:00 CD D0 06 20 95 17 4C BF
0F81:AD 14 03 8D 70 CD AD 15 DF 11B1:8D 00 CC 8D 08 CC AA BD 93 13E1:C6 13 20 AD 14 AD 3E CD B0

PROGRAMS

```

13E9:F0 08 AD 3B CD D0 03 20 CB
13F1:7B 15 A0 0D 20 A3 0D A0 4A
13F9:14 A9 0E 8D 06 CD 20 BE 95
1401:0D A9 01 8D 26 CD A9 00 CE
1409:8D 3D CD 8D 3B CD 8D 3E 44
1411:CD A9 25 8D 33 CD A9 21 4D
1419:8D 39 CD 20 93 12 AD 32 84
1421:CD D0 03 4C 9B 14 AD 35 47
1429:CD 30 F8 AD 3E CD F0 2A 73
1431:8D 1D CD AD 43 CD 8D 11 79
1439:CD AD 3F CD 8D 00 CD 20 A0
1441:23 16 20 EE 0D 20 99 16 A5
1449:AD 41 CD 8D 00 CD AD 44 02
1451:CD 8D 1E CD 20 AD 14 4C 90
1459:81 14 4C BA 14 A9 00 8D 51
1461:1D CD AD 42 CD 8D 11 CD F9
1469:AD 40 CD 8D 00 CD 20 23 A5
1471:16 20 EE 0D 20 99 16 A5
1479:30 CD 8D 00 CD 20 AD 14 3D
1481:AD 00 CD C9 38 B0 03 4C AD
1489:9C 13 A0 14 20 A3 0D A0 64
1491:22 A9 0A 8D 06 CD 20 BE B5
1499:0D 60 A0 14 20 A3 0D A0 FF
14A1:1B A9 0A 8D 06 CD 20 BE 42
14A9:0D 4C 9A 14 20 EC 17 20 03
14B1:EE 0D 20 65 17 20 EE 0D 13
14B9:60 AD 54 CD D0 48 A9 01 E0
14C1:8D 4A CD A9 3F 8D 50 CD 36
14C9:AE 50 CD BD 00 CB C9 25 DA
14D1:D0 2F 8E 00 CD 20 8B 11 17
14D9:A9 02 8D 42 CD AE 02 CC 27
14E1:8E 30 CD BD 00 CB F0 3B 3F
14E9:AE 50 CD 8E 00 CD 20 8B 23
14F1:11 A9 03 8D 42 CD AE 03 EF
14F9:CC 8E 30 CD BD 00 CB F0 85
1501:22 CE 50 CD 10 C2 A9 00 B5
1509:8D 4A CD 20 93 12 4C 5E 24
1511:14 AE 50 CD A9 25 9D 00 F4
1519:CB AD 42 CD C9 03 D0 C8 7E
1521:4C 02 15 AE 00 CD A9 00 0A
1529:9D 00 CB AD 30 CD 8D 00 4A
1531:CD 20 8B 11 AE 02 CC 30 14
1539:13 BD 00 CB F0 0E C9 25 91
1541:F0 0A AE 01 CC 30 05 BD 3B
1549:00 CB F0 C5 AE 03 CC 30 2C
1551:16 AE 03 CC BD 00 CB F0 D5
1559:0E C9 25 F0 0A AE 00 CC 88
1561:30 05 BD 00 CB F0 AA AE C2
1569:50 CD 8E 40 CD A9 25 9D 02
1571:00 CB A9 00 8D 4A CD 4C 41
1579:5E 14 20 0B 16 A9 41 8D F3
1581:0B D4 A9 12 8D 3E CD AE 6C
1589:3F CD BD 00 CB F0 03 8E 35
1591:00 CD AD 9A 0D 49 0D 8D C3
1599:9A 0D 8D 08 D4 8D 0A D4 4C
15A1:8D 06 CD A0 29 20 BE 0D 2C
15A9:20 1B 10 20 EE 0D CE 3E 36
15B1:CD D0 DF A9 40 8D 0B D4 B0
15B9:20 23 16 20 EE 0D 20 99 07
15C1:16 20 02 16 A9 FA 8D 0D 02
15C9:D4 8D 0C D4 A9 2C 8D F8 A2
15D1:07 8D F9 07 A9 30 8D 20 DB
15D9:CD A9 81 8D 0B D4 A9 00 5D
15E1:8D 17 D4 20 24 17 A9 01 07
15E9:8D 08 D4 A9 80 8D 0B D4 37
15F1:8D 04 D4 A9 00 8D 00 D0 20
15F9:8D 02 D0 AE 3D CD DE 35 84
1601:CD A2 04 20 8E 16 CA 10 B1
1609:FA 60 A2 06 BD 4E 17 9D 72
1611:07 D4 CA 10 F7 60 A2 06 DC

```

```

1619:BD 4E 17 9D 00 D4 CA 10 6D
1621:F7 60 20 17 16 A9 13 8D E1
1629:17 D4 A9 1F 8D 18 D4 20 D3
1631:89 16 A9 41 8D 04 D4 AE C5
1639:00 CD 8E 45 CD BD 80 CB 31
1641:8D 47 CD BD 00 CB 8D 0D F2
1649:CD A9 21 8D F8 07 8D F9 BC
1651:07 BD 40 CB 8D 0E CD 8D 03
1659:27 D0 A9 00 9D 00 CB 9D A4
1661:40 CB 8D 28 D0 BD 00 CA 1D
1669:8D 01 D0 8D 03 D0 BD 40 A6
1671:CA 8D 00 D0 8D 02 D0 60 E9
1679:A9 05 8D 10 CD 4C 8E 16 41
1681:A9 0F 8D 10 CD 4C 8E 16 CB
1689:A9 46 8D 10 CD CE 0F CD 64
1691:D0 FB CE 10 CD D0 F6 60 FF
1699:20 89 16 EE F8 07 EE F9 A5
16A1:07 AD F8 07 C9 24 D0 F0 B6
16A9:A9 81 8D 04 D4 A2 04 A0 D0
16B1:03 20 89 16 C8 C8 8C 01 7D
16B9:D4 EE 03 D0 CE 01 D0 CA 60
16C1:10 EF 60 A9 02 8D 15 CD D6
16C9:20 81 16 CE 15 CD A9 0E 57
16D1:8D 01 D4 AD 01 D0 69 03 9B
16D9:CD 14 CD D0 01 60 AD 1B B8
16E1:CD C9 24 F0 09 EE 01 D0 D1
16E9:EE 03 D0 4C F5 16 CE 01 D3
16F1:D0 CE 03 D0 AD 23 CD C9 07
16F9:2A F0 14 EE 00 D0 EE 02 0C
1701:D0 AD 15 CD 10 C2 EE 00 EB
1709:D0 EE 02 D0 4C C4 16 CE 19
1711:00 D0 CE 02 D0 AD 15 CD A2
1719:10 AE CE 00 D0 CE 02 D0 6B
1721:4C C4 16 A9 04 8D 01 D4 31
1729:20 89 16 AD F8 07 CD 20 07
1731:CD F0 14 B0 09 EE F8 07 0D
1739:EE F9 07 4C 29 17 CE F8 3F
1741:07 CE F9 07 4C 29 17 A9 35
1749:0E 8D 01 D4 60 FF 04 FF 5A
1751:07 80 C1 FC 24 24 28 28 55
1759:2A 26 2A 26 2B 25 29 27 35
1761:27 29 25 2B AD 11 CD 29 3B
1769:03 AA BD 5D 17 8D 20 CD 4E
1771:20 24 17 BD 55 17 8D 1B B4
1779:CD BD 59 17 8D 23 CD AE DD
1781:00 CD 8E 46 CD BD 00 CA 89
1789:8D 14 CD BD 40 CA 8D 53 B4
1791:CD 20 C4 16 A9 24 8D 20 C1
1799:CD 20 24 17 A2 03 8E 01 EB
17A1:D4 20 89 16 CE 03 D0 EE E7
17A9:01 D0 AD 00 D0 CD 53 CD 74
17B1:F0 11 B0 09 EE 00 D0 EE 4B
17B9:02 D0 4C C4 17 CE 00 D0 B7
17C1:CE 02 D0 CA 10 DB A9 21 03
17C9:8D 20 CD 20 24 17 A9 80 D3
17D1:8D 04 D4 A9 00 8D 00 D0 04
17D9:8D 02 D0 AE 00 CD AD 0D F3
17E1:CD 9D 00 CB AD 0E CD 9D F9
17E9:40 CB 60 AD 1D CD D0 01 D4
17F1:60 8D 3B CD AD 11 CD 29 6E
17F9:03 AA BD 5D 17 8D 1F CD DC
1801:BD 61 17 8D 21 CD A9 13 CA
1809:8D 17 D4 20 0B 16 A9 21 87
1811:8D 0B D4 8D FA 07 8D FC 4A
1819:07 AE 1E CD BD 40 CB 8D 2D
1821:29 D0 BD 00 CA E9 03 8D 63
1829:05 D0 8D 09 D0 BD 40 CA 1B
1831:8D 04 D0 8D D0 A9 00 F2
1839:8D 2B D0 9D 00 CB 20 EE 4D
1841:0D 20 89 16 AD FA 07 8D 87

```

```

1849:0A D4 C9 25 F0 0F EE FA DB
1851:07 EE FC 07 CE 05 D0 EE EB
1859:09 D0 4C 42 18 20 89 16 5A
1861:AD FA 07 CD 21 CD F0 09 10
1869:EE FA 07 EE FC 07 4C 5E 9A
1871:18 AD 1F CD 8D 20 CD 20 82
1879:24 17 A9 FC 8D 0D D4 A9 7A
1881:80 8D 0B D4 20 89 16 A9 01
1889:81 8D 0B D4 A9 11 8D 17 50
1891:D4 A9 01 8D 2A D0 8D 21 60
1899:CD A9 20 8D FB 07 AD 01 50
18A1:D0 69 02 8D 07 D0 AD 00 84
18A9:D0 8D 06 D0 20 79 16 EE 75
18B1:21 CD AD 21 CD 8D 08 D4 37
18B9:AD 07 D0 CD 05 D0 F0 21 E7
18C1:B0 06 EE 07 D0 4C CC 18 83
18C9:CE 07 D0 AD 06 D0 CD 04 2B
18D1:D0 F0 D9 B0 06 EE 06 D0 B5
18D9:4C AD 18 CE 06 D0 4C AD 45
18E1:18 A9 01 8D 08 D4 A9 80 E8
18E9:8D 0B D4 A9 00 8D 06 D0 EB
18F1:8D 08 D0 A9 2C 8D FA 07 34
18F9:20 89 16 AD FA 07 C9 30 F1
1901:F0 06 EE FA 07 4C F9 18 30
1909:A9 00 8D 04 D0 AE 26 CD 5D
1911:DE 35 CD 60 00 00 00 00 BF

```

Michael Sedlezky, the author of *Hover-Jet* (October 1991), lives in Mississauga, Ontario, Canada.

COUNTRY CAB

Alain Tremblay

The people in a remote countryside community are looking for a cabdriver. The job has a certain appeal, and you decide to apply for it. Unfortunately, there is another contender for the position, so the residents must find a way to determine which of you to hire. They decide to put both of you to a test, with the job going to the most reliable cabdriver.

In this one- or two-player game, the first player to reach 500 gas points and attain a rating of A wins the game. You are also penniless and must earn enough money to pay for the local cabdriver's license.

Entering the Program

Country Cab is written entirely in machine language. To type it in, use *MLX*, our machine language entry program. See "Typing Aids" elsewhere in this section. When *MLX* prompts, respond with the following values.

Starting address: 0801
Ending address: 1CBO

The screen is divided into two halves,

a half for each cab. Each player can drive his or her car freely along roads and country lanes. The halves are separated by two lines of text. These lines provide players with useful information about their respective ratings, gas points earned, and fare status.

Only part of the countryside is visible at a time, and it's very easy to drive off the road. No harm will come unless you run into a fence or a tree at high speed. You may bog down, however. Unlike in real traffic, collisions have no effect at all.

One joystick is required to control each car. To accelerate, move the stick forward. Move the stick right or left to turn, and pull it back to brake. To shift into reverse gear, bring your car to a complete stop and press the fire button. Repeat the process to shift the cab back into forward gear.

From time to time, potential fares will appear on the road. A fare's presence is indicated by an onscreen hand. Its thumb points in the direction in which you're likely to find the waiting fare. The fare itself will appear on your screen as a flashing green character. To pick up a fare, stop your car close to the flashing character. The fare will point you toward his or her destination. The exact spot on the road is marked by an X, which flashes on your screen as you drive by. If another customer appears, feel free to stop. You can pick up as many as two fares at a time. Just as you would with human passengers, you'll have to humor you fares to win their esteem. Some will tell you to drive slower; others faster. Do as they say if you want your rating to improve and earn the job as driver.

They also pay, and you need gas points to win the game. Drive according to your fare's indications and check his or her mood. Infuriated fares exasperated by a driver's lack of compliance will leave without paying. Some fares are special. Watch out for a monster that eats cabdrivers who make him angry. A prison escapee is a generous fellow, but giving him a ride is unlawful. Picking him up could get you in trouble with the sheriff. There's also a robber who may change your fortune for the worse. In most cases, though, it's best to do exactly as you are told.

Edit Your Maps

Also included is an optional editor that allows you to edit, save, and load previously saved maps so you can change the game's layout.

Map Editor is written entirely in machine language. Use *MLX* again to enter it. When *MLX* prompts you, respond with the following values.

Starting address: 2000

Ending address: 2247

Remember to save a copy of the program before you exit *MLX*.

To use *Map Editor*, load *Country Cab* without running it; then load *Map Editor* with the .8,1 extension. Then type SYS 8192 and press Return.

The screen will clear, and you will then see a much reduced and approximate representation of the actual map found in the game.

The map is composed of 12 x 21 "tiles." Each tile is composed of several characters to make up roads, trees, and so on. On the editor's screen, each tile is represented by a single character which roughly depicts its corresponding tile in the game. There are 21 such characters. The only character which may be difficult to decipher is the Commodore club character (ASCII 120 or Screen Code 88). This figure represents a forest tile.

Edit from the keyboard. Each tile character has a corresponding letter listed at the top of the screen. A cursor helps you to see where your next selection will be entered. The Home, Del, Return, and cursor keys work the same as in BASIC except that the cursor is restricted to the 12 x 21 area. You can use the space bar instead of the G key to enter blanks. Press f3 to load a saved map and f5 to save the one you are currently editing. In both cases you will be asked for a filename. After the load or save, you may resume editing.

To play the game, press f7. Be sure you have saved it first, or your editing will be lost. Once a game has started, you cannot return to the editor.

Any saved map can only be played after it has been loaded by the map editor. You cannot substitute your own map for the original one found in the game. That would require the game being rewritten and compiled.

COUNTRY CAB

```

0801:0B 08 0A 00 9E 32 30 36 2E
0809:32 00 00 00 00 20 D3 11 6B
0811:20 9B 14 20 DD 15 20 8B AB
0819:0F A2 40 A9 00 95 37 9D 5E
0821:F0 3F 9D D0 CF BD FA 11 B6
0829:9D 00 D4 CA 10 ED 20 A4 6C
0831:0E 20 84 10 20 13 12 A2 F5
0839:02 20 1D 0A A9 D0 9D F9 5C
0841:07 A9 C0 9D F8 07 0A 95 BE
0849:4C 20 C5 0E CA CA 10 E9 AC
0851:20 0D 0F 20 76 10 20 4F 1C
0859:0A C6 2C D0 34 A2 02 B5 98
0861:67 48 F0 06 D6 67 A0 07 52
0869:D0 05 B5 4C 20 E3 09 8A CB
0871:F0 02 A2 07 B9 DB 09 9D 2C
0879:07 D4 B9 D3 09 9D 08 D4 5A
0881:68 D0 05 A9 21 9D 0B D4 9F
0889:8A F0 02 A2 02 CA CA 10 66
0891:CE C6 2B D0 C1 A2 02 AD 77
0899:01 DC 29 1F C9 10 B0 31 99
08A1:B4 4C 10 2D B4 64 10 09 54
08A9:C8 30 23 20 EC 09 4C 54 09
08B1:08 56 4C B5 5C 49 08 95 ED
08B9:5C 8A D0 0A AD E0 05 49 99
08C1:9B 8D E0 05 D0 08 AD 08 79
08C9:06 49 9B 8D 08 06 4C 8F FB
08D1:09 B4 5B D0 04 B4 FB 10 07
08D9:02 A9 1D 4A 6A D6 FC D0 17
08E1:31 A0 10 94 FC B0 1B 16 F4
08E9:4C D0 17 76 4C B5 64 30 D0
08F1:02 94 FB B5 5B F0 08 4A FB
08F9:F0 03 4A 95 5B 56 FC 4C 60
0901:82 09 A8 30 0D 56 4C F0 F9
0909:06 B5 4C D5 5C B0 02 36 52
0911:4C 98 B4 3C 4A B0 0B 88 7D
0919:88 88 30 14 C0 7D 90 10 06
0921:A0 80 4A B0 0B C8 C8 C8 CD
0929:10 06 C0 83 B0 02 A0 7F 63
0931:20 B9 09 A0 00 B5 3C 10 4C
0939:04 88 88 49 FF C8 84 02 43
0941:20 E3 09 B9 CB 09 D0 04 41
0949:95 5F F0 45 D5 3D B0 41 B6
0951:A9 00 95 3D BD F8 07 65 04
0959:02 29 0F 09 C0 9D F8 07 9E
0961:09 10 9D F9 07 C0 06 90 27
0969:18 B5 4C 4A 90 13 2A 95 DD
0971:5F A4 0C D0 03 88 94 FB 4A
0979:C0 E0 90 09 4E 7A 09 D0 06
0981:10 A9 00 95 5F B5 FB 30 59
0989:08 A9 E0 8D 7A 09 20 C5 FC
0991:0E B5 5B 4A 15 5F 95 5F D8
0999:AD 00 DC CA CA 30 03 4C 34
09A1:9B 08 A5 4C 18 65 4E 20 10
09A9:E3 09 B9 47 0A 8D 55 0A D6
09B1:38 2A 0A 85 2B 4C 57 08 45
09B9:C0 00 30 07 88 F0 08 88 43
09C1:4C C8 09 C8 F0 01 C8 94 8B
09C9:3C 60 00 00 1C 18 14 10 8B
09D1:0C 08 04 02 01 01 01 01 9B
09D9:01 01 FF FD FB 88 86 84 20
09E1:82 20 A0 07 0A B0 03 88 63
09E9:D0 FA 60 A9 00 95 64 95 7E
09F1:FB 86 04 A0 02 8A 4A AA A7
09F9:69 02 D9 60 D0 00 09 A9 81
0A01:FF 99 63 00 8A 20 63 0C 8F
0A09:A6 04 84 26 84 28 88 88 C2
0A11:10 E3 20 1D 0A 98 AA A9 AD
0A19:1E 4C B5 0C A9 A0 8D 96 48

```

PROGRAMS

```

0A21:11 8A 48 20 8A 11 B0 FB 61 0C51:A9 22 C8 91 22 A9 20 C0 B1 0E81:E5 03 E0 01 D0 03 18 69 A9
0A29:68 AA 4A A8 A5 22 E9 11 8A 0C59:1F D0 F7 60 20 63 0C 4C 2D 0E89:7C 9D 92 14 98 D0 0B 66 63
0A31:95 B2 A5 23 E9 05 95 B3 E5 0C61:88 0B 85 02 4A 99 60 00 CA 0E91:02 90 03 BD 98 14 9D 72 D1
0A39:A9 02 99 82 00 99 80 00 65 0C69:99 09 D0 99 0D D0 85 26 21 0E99:00 60 A2 00 F0 18 AD 6B D0
0A41:A9 1E 99 6D 00 60 01 01 40 0C71:85 28 98 AA A9 A0 81 53 3A 0EAL:14 30 16 A2 07 BD BB 0E 75
0A49:0E 11 11 12 12 11 CE 47 A5 0C79:B6 68 F8 BD 1D 0D 38 F9 89 0EA9:9D 00 D0 CA 10 F7 AD 10 27
0A51:0A D0 97 A9 05 8D 47 0A 23 0C81:63 00 90 1A 85 28 E0 09 96 0EB1:D0 29 F0 8D 10 D0 8E 6B C3
0A59:A2 02 A0 00 94 02 94 03 2C 0C89:D0 14 AD 12 D0 10 04 A6 5B 0EB9:14 60 A8 54 A8 54 A8 C8 03
0A61:D6 4D D0 1A B5 4C 95 4D 47 0C91:02 95 6B 09 14 18 65 28 02 0ECL:A8 C8 A8 50 BD F8 07 18 76
0A69:30 14 E8 D6 40 D0 09 B5 32 0C99:85 28 90 02 E6 26 D8 A6 D8 0EC9:75 5C 29 0F A8 A9 FF 95 4F
0A71:48 95 40 B5 44 95 02 88 77 0CAL:02 B9 63 00 C9 0F 90 02 43 0ED1:44 95 45 A9 01 C0 08 90 64
0A79:CA 8A 4A 90 EE E8 98 95 C9 0CA9:A9 0F 75 6D E9 04 95 6D D7 0ED9:02 95 44 C0 0C B0 04 C0 DC
0A81:06 F0 04 F6 50 F6 3D CA 68 0CB1:96 63 84 03 A0 00 38 C8 EC 0EE1:04 B0 02 95 45 98 29 07 AB
0A89:CA 10 CF AD DB 04 C9 92 F0 0CB9:E9 0A B0 FB 98 4A D0 04 B2 0EE9:A8 B9 01 0F 95 48 95 40 13
0A91:B0 05 A2 00 20 87 0D AD 7A 0CC1:A9 05 95 6D 8A 18 69 05 06 0EF1:D0 02 95 44 B9 05 0F 95 83
0A99:0B 07 C9 92 B0 05 A2 02 38 0CC9:85 23 BD 1B 0D 85 22 98 32 0EF9:49 95 41 D0 02 95 45 60 A6
0AA1:20 87 0D A5 06 05 08 F0 E8 0CD1:A0 05 91 22 BD 89 0F 85 87 0F01:00 04 03 02 02 02 03 04 C2
0AA9:03 4C 15 0E A2 02 B5 50 AE 0CD9:22 A9 20 91 22 C8 C0 20 60 0F09:00 04 03 02 A9 04 A2 50 9B
0AB1:10 11 86 04 8A 4A 95 50 1C 0CE1:D0 F9 8A 48 20 40 0F 68 3F 0F11:9D DF D9 CA D0 FA 86 26 83
0AB9:AA 20 3A 0F D0 38 A6 04 1C 0CE9:A4 03 AA B5 80 C9 05 B0 AB 0F19:86 28 20 40 0F A2 01 20 B1
0AC1:20 F7 0D CA CA 10 E7 A5 3E 0CF1:01 60 B5 6D C9 0A B0 F9 02 0F21:40 0F A2 07 BD 32 0F 9D 5A
0AC9:0D F0 03 4C 67 12 AD 12 B6 0CF9:85 0C A0 13 20 24 0C A6 6D 0F29:E0 05 9D 08 06 CA 10 F4 9D
0AD1:D0 29 0F 05 0C D0 20 AA 59 0D01:0C D0 FC A0 12 20 24 0C 64 0F31:60 1E 20 04 20 07 01 13 7D
0AD9:A8 A5 60 F0 07 E8 A0 02 E5 0D09:AD 01 DC 2D 00 DC 29 1F 8D 0F39:3A A9 99 85 26 85 28 BD BF
0AE1:A5 62 D0 13 A9 BF 99 60 8C 0D11:C9 10 B0 F4 A2 F8 9A 4C F3 0F41:89 0F 85 24 A0 05 A9 7F CC
0AE9:00 9D FC 07 9D FE 07 20 8C 0D19:1A 08 DD 05 3C 32 00 00 F8 0F49:CA D0 03 C8 A9 80 85 84 C6
0AF1:5D 0D A9 92 81 53 60 A0 11 0D21:5F 4B 37 5F 41 5A 5A 04 C6 0F51:84 25 A0 03 A9 00 85 85 1D
0AF9:02 A5 0C C9 0A B0 32 B6 C4 0D29:01 00 00 01 03 03 01 04 FD 0F59:F8 18 B1 84 79 25 00 91 6A
0B01:60 10 21 20 33 0D A6 02 8E 0D31:01 01 A2 02 A9 00 95 02 FA 0F61:84 08 AA 29 0F 09 30 91 3A
0B09:BD 2A 0B 99 08 D0 BD 2E B0 0D39:B5 B2 18 69 13 F9 53 00 9B 0F69:24 88 8A 4A 4A 4A 09 CA
0B11:0B 99 09 D0 A6 04 BD 2E 30 0D41:10 02 49 FF 95 57 36 02 85 0F71:30 91 24 28 88 10 E3 D8 38
0B19:0B 69 6C 99 D0 D0 BD 2A 87 0D49:B5 B3 69 06 F9 54 00 10 E9 0F79:C8 A9 30 D1 24 D0 06 A9 A3
0B21:0B 99 0C D0 88 88 10 D7 10 0D51:02 49 FF 95 58 36 02 CA 82 0F81:20 91 24 D0 F3 C0 04 60 B0
0B29:60 FF FF 60 60 7A 32 7A 41 0D59:CA 10 D9 60 A9 81 8D 12 9E 0F89:E8 10 A2 B3 8E 01 10 CA 13
0B31:32 B9 60 00 F0 51 48 20 58 0D61:D4 A9 FF 8D 0F D4 98 AA D0 0F91:8E F9 0F A9 3A A0 00 A2 E8
0B39:33 0D 98 4A AA 68 30 4C 87 0D69:AD 1B D4 95 53 AD 1B D4 71 0F99:00 20 AC 0F A2 B5 8E 01 50
0B41:4A 90 21 A5 4E 10 0A A5 8B 0D71:C9 40 90 F9 C9 D0 B0 F5 1B 0FAL:10 CA 8E F9 0F A9 3A A0 20
0B49:59 05 5A C9 03 A9 01 90 86 0D79:95 54 A1 53 C9 A0 D0 E8 38 0FA9:84 A2 0E 85 25 84 26 86 DA
0B51:21 A9 A8 99 0C D0 A9 A0 AC 0D81:A9 21 8D 12 D4 60 85 22 E0 0FB1:24 20 0F D0 A2 00 20 03 25
0B59:99 0D D0 A5 04 69 BA 9D C8 0D89:C9 8C 90 08 BD 11 0E 0D 99 0FB9:10 E0 0C D0 F9 C6 02 D0 66
0B61:FE 07 D0 23 A5 4C 10 0D 90 0D91:1B D0 D0 06 BD 12 0E 2D 67 0FCL:F3 20 03 10 20 0F 10 A6 47
0B69:A5 57 05 58 C9 03 A9 00 FB 0D99:1B D0 8D 1B D0 B5 4C 30 FE 0FC9:24 18 20 F0 FF A2 00 A0 3E
0B71:B0 03 4C 5D 0C A9 A8 99 F1 0DAL:E4 20 E3 09 B5 64 30 DD C0 0FD1:05 A5 D1 9D 20 3E 20 06 30
0B79:08 D0 A9 32 99 09 D0 A5 58 0DA9:C0 03 B0 02 A9 FF 95 FB 8F 0FD9:10 CA A5 D2 9D 40 3E 20 1F
0B81:02 18 69 BB 9D FC 07 88 FE 0DB1:A5 0C C9 10 B0 0F 4A B9 EB 0FE1:06 10 98 18 69 0A 8A 90 F0
0B89:88 10 A6 60 A2 04 CA CA 48 0DB9:CD 09 B0 02 49 FF 75 3C A4 0FE9:02 E6 23 A9 11 20 D2 FF 70
0B91:30 F5 B5 57 15 58 C9 03 0A 0DC1:95 3C 20 C5 0E A9 00 95 C2 0FF1:C6 02 D0 DD 60 A0 27 B1 71
0B99:B0 F4 B5 4C 10 F0 A9 0F 58 0DC9:5F A5 22 C9 87 90 B6 B5 7F 0FF9:B2 99 0D 04 88 10 F8 E6 75
0BA1:95 0E 99 6F 00 A9 00 95 6C 0DD1:4C 4A B0 0B A5 0C C9 40 9C 1001:B3 60 BD F6 0F E8 91 22 9B
0BA9:0F 85 28 8A 4A AA 86 02 62 0DD9:B0 04 A9 01 95 5B 60 2A 97 1009:C8 D0 02 E6 23 60 A9 0B 69
0BB1:69 02 99 60 00 99 09 D0 7F 0DE1:85 2C A9 18 95 67 8A F0 D0 1011:85 02 A5 25 85 23 A5 26 A5
0BB9:99 0D D0 69 03 85 23 BD C2 0DE9:02 A9 07 A8 A9 81 99 0B 6C 1019:85 22 A0 00 60 A2 03 A9 D5
0BC1:89 0F 85 22 98 AA A9 A0 96 0DF1:D4 A9 80 99 0B D4 A0 FF 77 1021:00 85 26 B5 02 18 75 37 55
0BC9:81 53 20 5D 0D A9 93 81 07 0DF9:94 FB 94 0E 88 94 64 8A BA 1029:A8 29 07 95 22 98 10 04 B9
0BD1:53 A9 99 85 26 AD 12 D0 64 0E01:4A A8 69 05 85 23 B9 89 9F 1031:F6 B2 D0 06 C0 08 D0 05 C0
0BD9:2C 45 0C 29 0F C9 0B B0 D1 0E09:0F 85 22 A0 11 4C 24 0C 6A 1039:D6 B2 38 26 26 CA 10 E3 3B
0BE1:F8 99 68 00 84 03 A8 C0 2A 0E11:03 FC 0C F3 20 1E 10 A5 ED 1041:A2 02 A0 00 B5 B3 C9 40 97
0BE9:03 D0 11 A6 02 B5 6B F0 F0 0E19:B5 38 E5 B3 C9 06 90 04 A1 1049:90 06 C9 C5 90 04 A0 07 A5
0BF1:16 A9 00 95 6B 20 19 0C F0 0E21:C9 FA 90 7A 85 05 A5 B4 DA 1051:94 23 CA CA 10 EE A6 22 36
0BF9:A0 0F D0 0B C0 02 D0 0C AA 0E29:38 E5 B2 C9 14 90 04 C9 82 1059:A4 23 A5 26 D0 0D 86 37 AA
0C01:A6 02 20 19 0C A0 02 98 02 0E31:EB 90 6B A2 02 85 04 A0 CD 1061:84 38 A5 24 85 39 A5 25 4A
0C09:A6 03 95 63 20 24 0C A4 6C 0E39:00 20 41 0E A2 03 A0 01 C9 1069:85 3A 60 AD 12 D0 C9 A8 D1
0C11:03 A2 00 86 0C 4C 88 0B 69 0E41:A9 37 8D 5C 0E B9 04 00 D6 1071:90 F9 20 5F 10 A5 B5 48 1D
0C19:B5 80 C9 01 B0 02 85 26 34 0E49:10 0D 38 E9 01 49 FF EE 72 1079:A6 B3 20 00 3A 86 B3 68 99
0C21:4C 40 0F A9 27 8D 33 0C 0D 0E51:5C 0E 0E 5C 0E CA CA 0A FD 1081:85 B5 60 20 09 11 A9 40 FF
0C29:A2 FF E8 D0 03 EE 33 0C 03 0E59:0A 0A 79 37 00 38 F5 37 A3 1089:85 25 A0 00 84 24 A2 90 54
0C31:BD 00 28 D0 F5 88 10 F2 1F 0E61:85 03 18 79 C3 0E 26 02 40 1091:A9 A0 C0 FC 90 02 A9 84 FA
0C39:AD 33 0C 8D 4E 0C A0 04 37 0E69:E0 01 D0 03 18 69 7C 9D 7D 1099:91 24 C8 D0 F3 E6 25 CA 02
0C41:A9 22 C8 E8 D0 03 EE 4E 1D 0E71:92 14 98 D0 03 9D 72 00 6F 10A1:D0 EE A9 40 85 25 A9 15 48
0C49:0C 91 22 BD 00 28 D0 F2 1D 0E79:8A 49 02 AA B9 C3 0E 38 49 10A9:85 03 BC CF 29 B9 A9 11 76

```


10B1:8D	CA	10	B9	AA	11	8D	CB	69	12E1:09	98	A0	0B	38	E5	02	10	E2	1511:A9	10	85	05	20	5E	15	A9	63
10B9:10	8A	48	A5	25	85	23	A2	10	12E9:10	C9	FE	B0	1A	B5	5F	F0	CA	1519:15	85	04	A9	03	85	03	B1	30
10C1:FF	A0	00	A9	01	85	02	E8	AF	12F1:0D	A6	03	F6	63	A0	0E	D0	A0	1521:22	85	06	A9	01	85	02	4A	85
10C9:BD	00	00	F0	19	C9	01	F0	BA	12F9:05	C9	02	90	0A	C8	20	24	34	1529:06	06	90	02	05	02	06	02	48
10D1:0B	C9	00	10	F0	91	24	C8	C9	1301:0C	A6	03	F6	63	D0	9C	A5	E3	1531:90	F6	A6	05	E0	08	B0	0C	1B
10D9:C0	0C	D0	04	E6	25	A0	00	C4	1309:03	4A	65	04	A8	BE	FC	07	71	1539:AA	29	AA	4A	85	02	8A	29	6F
10E1:C6	02	D0	F1	F0	DD	68	AA	99	1311:BD	78	12	A6	04	38	FD	F8	D6	1541:55	0A	05	02	91	24	E6	22	66
10E9:E8	E0	FC	F0	6D	A9	0C	1A	A7	1319:07	10	02	49	FF	A6	03	C9	06	1549:C6	24	C6	03	D0	D1	A5	24	26
10F1:C6	03	D0	0A	65	23	85	25	D8	1321:03	90	09	A0	0D	56	6F	90	49	1551:18	69	06	85	24	C6	04	D0	10
10F9:A9	00	85	24	F0	A8	65	24	FA	1329:D5	4C	A4	12	38	36	6F	4C	C8	1559:C2	C6	05	D0	B7	A4	FF	B9	4E
1101:85	24	A5	23	85	25	D0	A2	DA	1331:A2	12	C6	C2	CA	CE	A9	00	17	1561:92	15	85	22	B9	79	15	85	50
1109:A2	00	A9	04	85	02	A0	8C	F3	1339:18	69	07	88	10	FB	AA	A0	95	1569:23	B9	C4	15	85	24	B9	AB	59
1111:98	9D	00	04	18	69	03	9D	31	1341:05	A9	20	91	22	BD	7B	29	99	1571:15	85	25	E6	FF	A0	00	60	7D
1119:0C	04	E8	C8	0C	8F	D0	F0	C2	1349:C8	E8	C0	0D	90	F5	C0	14	E8	1579:2F	30	30	30	30	34	34	34	3F
1121:C6	02	D0	EA	8A	18	69	0C	83	1351:D0	EF	A6	03	A0	FF	B5	63	B4	1581:34	2F	2F	31	31	31	31	30	6B
1129:AA	E0	90	D0	DD	A2	00	A0	12	1359:C8	E9	06	B0	FB	C0	04	B0	C5	1589:30	30	35	35	35	35	34	34	EC
1131:00	B9	54	11	9D	00	05	B9	0E	1361:2F	C0	02	D0	0D	B5	68	C9	76	1591:34	80	C0	80	40	00	C0	80	1A
1139:57	11	9D	00	06	E8	C8	C0	25	1369:0A	F0	48	C9	04	D0	03	D6	B6	1599:40	00	80	40	C0	80	40	00	80
1141:04	90	EE	E0	30	D0	E8	A9	B5	1371:63	88	A2	FF	E8	BD	5E	29	E3	15A1:C0	80	40	C0	80	40	00	C0	26
1149:00	8D	90	04	8D	30	05	8D	E5	1379:D0	FA	88	10	F7	A9	20	A0	20	15A9:80	40	2F	31	31	31	32	35	05
1151:30	06	60	09	A0	03	84	84	48	1381:13	E8	C8	91	22	BD	5E	29	8B	15B1:35	35	36	2F	2E	32	32	32	4E
1159:84	01	A9	84	8D	7E	0D	8D	89	1389:D0	F7	20	56	0C	4C	A2	12	68	15B9:33	33	33	33	36	36	36	37	12
1161:96	11	20	8A	11	A9	A0	8D	BD	1391:A6	04	A0	02	94	5B	A4	03	9E	15C1:37	37	37	40	40	80	C0	00	C5
1169:7E	0D	B0	15	A0	00	A2	8C	4C	1399:99	63	00	8A	4A	85	02	B9	34	15C9:40	80	C0	00	02	C2	42	82	6E
1171:8A	91	22	C8	E8	E0	8F	D0	C8	13A1:68	00	C9	09	8D	8B	05	0F	E6	15D1:C2	02	02	42	82	C2	42	82	C3
1179:04	E6	23	A0	00	E0	92	D0	3F	13A9:30	04	A6	02	95	6B	A5	02	85	15D9:02	42	82	C2	A9	03	85	05	7B
1181:EF	AD	12	D0	C9	FC	90	D2	8C	13B1:4C	9F	12	A6	04	B5	64	D0	23	15E1:A9	28	85	23	A2	00	86	22	12
1189:60	A0	CF	20	5D	0D	A2	02	66	13B9:09	A0	10	94	64	20	24	0C	CF	15E9:86	03	A9	80	85	02	A0	00	CA
1191:A0	02	B1	22	C9	84	D0	0E	EC	13C1:F0	03	20	F7	0D	4C	A2	12	95	15F1:BD	ED	1A	48	4A	4A	4A	4A	98
1199:88	10	F7	E6	23	CA	D0	F0	48	13C9:A9	17	A6	0D	10	02	A9	2B	37	15F9:86	04	20	12	16	68	29	0F	41
11A1:C6	23	C6	23	18	60	38	60	0E	13D1:A2	02	38	2A	B4	60	30	02	FC	1601:20	12	16	A6	04	E8	D0	E8	3D
11A9:00	2C	00	04	57	2C	88	2C	BF	13D9:09	50	86	0D	B4	5B	C0	01	CF	1609:EE	F3	15	C6	05	D0	E1	F0	D8
11B1:B9	2C	3E	2C	F3	2C	CB	09	37	13E1:D0	07	AC	12	D0	10	02	D6	8A	1611:1E	A6	03	1E	53	1C	2A	C9	61
11B9:0A	2D	0F	2D	14	2D	00	05	3B	13E9:5B	CA	CA	10	E5	8D	15	D0	2B	1619:1B	90	04	AA	BD	10	16	46	C2
11C1:00	06	1B	2D	31	2D	7A	2D	FB	13F1:A2	0F	BD	90	3C	49	FF	29	1E	1621:02	90	04	66	02	E6	03	4C	57
11C9:9E	2D	C2	2D	C5	2D	CA	2D	57	13F9:55	9D	90	3C	CA	10	F3	60	E6	1629:07	10	20	21	27	C2	3F	1E	79
11D1:DD	2D	78	A9	33	85	01	A2	2C	1401:A9	01	8D	19	D0	E6	0C	A6	62	1631:CF	29	E8	D0	FA	A9	2C	85	16
11D9:00	BD	00	D0	9D	00	38	BD	93	1409:0C	F0	04	E0	80	D0	03	E8	38	1639:23	A2	00	20	6E	16	48	4A	48
11E1:00	D1	9D	00	39	A9	00	9D	3A	1411:86	FD	A6	07	F0	30	CA	86	69	1641:4A	4A	4A	20	53	16	68	F0	25
11E9:00	3D	BD	02	18	9D	00	3C	A6	1419:07	D0	0D	A0	02	20	6C	14	22	1649:2D	B0	F0	29	0F	20	53	16	9E
11F1:CA	D0	E6	A9	36	85	01	58	47	1421:A6	39	A5	3A	A0	24	D0	31	AB	1651:D0	E9	C9	0B	90	0B	E9	0B	D9
11F9:60	00	41	00	00	02	FF	B8		1429:A5	5F	05	61	F0	0C	A9	17	DA	1659:C9	04	90	0E	20	6E	16	D0	16
1201:00	00	00	00	21	22	FF	00	B6	1431:CD	46	14	D0	02	A9	27	8D	F3	1661:09	C9	05	D0	02	A9	20	09	32
1209:00	00	00	21	22	FF	00	FF	50	1439:46	14	8D	04	D4	A9	10	A0	89	1669:80	18	4C	07	10	BD	7A	16	58
1211:FF	74	A9	93	20	D2	FF	78	80	1441:A7	A2	08	D0	14	17	A0	00	32	1671:08	D0	03	EE	70	16	60	60	92
1219:A9	14	8D	15	03	A9	01	8D	68	1449:20	6C	14	A9	02	85	07	A6	94	1679:E0	F0	0B	43	F0	0A	43	CF	7D
1221:14	03	A9	7F	8D	0D	DC	A2	3A	1451:37	A5	38	D0	02	09	01	A0	69	1681:06	A9	84	3C	F0	05	49	84	0A
1229:1F	BD	47	12	9D	0F	D0	CA	EB	1459:8E	09	18	8D	11	D0	8C	12	DD	1689:3C	F0	04	A9	84	3C	E4	98	9C
1231:D0	F7	86	07	58	A9	0D	9D	1E	1461:D0	8A	09	10	8D	16	D0	4C	69	1691:43	CD	49	84	3C	49	84	3C	90
1239:00	D8	9D	00	D9	9D	00	DA	67	1469:81	EA	FF	AE	6B	14	D0	1E	63	1699:98	43	CD	43	C4	3C	3B	F0	4F
1241:9D	00	DB	CA	D0	F1	60	00	6B	1471:B9	90	14	9D	00	D0	9D	02	77	16A1:54	5F	04	52	F0	07	4E	52	08
1249:1B	24	00	00	FF	00	00	1E	22	1479:D0	99	94	14	9D	04	D0	9D	88	16A9:F0	08	4D	52	F0	09	45	2F	84
1251:01	01	00	0A	00	00	00	FB	D2	1481:06	D0	E8	C8	E0	02	D0	E8	24	16B1:0A	42	F0	0B	4B	F0	0B	52	C8
1259:FB	FD	F9	00	FE	FE	F0	F2	03	1489:B9	70	00	8D	10	D0	60	A8	B0	16B9:F0	0A	52	4F	09	52	D4	F0	4C
1261:F0	F7	F1	F3	F1	F3	A2	02	20	1491:54	00	00	00	00	A8	C8	C0	24	16C1:09	5E	4F	09	5E	4F	09	5E	25
1269:B4	64	C8	10	05	8A	4A	8A	AA	1499:00	03	A9	A2	85	22	A9	18	02	16C9:4F	09	5E	4F	09	5E	4F	09	0A
1271:10	09	B4	60	F0	2D	30	2B	44	14A1:85	23	A9	2F	8D	C6	14	A2	CF	16D1:5E	4F	09	5E	4F	09	5E	4F	B2
1279:88	88	18	18	69	05	85	23	26	14A9:00	A0	00	A9	01	85	FF	B1	64	16D9:09	5E	4B	F0	09	5E	4F	09	04
1281:B9	89	0F	85	22	98	0A	85	2C	14B1:22	C8	D0	02	E6	23	C9	FB	AA	16E1:5E	4F	09	5E	4F	09	5E	4F	C2
1289:04	B4	68	86	03	A6	04	B9	C6	14B9:D0	09	B1	22	85	FF	F0	12	05	16E9:09	5E	4F	09	5E	4F	09	5E	4D
1291:28	0D	85	02	D0	14	56	0E	6F	14C1:C8	A9	00	9D	80	2F	E8	D0	F5	16F1:4F	09	5E	4F	09	5E	4F	09	32
1299:B0	14	A4	03	8A	4A	20	63	01	14C9:03	EE	C6	14	C6	FF	D0	F3	15	16F9:								

PROGRAMS

```

1741:4B F0 54 5F 0C AF 30 4B 9C
1749:F0 54 5F 07 41 CF 08 41 FB
1751:CF 09 41 CF 0A 41 CF 0B CE
1759:41 B0 F0 0B 45 0F 0A 4D EA
1761:50 46 7F 06 4E 50 46 7F 59
1769:05 4F 04 50 46 7F 04 4F FA
1771:05 50 46 7E 4F 06 50 46 60
1779:7D 4F 07 50 46 74 F0 08 0E
1781:50 46 7F 09 50 46 F0 0A 71
1789:50 4F 0B 50 B1 C4 1C D4 C7
1791:1C E4 CE 4C E4 CE 4C E4 85
1799:CE 4C E4 CE 4C E4 BE 4C 8B
17A1:E4 CE 4C E4 CE 4C E4 CE 0E
17A9:4C E4 CE 4C D4 3C 43 C3 B7
17B1:BF 3C 4B F0 30 4F 0C AB C9
17B9:F0 0B 43 F0 0A 43 CF 09 A0
17C1:43 CF 08 43 CF 07 43 BF 9B
17C9:0B 52 F0 0A 52 9F 09 52 46
17D1:98 F0 08 52 98 4F 07 52 11
17D9:98 D4 F0 06 52 98 E4 F0 B7
17E1:05 52 98 F0 04 4F 04 52 01
17E9:98 F0 05 4E 52 98 F0 06 03
17F1:4D 52 98 F0 07 45 29 8F AC
17F9:08 42 98 F0 09 4B 00 00 54
1801:00 55 1D 15 15 05 05 01 43
1809:01 40 40 50 50 D4 54 54 A9
1811:55 01 01 05 05 15 1D 15 68
1819:55 55 54 54 54 50 50 40 DD
1821:40 57 55 55 55 75 55 55 C7
1829:55 18 18 18 7E 3C 18 D9
1831:00 A5 A5 A9 A9 9A 5A 56 DC
1839:D6 75 55 55 5D 55 55 95 B2
1841:95 5A 5A 6A 6A A6 A5 95 93
1849:97 55 55 D5 5D 55 55 56 E3
1851:76 55 75 55 AA AA 65 67 48
1859:55 59 59 D9 59 59 79 59 CF
1861:59 57 AD 5B DF 77 7F 56 B3
1869:FD 7F B5 FD DF 7D EB EF CB
1871:F5 57 F5 55 D5 55 75 D5 4B
1879:D5 57 7F 7F 5D 55 75 55 D2
1881:55 77 FD FF D9 56 75 55 62
1889:55 57 55 D5 D5 75 55 55 C6
1891:55 00 40 44 55 05 05 04 85
1899:15 00 44 44 10 00 44 44 AE
18A1:00 C0 00 00 F0 00 00 78 02
18A9:00 C0 1E 01 80 0F 03 80 A4
18B1:07 83 00 0B E7 70 1D DF 50
18B9:00 2E BF 00 77 7F 00 3A 61
18C1:FE 00 D9 FE 00 E7 FC 00 36
18C9:5F FA 00 3F F7 00 1F FF 5A
18D1:80 07 FF C0 00 FF C0 00 91
18D9:3F 80 00 1E 00 00 0C FB BF
18E1:04 C0 00 01 80 00 03 80 DE
18E9:03 83 00 0B A7 00 1D DF 84
18F1:00 2E BF 00 77 7F 00 3A 99
18F9:FE 00 D9 FE 00 E7 FC 00 6E
1901:5F FA 00 3F F7 00 1F FF 93
1909:80 07 FF C0 00 FF C0 00 CA
1911:3F 80 00 1E 00 00 0C FB F8
1919:0B 01 FF 00 03 01 80 02 30
1921:00 80 02 00 80 02 7C 80 39
1929:02 82 80 03 01 80 07 7D D2
1931:80 02 C6 80 03 83 80 02 2E
1939:82 80 02 82 80 03 7D 80 C0
1941:02 82 80 03 01 80 03 FF 65
1949:80 02 10 80 02 10 80 01 98
1951:FF FB 09 1F 00 00 20 E0 B6
1959:00 40 10 00 40 18 00 BE BE
1961:10 01 C1 10 01 40 A0 01 60
1969:3C A0 03 C2 40 02 83 40 BF
1971:03 83 80 04 84 80 07 7D 08
1979:00 0C 0B 00 0B 0A 00 10 A0
1981:F6 00 08 8C 00 07 84 00 1E
1989:00 78 FB 0A C0 00 03 20 26
1991:00 04 10 00 08 08 00 7F A6
1999:04 00 50 82 00 88 42 01 A7
19A1:74 44 06 42 48 08 81 50 B9
19A9:1F 82 60 28 45 80 44 39 88
19B1:00 42 26 00 25 28 00 18 1B
19B9:D0 00 08 60 00 04 80 00 6C
19C1:03 FB 0E 30 00 00 C8 00 CA
19C9:17 04 00 1F 04 00 08 C2 2F
19D1:03 3C 42 1C C2 21 7D 03 37
19D9:21 93 01 4E 88 87 B0 88 D2
19E1:F8 C0 54 A7 00 63 38 00 C3
19E9:21 C0 00 16 00 00 08 FB 4A
19F1:1C 02 00 7F FF FE 8E 8B 4F
19F9:83 89 FC 41 89 02 21 F9 94
1A01:02 21 89 02 21 89 FC 41 3A
1A09:8E 8B 83 7F FF FE FB 1A DD
1A11:AA 00 02 AA 00 02 AA 00 E2
1A19:02 AA 00 02 FE 00 02 FE 14
1A21:00 03 C3 80 03 AB 80 03 61
1A29:AB 80 03 AB 80 03 AB 80 56
1A31:02 EE 00 02 FE 00 02 FE 3D
1A39:00 02 AA 00 02 AA 00 02 FF
1A41:AA 00 00 AA FB 0C 2A 00 D9
1A49:00 2A A0 00 2A A0 00 2A 1A
1A51:A0 00 3F A0 00 FF 80 00 C8
1A59:C3 80 00 AB 80 03 AB 80 32
1A61:03 AB 00 03 AB 00 00 CF 5F
1A69:00 03 FF 00 0A FE 00 0A B4
1A71:A8 00 0A A8 00 00 A8 FB 13
1A79:10 80 00 02 A0 00 0A A0 AF
1A81:00 00 A8 00 3F A8 00 FF 67
1A89:E8 00 CB E8 03 EB E0 0F D2
1A91:AA E0 0C AB C0 2F AB 00 A9
1A99:2B EF 00 2B F8 00 2A F0 1F
1AA1:00 0A B0 00 0A 80 00 02 C2
1AA9:80 FB 13 20 00 00 A8 00 D2
1AB1:00 A8 00 3F 28 00 C3 E8 B5
1AB9:03 28 EA 03 A8 EA CA AA FB
1AC1:E0 AF A8 80 AF 0F 00 2B 54
1AC9:FE 00 28 C0 00 2A 00 00 37
1AD1:08 FB 24 A3 FF AB AF 03 CC
1AD9:EA AF AB EA 0F AB EA AF 40
1AE1:AB EA AF 03 EA A3 FF AB 5B
1AE9:FB 16 FB 00 06 2A 0F D4 A2
1AF1:0B 2D 0D 74 12 D9 42 20 7C
1AF9:B9 70 66 E0 97 99 CF D1 96
1B01:A2 2C 00 14 22 D1 CD A4 6D
1B09:2D 60 B0 4E 6D 60 A2 D3 EE
1B11:79 D0 D8 09 AC 24 4E 06 FE
1B19:07 CD 09 2D A4 2D 0C C9 3F
1B21:08 A4 15 ED 07 D2 62 93 E1
1B29:27 1C E0 B4 0A D0 D9 43 EB
1B31:4A E0 29 42 2D 77 FD 1A 6B
1B39:22 C0 4D 32 26 D9 AF 07 70
1B41:32 09 67 BD 27 B7 FD 86 36
1B49:20 92 02 94 B2 D3 09 A2 57
1B51:9F D8 62 09 20 B4 29 2D BD
1B59:09 2D C7 AD 37 47 3F 00 88
1B61:92 DC 7A D1 90 DC D7 9D C9
1B69:B4 0A F0 42 68 47 3D 29 C2
1B71:10 82 29 D7 7B F0 A4 2D 09
1B79:67 79 A2 9D 37 29 D0 67 57
1B81:5E 0B 7A 9D 10 92 29 D4 05
1B89:9D 7C 29 09 A0 9A D0 30 64
1B91:47 F0 C7 AE 92 DA 42 DB EB
1B99:47 72 9E 08 62 09 22 03 E2
1BA1:9A 61 64 73 00 73 9C 04 4C
1BA9:73 A9 40 A2 20 39 07 7C A6
1BB1:D5 A7 47 9D 97 11 29 D9 AC
1BB9:42 94 33 52 99 CD DF FF 85
1BC1:FF FF 6C 9A 41 D2 71 A7 0F
1BC9:9D A7 A9 49 A2 91 08 22 10
1BD1:67 79 A2 90 00 00 44 00 FF
1BD9:04 99 99 98 88 04 40 33 3D
1BE1:37 44 82 55 55 54 63 37 64
1BE9:44 3A 42 37 01 44 03 37 E2
1BF1:00 23 34 43 44 43 63 33 D4
1BF9:3A 47 37 00 23 00 34 40 C7
1C01:33 37 44 03 33 37 44 34 8C
1C09:03 40 3A 42 30 43 23 00 13
1C11:34 43 00 34 03 74 03 04 6B
1C19:30 30 03 44 30 43 44 23 54
1C21:33 A4 43 03 00 34 43 40 4C
1C29:34 44 23 A4 44 75 23 3A B3
1C31:44 34 43 74 40 30 00 48 53
1C39:14 00 04 03 04 23 33 33 72
1C41:38 89 33 24 46 33 A4 00 E8
1C49:00 04 04 00 00 00 00 04 07
1C51:44 00 2E BD EA 3C CA 95 C0
1C59:6C DB D6 BA 49 BB 3F 7D 7A
1C61:BD B2 BF 02 E5 2D B2 D7 5E
1C69:64 F1 6D 27 AB BF ED 7F 28
1C71:5D A9 2F DE E3 D5 FF 9D AA
1C79:DB E9 4F AF 67 90 79 65 D4
1C81:55 2D 29 AD 4B 51 3F FE CC
1C89:ED 5B 7B D5 F3 81 E3 84 4E
1C91:1E 22 06 D9 1F 9B 78 A1 B9
1C99:E2 D8 DF 9E C6 FC D1 C7 F4
1CA1:E5 84 36 24 7C B9 9F 7F 80
1CA9:F3 EB FE 20 00 00 00 00 B8

```

MAP EDITOR

```

2000:A9 2C 8D 14 08 8D 30 16 FF
2008:20 DD 15 A9 80 8D 8A 02 5E
2010:20 CB 20 A9 0C 8D 21 D0 9B
2018:8D 20 D0 20 74 21 20 E4 90
2020:FF A4 D3 AA D0 0F A5 A2 5F
2028:29 10 F0 0F 86 A2 B1 D1 04
2030:49 80 4C 39 20 B1 D1 29 E6
2038:7F 91 D1 8A C9 86 F0 66 30
2040:C9 87 F0 6D C9 88 D0 0B 59
2048:A2 00 1E CF 29 E8 D0 FA 24
2050:4C 0E 08 C9 93 D0 05 20 E1
2058:CB 20 D0 1B C9 91 F0 14 DC
2060:C9 9D F0 10 C9 55 B0 0F 20
2068:C9 20 90 08 D0 02 A9 47 51
2070:29 1F 09 40 20 D2 FF 38 B6
2078:20 F0 FF E0 05 B0 02 A2 A4
2080:05 E0 11 90 02 A2 10 C0 22
2088:0B B0 02 A0 0B 98 29 1F F0
2090:A8 18 20 F0 FF 20 0D 21 F9
2098:B1 22 29 F9 0D CF 29 20 F5
20A0:1F 21 D0 F4 F0 22 20 34 A6
20A8:21 A9 00 20 D5 FF 4C C5 F2
20B0:20 20 34 21 A9 CF 85 22 5B
20B8:A9 29 85 23 A2 CB A0 2A AA
20C0:A9 22 20 D8 FF 20 CB 20 28
20C8:4C 1E 20 A9 93 20 D2 FF 18
20D0:A9 90 20 D2 FF A2 00 A0 66
20D8:00 8A 99 28 04 09 40 99 CF
20E0:00 04 C8 C8 C0 51 B0 09 7D
20E8:E8 E0 14 D0 EC A0 51 D0 C2
20F0:E8 A2 00 8A 9D 00 58 9D 33
20F8:00 D9 9D 00 DA E8 D0 F4 74

```

```

2100:20 0D 21 BD CF 29 91 22 FD
2108:20 1F 21 D0 F6 A2 00 A0 36
2110:0B A9 C8 85 22 A9 04 85 F8
2118:23 A9 1E 8D 18 D0 60 C8 80
2120:C0 20 90 0C A5 22 69 27 4D
2128:85 22 90 02 E6 23 A0 0B F7
2130:E8 E0 FC 60 A9 15 8D 18 99
2138:D0 A2 14 A0 00 18 20 F0 A9
2140:FF A2 00 BD 6A 21 20 D2 F1
2148:FF E8 E0 0A D0 F5 A0 00 21
2150:20 CF FF 99 00 90 C8 C9 CD
2158:0D D0 F5 98 A2 00 A0 90 84
2160:20 BD FF A2 08 A0 FF 4C 5B
2168:BA FF 46 49 4C 45 4E 41 BA
2170:4D 45 3F 3A 78 A9 33 85 8C
2178:01 A2 00 BD 00 D0 9D 00 3E
2180:3A BD 00 D1 9D 00 39 BD 89
2188:9B 21 9D 00 38 49 FF 9D 19
2190:00 3C E8 D0 E6 A9 37 85 DD
2198:01 58 60 FB F6 EC D8 B0 0B
21A0:60 C0 80 18 18 66 66 18 14
21A8:18 3C 00 01 03 07 0F 77
21B0:0F 0F 0F 0F 0F 0F 0F F2
21B8:07 03 01 80 C0 60 B0 D8 29
21C0:EC F6 FB 00 00 00 00 1F D5
21C8:3F 7F FF FF 7F 3F 1F 00 C1
21D0:00 00 00 00 00 00 00 13
21D8:00 00 00 FF FF FF FF 1B
21E0:FF FF FF 00 00 00 00 FF 23
21E8:FF FF FF 00 00 00 00 FF 2B
21F0:00 FF FF 0F 0F 0F 0F 06
21F8:0F 0F 0F 0F 0F 0F 0F 95
2200:F0 F0 F0 00 00 00 00 F8 10
2208:FC FE FF DF 6F 37 1B 0D 24
2210:06 03 01 80 C0 E0 F0 F0 9C
2218:F0 F0 F0 F0 F0 F0 F0 F0 5C
2220:E0 C0 80 FF FF FF FF 15
2228:00 00 00 FF FF 00 FF 00 6C
2230:00 00 00 FF FE FC F8 00 52
2238:00 00 00 01 03 06 0D 1B F1
2240:37 6F DF 00 00 00 00 F7

```

Getting Started

Janus is written entirely in BASIC. To avoid typing errors, enter the program with *The Automatic Proofreader*. See "Typing Aids" elsewhere in this section. When you've finished typing *Janus*, be sure to save a copy of the program to disk before running it.

How to Use Janus

Remember that the *Janus* loader must be loaded and run with your computer in 128 mode. The loader will then set up the machine code and prompt you for a 64 BASIC program name. Should the program being loaded exceed 90 blocks, *Janus* will abort with a message advising you that the program is too large for it to handle.

After the 64 program has been successfully loaded, a message will appear saying that the new loader file may now be saved. Save this new loader in the conventional manner, either by entering SAVE "filename", 8 or DSAVE "filename". The new file can be loaded into a 64 or 128 and run.

You'll notice a big difference when you load the new file in 128 mode. It will take advantage of the 1571's higher speed for loading; then the 128 will switch automatically to 64 mode when the program runs. If you load the program into a 128 in 80-column mode, you'll be advised to switch to the 40-column screen and press a key.

JANUS

```

GD 10 REM COPYRIGHT 1991 - COM
    PUTE PUBLICATIONS INTL L
    TD - ALL RIGHTS RESERVED
JA 100 REM "JANUS, A COMMODORE
    64 BASIC PROGRAM LOADE
    R FOR LOADING FROM BOTH
    "
QP 110 REM "THE COMMODORE 64 A
    ND 128 MODES."
RJ 140 PRINTCHR$(147)CHR$(14)C
    HR$(17)CHR$(17)"SETTING
    UP..."
PE 150 RESTORE220:Y=DEC("1300"
    ):IF PEEK(215) THEN FAS
    T
QD 160 READB$:IF B$="EOF" THEN
    SLOW:SYS DEC("1300")
JS 170 IF LEFT$(B$,1)<>"E" AN
    D LEFT$(B$,1)<>"@" THEN
    210
FH 180 A$=B$:N=0:FOR X=0 TO 15
    :READ B$:POKEY+X,DEC(B$
    ):N=N+DEC(B$):NEXT

```

```

JS 190 READB$:IF N<>VAL(B$) TH
    EN 210
QB 200 Y=Y+16:GOTO160
XR 210 PRINT"THERE IS A DATA E
    RROR IN THE LINE BEGINN
    ING WITH ";A$:END
HD 220 DATA @1,20,7D,FF,0E,0D,
    0D,70,4C,41,43,45,20,54
    ,48,45,20,1130
EJ 230 DATA @2,44,49,53,4B,20,
    54,4F,20,42,45,20,55,53
    ,45,44,20,1030
JG 240 DATA @3,49,4E,54,4F,20,
    54,48,45,20,44,49,53,4B
    ,20,44,52,1084
RM 250 DATA @4,49,56,45,0D,41,
    4E,44,20,45,4E,54,45,52
    ,20,54,48,1054
QB 260 DATA @5,45,20,63,4F,4D,
    4D,4F,44,4F,52,45,20,36
    ,34,20,50,1060
HG 270 DATA @6,52,4F,47,52,41,
    4D,20,66,69,6C,65,20,6E
    ,61,6D,65,1353
CH 280 DATA @7,2E,0D,0D,00,20,
    7E,13,4C,E7,13,00,00,00
    ,00,00,00,575
PQ 290 DATA @8,00,00,00,00,00,
    00,00,00,00,00,00,00,00
    ,00,A9,00,169
SK 300 DATA @9,8D,FD,03,8D,20,
    D0,8D,21,D0,20,7D,FF,1C
    ,5F,9D,9A,2006
GX 310 DATA @A,00,20,E4,FF,F0,
    FB,8D,FE,03,20,D1,13,90
    ,16,AE,FD,2257
PC 320 DATA @B,03,9D,6A,13,EE,
    FD,03,20,D2,FF,AE,FD,03
    ,E0,11,D0,2155
DG 330 DATA @C,D8,4C,C2,13,C9,
    0D,D0,01,60,C9,14,D0,D4
    ,AD,FD,03,2094
SM 340 DATA @D,F0,C7,CE,FD,03,
    20,7D,FF,9D,20,20,9D,9D
    ,00,4C,89,2061
SJ 350 DATA @E,13,8D,FE,03,18,
    C9,20,90,09,E9,5B,B0,05
    ,AD,FE,03,1762
KK 360 DATA @F,38,60,AD,FE,03,
    18,60,A9,6A,85,FB,A9,13
    ,85,FC,A9,2103
PA 370 DATA @G,0F,A2,08,A0,00,
    20,BA,FF,AD,FD,03,A6,FB
    ,A4,FC,20,2112
RB 380 DATA @H,BD,FF,A9,00,A2,
    01,A0,20,20,D5,FF,8C,11
    ,12,8C,D0,1991
FF 390 DATA @I,15,8E,10,12,8E,
    CF,15,AD,11,12,85,FC,C9
    ,80,B0,03,1668
QC 400 DATA @J,4C,77,14,20,7D,
    FF,0D,0D,74,48,45,20,62
    ,61,73,69,1357
FP 410 DATA @K,63,20,50,52,4F,
    47,52,41,4D,20,49,53,20
    ,54,4F,4F,1129
PC 420 DATA @L,20,4C,4F,4E,47,
    20,46,4F,52,20,54,48,45

```

Alain Tremblay lives in Sainte-Foy, Quebec, Canada. □

JANUS

Bruce M. Bowden

A 128 with a 1571 or 1581 can load programs much faster than a 64 or a 128 in 64 mode. With this utility, you can take advantage of the 128's speed to load 64 BASIC programs.

Janus is named for the Roman god with two faces to emphasize the fact that it uses both 64 and 128 modes to load a 64 program. There are a couple of advantages for operating this way. First, the 128 can load programs very quickly from a 1571 or 1581 disk drive. Second, you can save a BASIC program and make it available to others so that they needn't be concerned about whether or not their 128 is in the proper mode when they try to run it.

PROGRAMS

```

,20,4C,4F,1043
FA 430 DATA @M,41,44,45,52,2E,
0D,70,4C,45,41,53,45,20,
41,43,43,1048
JE 440 DATA @N,45,50,54,20,4D,
59,20,41,50,4F,4C,4F,47,
49,45,53,1138
MJ 450 DATA @O,2E,0D,0D,00,4C,
09,40,A9,14,85,FC,A9,1C,
85,FE,A9,1548
XM 460 DATA @P,CC,85,FB,A9,01,
85,FD,A2,16,A0,9D,20,72,
16,A9,00,1982
XM 470 DATA @Q,8D,00,FF,20,7D,
FF,0E,0D,0D,79,4F,55,20,
4D,41,59,1396
BK 480 DATA @R,20,4E,4F,57,20,
53,41,56,45,20,54,48,45,
20,50,52,1062
XA 490 DATA @S,4F,47,52,41,4D,
20,49,4E,20,54,48,45,20,
4E,4F,52,1085
MF 500 DATA @T,4D,41,4C,20,57,
41,59,0D,00,4C,09,40,18,
1C,0A,00,715
EQ 510 DATA @U,8B,20,C2,28,36,
32,29,B2,32,38,20,A7,20,
9E,37,32,1328
KS 520 DATA @V,30,34,00,22,1C,
14,00,9E,32,32,34,39,00,
00,00,A9,718
DP 530 DATA @W,0E,8D,00,FF,A9,
20,8D,06,1D,A9,80,85,FE,
A0,00,84,1763
XF 540 DATA @X,FD,A9,1C,85,FC,
A9,E8,85,FB,A2,1D,A0,D2,
20,A7,1D,2409
BP 550 DATA @Y,A5,D7,F0,78,20,
7D,FF,1C,0E,0D,0D,74,48,
49,53,20,1596
GK 560 DATA @Z,49,53,20,54,48,
45,20,38,30,2D,43,4F,4C,
55,4D,4E,1056
GK 570 DATA @1,20,53,43,52,45,
45,4E,20,53,45,54,54,4,
9,4E,47,2E,1100
CH 580 DATA @2,2E,2E,0D,57,48,
45,4E,20,59,4F,55,20,4,
8,41,56,45,1020
CH 590 DATA @3,20,41,20,34,30,
2D,43,4F,4C,55,4D,4E,2,
0,53,43,52,1000
PH 600 DATA @4,45,45,4E,20,55,
50,2C,0D,50,52,45,53,5,
3,20,41,4E,1042
ME 610 DATA @5,59,20,4B,45,59,
20,54,4F,20,43,4F,4E,5,
4,49,4E,55,1125
KH 620 DATA @6,45,2E,0D,00,20,
5F,FF,20,E4,FF,E0,FB,A,
9,00,8D,00,1826
EM 630 DATA @7,FF,4C,4D,FF,A9,
0C,8D,06,09,A9,80,85,F,
E,A0,00,84,1976
XP 640 DATA @8,FD,A9,08,85,FC,
A9,E8,85,FB,A2,09,A0,D,
2,20,A7,09,2349
JG 650 DATA @9,4C,E2,FC,09,80

```

```

,18,80,C3,C2,CD,38,30,A,
9,AE,8D,00,2025
SA 660 DATA @A,80,8D,02,80,A9,
A7,8D,01,80,8D,03,80,4,
C,1F,80,00,1512
SF 670 DATA @B,00,00,A2,FF,78,
9A,D8,A2,00,8E,16,D0,2,
0,A3,FD,20,1921
QR 680 DATA @C,50,FD,20,15,FD,
{1}20,5B,FF,58,20,53,E4,
20,BF,E3,A9,2067
FJ 690 DATA @D,00,8D,20,D0,8D,
21{1}D0,A9,5E,85,FB,A9,
80,85,FC,A9,2261
HP 700 DATA @E,C0,85,FE,A9,00,
85,FD,A2,80,A0,EA,20,B,
F,80,4C,00,2245
GF 710 DATA @F,C0,20,42,A6,AD,
1D,80,AA,38,E9,18,8D,1,
D,80,18,AC,1763
AE 720 DATA @G,1C,80,AD,1E,80,
85,FC,A9,01,85,FB,85,F,
D,A9,08,85,2122
KM 730 DATA @H,FE,20,61,C0,A9,
00,8D,00,08,A9,08,85,2,
C,A9,01,85,1550
SB 740 DATA @I,2B,AD,1D,80,85,
2E,85,30,85,32,AD,1C,8,
0,85,2D,85,1556
QR 750 DATA @J,2F,85,31,A4,2E,
20,08,A4,A9,93,20,D2,F,
F,A9,0E,8D,1780
BC 760 DATA @K,86,02,A9,A0,8D,
84,02,85,34,85,38,20,3,
3,A5,58,4C,1526
CF 770 DATA @L,AE,A7,8E,FE,03,
8C,FD,03,A0,00,B1,FB,9,
1,FD,A5,FC,2539
FB 780 DATA @M,CD,FE,03,D0,08,
A5,FB,CD,FD,03,D0,01,6,
0,E6,FB,D0,2549
PR 790 DATA @N,02,E6,FC,E6,FD,
D0,E3,E6,FE,A9,00,F0,D,
D,EA,EA,EA,3218
FB 800 DATA EOF

```

Bruce M. Bowden is a talent with many faces at *COMPUTE* magazine. □

TYPING AIDS

MLX, our machine language entry program for the 64 and 128, and *The Automatic Proofreader* are utilities that help you type in Gazette programs without making mistakes. To make room for more programs, we no longer include these labor-saving utilities in every issue, but they can be found on each *Gazette Disk* and are printed in all issues of *Gazette* through June 1990.

If you don't have access to a back issue or to one of our disks, write to us, and we'll send you free copies of both of these handy programs. We'll also include instructions on how to type in Gazette programs. Please enclose a self-addressed, stamped envelope.

Write to Typing Aids, *COMPUTE's Gazette*, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

BUG-SWATTER

In November's "Programmer's Page," Randy Thompson featured a short program called *Flood* that had been submitted by Geza Lucz. Due to a printing error, the listing was omitted from the column. That listing is printed below.

The object of the game is to build flood walls that will contain a spreading body of water (represented by asterisks). Move with the cursor keys and press Return wherever you want to build a section of wall. Your score is determined by how quickly and effectively you can accomplish this task. □

FLOOD

```

FM 100 POKE 53281,14:PRINT CHR
$(147):POKE 53281,6
KF 110 DIM A(2000),B(299)
BS 120 B(1)=1:B(2)=-1:B(3)=40:
B(4)=-40
KC 130 B(29)=1:B(157)=-1:B(145)
)=-40:B(17)=40
GQ 140 FOR I=0 TO 39
FG 150 POKE 1024+I,42:POKE1984
+I,42
DH 160 POKE 1024+INT(I/1.6)*40,
42
MB 170 POKE 1063+INT(I/1.6)*40,
42
MR 180 NEXT
CK 190 FOR W=1 TO 2
SD 200 A(W)=INT(RND(1)*999)+10
24
AH 210 IF PEEK(A(W))<>32 THEN
{SPACE}200
DG 220 POKE A(W),42
DX 230 NEXT
XE 240 B=2:A=1:R=32
JQ 250 H=1447:POKEH,102
GP 260 L=0
ER 270 FOR I=A TO B
JJ 280 FOR J=1 TO 4
DX 290 IF PEEK(A(I)+B(J))<>32
{SPACE}THEN 310
GP 300 L=L+1:A(B+L)=A(I)+B(J):
POKEA(B+L),42
BE 310 NEXT
FH 320 GOSUB 370
KG 330 NEXT
QB 340 A=B:B=B+L
MP 350 IF L=0 THEN PRINT"{CLR}
CONGRATULATIONS. YOUR S
CORE IS" 874-B:END
PP 360 GOTO 260
QH 370 GET RS:RS=RS+" "
PA 380 IF ASC(R$)=13 THEN R=91
AQ 390 IF PEEK(H+B(ASC(R$)))<>
32 THEN RETURN
ED 400 POKE H,R
QM 410 H=H+B(ASC(R$))
RD 420 R=PEEK(H):POKE H,102
RB 430 RETURN

```

THE AUTOMATIC PROOFREADER

Philip I. Nelson

The Automatic Proofreader helps you type in program listings for the 128 and 64 and prevents nearly every kind of typing mistake.

Type in *Proofreader* exactly as listed. Because the program can't check itself, type carefully to avoid mistakes. Don't omit any lines, even if they contain unusual commands. After you've finished, save a copy before running it.

Next, type RUN and press Return. After the program displays the message *Proofreader Active*, you're ready to type in a BASIC program.

Every time you finish typing a line and press Return, *Proofreader* displays a two-letter checksum in the upper left corner of the screen. Compare this result with the two-letter checksum printed to the left of the line in the program listing. If the letters match, the line probably was typed correctly. If not, check for your mistake and correct the line.

Proofreader ignores spaces not enclosed in quotation marks, so you can omit or add spaces between keywords and still see a matching checksum. Spaces inside quotes are almost always significant, so the program pays attention to them.

Proofreader does not accept keyword abbreviations (for example, ? instead of PRINT). If you use abbreviations, you can still check the line by listing it, moving the cursor back to the line, and pressing Return.

If you're using *Proofreader* on the 128, do not perform any GRAPHIC commands while *Proofreader* is active. When you perform a command like GRAPHIC 1, the computer moves everything at the start of BASIC program space—including the *Proofreader*—to another memory area, causing *Proofreader* to crash. The same thing happens if you run any program with a GRAPHIC command while *Proofreader* is in memory.

Though *Proofreader* doesn't interfere with other BASIC operations, it's a good idea to disable it before running another program. To disable it, turn the computer off and then on. A gentler method is to SYS to the computer's built-in reset routine (65341 for the 128, 64738 for the 64).

```
AS 0 CLR
KK 10 VE=PEEK(772)+256*PEEK(77
3):LO=43:HI=44:PRINT"
```

```
{CLR}{WHT}AUTOMATIC PROO
FREADER FOR ";
EB 20 IF VE=42364 THEN PRINT "
64"
AA 30 IF VE=17165 THEN LO=45:H
I=46:GRAPHIC CLR:PRINT"1
28"
KK 40 SA=(PEEK(LO)+256*PEEK(HI
))+6:FOR J=SA TO SA+166:
READ B:POKE J,B:CH=CH+B:
NEXT
QF 50 IF CH<>20570 THEN PRINT
{SPACE}"**ERROR* CHECK TY
PING IN DATA STATEMENTS"
:END
PD 60 FOR J=1 TO 5:READ RF,LF,
HF:RS=SA+RF:HB=INT(RS/25
6):LB=RS-(256*HB)
XB 70 CH=CH+RF+LF+HF:POKE SA+L
F,LF:POKE SA+HF,HB:NEXT
SB 80 IF CH<>22054 THEN PRINT
{SPACE}"**ERROR* RELOAD P
ROGRAM AND CHECK FINAL L
INE":END
PH 90 IF VE=17165 THEN POKE SA
+14,22:POKE SA+18,23:POK
ESA+29,224:POKESA+139,22
4
JS 100 POKE SA+149,PEEK(772):P
OKE SA+150,PEEK(773):PR
INT"{CLR}PROOFREADER AC
TIVE"
FA 110 SYS SA:POKE HI,PEEK(HI)
+1:POKE (PEEK(LO)+256*P
EEK(HI))-1,0:NEW
PS 120 DATA120,169,73,141,4,3,
169,3,141,5,3,88,96,165
,20,133,167
PS 130 DATA165,21,133,168,169,
0,141,0,255,162,31,181,
199,157,227
XS 140 DATA3,202,16,248,169,19
,32,210,255,169,18,32,2
10,255,160
JC 150 DATA0,132,180,132,176,1
36,230,180,200,185,0,2,
240,46,201
XJ 160 DATA34,208,8,72,165,176
,73,255,133,176,104,72,
201,32,208
GM 170 DATA7,165,176,208,3,104
,208,226,104,166,180,24
,165,167
KH 180 DATA121,0,2,133,167,165
,168,105,0,133,168,202,
208,239,240
RM 190 DATA202,165,167,69,168,
72,41,15,168,185,211,3,
32,210,255
BR 200 DATA104,74,74,74,74,168
,185,211,3,32,210,255,1
62,31,189
RM 210 DATA227,3,149,199,202,1
6,248,169,146,32,210,25
5,76,86,137
HJ 220 DATA65,66,67,68,69,70,7
1,72,74,75,77,80,81,82,
83,88
XR 230 DATA 13,2,7,167,31,32,1
51,116,117,151,128,129,
167,136,137
```

ONLY ON DISK

In addition to the type-in programs found in each issue of the magazine, *Gazette Disk* offers bonus programs and original 64 and 128 artwork. Here are this month's bonuses.

The Raven

Daniel Lightner
Sidney, MT

Enter this machine language adventure game, and you'll find yourself in a three-dimensional maze that's filled with valuable treasure. The object is to locate the treasure and return it to a special storage area. The only obstacles are the puzzles that you'll have to solve and a number of deadly creatures blocking your path.

You are not alone, though. A friendly Hobbit named Harvey will help you find your way through the maze.

Trig 128

James Moore
Cleveland, OK

Use this handy 128 program to help you solve any triangle, not just right triangles. The program calculates sides to four decimal places and angles to the nearest second. The program will also help you determine the area of a triangle if you know an angle and the length of its two sides or if you know the length of three sides.

This program can be a real help to trigonometry students—but that's not all. *Trig 128* can also be used to find the distance between any two Cartesian coordinates.

Christmas Tunes

Don Radler
Cape Coral, FL

Enjoy these traditional Christmas songs and carols that have been collected by Don Radler. They can be played on the enclosed music program.

Gazette Gallery

Picture of the Month
"Rage"
By Jeff Boyle
Bethlehem, PA

"'Twas the Night"
"Santa's Best"
By Robert Woodall
Rural Hall, NC

HOW TO TYPE IN GAZETTE PROGRAMS

Each month, Gazette publishes programs for the Commodore 128 and 64. Each program is clearly marked as being written for the 128, 64, or both. Be sure to type in the correct version for your machine. All 64 programs run on the 128 in 64 mode. Be sure to read the instructions in the corresponding article. This can save time and eliminate any questions which might arise after you begin typing.

At irregular intervals, we publish two programs designed to make typing in our programs easier: *The Automatic Proofreader*, for BASIC programs, and a 128 and 64 version of *MLX*, for entering machine language programs. In order to make more room for programs, we do not print these handy utilities in every issue of the magazine. Copies of these programs are available on every *Gazette Disk*. If you don't have access to a disk, write us, and we'll send you free copies of both of these programs. Please enclose a stamped, self-addressed envelope. Write to Typing Aids, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

When entering a BASIC program, be especially careful with DATA statements, as they are extremely sensitive to errors. A mistyped number in a DATA statement can cause your machine to "lock up" (you'll have no control over the com-

puter). If this happens, the only recourse is to turn your computer off and then on, erasing what was in memory. This could cause you to lose valuable data, so be sure to *save a program before you run it*. If your computer crashes, you can always reload the program and look for the error.

Special Characters

Most of the programs listed in each issue contain special control characters. To facilitate typing in any programs from Gazette, use the following listing conventions.

The most common type of control characters in our listings appear as words within braces: {DOWN} means to press the cursor-down key; {5 SPACES} means to press the space bar five times. {RVS} means to enter Reverse mode by simultaneously pressing the Ctrl key and the 9 key.

To indicate that a key should be shifted (hold down the Shift key while pressing another key), the character is underlined>. For example, A means hold down the Shift key and press A. You may see strange characters on your screen, but that's to be expected. If you find a number followed by an underlined key enclosed in braces (for example, {8 A}), type the key as many times as indicated (in our example, enter eight shifted A's).

If a key is enclosed in special brack-

ets, [<>], hold down the Commodore key (at the lower left corner of the keyboard) and at the same time press the indicated character.

Rarely, you'll see a single letter of the alphabet enclosed in braces. This can be entered on the Commodore 64 by pressing the Ctrl key while typing the letter in braces. For example, {A} means to press Ctrl-A.

The Quote Mode

You can move the cursor around the screen with the Crsr keys, but you may want to move it under program control, as in examples like {LEFT} and {HOME} in the listings. The only way the computer can tell the difference between direct and programmed cursor control is the quote mode.

Once you press the quote key, you're in quote mode. It can be confusing when you are in this mode if you mistype a character and cursor left to change it. You'll see a graphics symbol for cursor left. Use the delete key to back up and edit the line from the beginning. Type another quotation mark to get out of quote mode.

If things get too confusing, exit quote mode by pressing Return; then cursor up to the mistyped line and fix it. If the mistake involves cursor movement, however, you must press the quote key to reenter quote mode. □

When You Read:	Press:	See:	When You Read:	Press:	See:	When You Read:	Press:	See:
{CLR}	SHIFT CLR/HOME		{PUR}	CTRL 5		←		
{HOME}	CLR/HOME		{GRN}	CTRL 6		↑	SHIFT ↑	
{UP}	SHIFT ↑ CRSR ↓		{BLU}	CTRL 7				
{DOWN}	↑ CRSR ↓		{YEL}	CTRL 8				
{LEFT}	SHIFT ← CRSR →		{F1}	f1				
{RIGHT}	← CRSR →		{F2}	SHIFT f1				
{RVS}	CTRL 9		{F3}	f3				
{OFF}	CTRL 0		{F4}	SHIFT f3				
{BLK}	CTRL 1		{F5}	f5				
{WHT}	CTRL 2		{F6}	SHIFT f5				
{RED}	CTRL 3		{F7}	f7				
{CYN}	CTRL 4		{F8}	SHIFT f7				

When You Read:	Press:	See:
←		
↑	SHIFT ↑	

For Commodore 64 Only

F 1	COMMODORE 1	
F 2	COMMODORE 2	
F 3	COMMODORE 3	
F 4	COMMODORE 4	
F 5	COMMODORE 5	
F 6	COMMODORE 6	
F 7	COMMODORE 7	
F 8	COMMODORE 8	

REVIEWS

Get the scoop on *Champions*, sneak a peek at *Harvard Draw*, and delve into a host of other commentaries.

CHAMPIONS

Long the most enjoyable set of superhero role-playing rules for paper-and-pencil gamers, *Champions* makes the transition to the PC with notable grace. The tried and true, logical gaming system provides the foundation for a virtual world where paranormal people fly, generate lightning, and hurl Volkswagens at one another. While this sounds like a 1970s Marvel comic, Hero Games delivers anything but straight silliness.

Assume for a moment that you could fly and that you have a personal, internally powered force field that's good against most attacks short of nuclear ones. Does that make you invincible? Hardly—you'll face your share of super villains and personal crises, and don't forget that even comic book heroes sometimes marry and max out their VISA cards.

Such annoyances will clamor for attention. In exchange for taking on these obligations or "hunted" as they're known in *Champions*, you receive a certain number of points that you use to buy powers or to improve your personal statistics. You also gain points for successfully completing missions.

Progress is realistically slow but rewarding, and you'll spend hours poring over your character's statistics. *Champions* devotees have often argued that designing a character is more fun than combat, but thanks to myriad powers and special effects to choose from, neither aspect of the game suffers.

Combat takes place on-screen and the energy blasts fly with comic book flair, leaping from your chosen sources of power to strike your opponents. The special effects you see are those chosen dur-

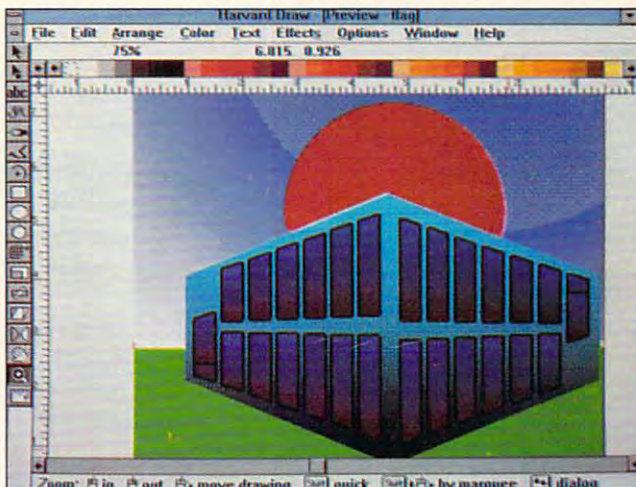
ing the design phase of play, and this detail engenders a feeling of control not common to most role-playing games.

Here, too, is where the computer version of the game re-

On top of the arcade sequences and the superb character design modules, you'll find a storyline that has you talking with police officers, clocking in at a day job, and



Though not all *Champions* has to offer, electrifying combat encounters will earn this RPG many fans.



Harvard Draw, the newest contender in the illustration-design arena, has an icon-driven toolbox.

ally shines: no more tedious combat arbitration by a ponderous, fallible, and human game master. All the necessary charts come built into the software, and the machine handles the dice rolls. As a result, action takes place at high speed; you have only to choose your targets.

patrolling the city looking for bad guys. Future modules will provide alternate scenarios to the first.

Champions has it all—character development, megavillain slug outs, and plenty of Day-Glo union suits to parade around in. Evildoers beware; this superpowered RPG hits

the streets before Christmas.

DAVID SEARS

Scheduled Release: December 1991

IBM PC and compatibles with 286 or faster microprocessor; 640K RAM; VGA; hard drive recommended; mouse recommended—\$49.99

HERO SOFTWARE
Distributed by Konami
900 Deerfield Pkwy.
Buffalo Grove, IL 60089
(708) 215-5100

Circle Reader Service Number 326

HARVARD DRAW

Not content with dominating the DOS charting and presentation market with its venerable *Harvard Graphics*, Software Publishing enters the illustration-design arena with a *Windows* program slated to go head to head with *CorelDRAW!*, *Micrografx Designer*, and *Arts & Letters*. The name of the contender is *Harvard Draw*, and it's loaded with exceptional features that would put it in the final round of any competition. The only question is whether there's room in the ring for yet another new face.

In the beta release seen at COMPUTE this fall, the product lacked some of the more interesting effects of *CorelDRAW!* such as extruding and perspective, but it had layers like *Designer*. It could make circular copies (generating multiple copies in a circle, rotating each so that they face a common axis) and rectangular copies (producing copies in perfectly placed columns and rows).

An onscreen help line provides the options associated with each icon as it's selected. (For example, clicking on the oval icon reveals a line that tells you to press Shift to generate the oval from the center rather than the corner of its selection rectangle and to press Ctrl to constrain the oval to a true circle.)

WORLD OF COMMODORE

DECEMBER 6, 7 & 8, 1991
International Centre
Toronto, Canada

AMIGA

Toronto's 9th Annual Commodore and Amiga Show and Sale

It's the world's biggest show and sale of Commodore and Amiga computers and compatible products. This is the time and place to check out:

- ★ **NEW HARDWARE – Hands-on browsing!**
- ★ **LATEST SOFTWARE – Thousands of titles!**
- ★ **MEET THE EXPERTS – 60,000 sq. ft. of exhibits!**
- ★ **FREE SEMINARS AND PRESENTATIONS**

Whether you use an Amiga, Commodore 64/128, Commodore PC or CDTV, you'll save money, have fun and learn from the experts at Toronto's 9th annual World of Commodore/Amiga.

Toronto International Centre, 6900 Airport Rd. (at Derry)
Friday, December 6, 10:00 am – 9:00 pm
Saturday, December 7, 10:00 am – 6:00 pm
Sunday, December 8, 10:00 am – 6:00 pm



Adults \$8, Students & Seniors \$6 (Admission includes seminars and presentations.)
COMING EVENTS: World of Commodore/Amiga, New York, April 24 – 26, 1992
and World of Commodore/Amiga, Sydney, Australia, July 3 – 5, 1992.
For more information, call The Hunter Group at (416) 595-5906 or fax (416) 595-5093.

**NEW
CDTV
PRODUCTS**

**FANTASTIC
BARGAINS!**

9th RECORD-BREAKING YEAR!

This is a nice feature for beginners that can easily be turned off when you become familiar with the special options. The program also provides an onscreen palette.

The *Harvard Draw* auto-trace is as friendly as *Micrografx Designer's* and very fast. It borrowed that tiresome "sands through the hourglass" mouse cursor from *Core!DRAW!* for use while the program is busy.

One of the innovations in this product is the scripting language, which allows you to write and edit drawings with a text editor. Simply copy the text file into the *Windows Clipboard* from a text editor while *Harvard Draw* is running, and the commands you've specified will be carried out. The commands read a little bit like remedial PostScript: `opendraw`; `set fillnone`; `setoutlinecmyk 0,0,0,100`; and so forth.

Harvard Draw also features a form of envelope editing that allows you to fit text to more than one curve, group, combine, cut holes, paste copies of an object to a path, blend shapes and colors, perform shaped gradient fills (like a rectangle, a 12-pointed star, and several others), mix color on a CMYK or an RGB model, fill an open path, automatically generate regular polygons, choose from a 16-level undo, get context-sensitive help, and more.

The most exciting news is that a new team of programmers is working in the area of design software, which means that new ideas will come even faster and the competition will be even more fierce. Although *Harvard Draw* seems to lack a few of the features that make the big three (*Core!*, *Micrografx*, or *Arts & Letters*) distinct, it will probably answer the design needs of most of

the people looking into this kind of software. If I were shopping for a design package, I wouldn't settle on one of the big three until I had seen *Harvard Draw* in action.

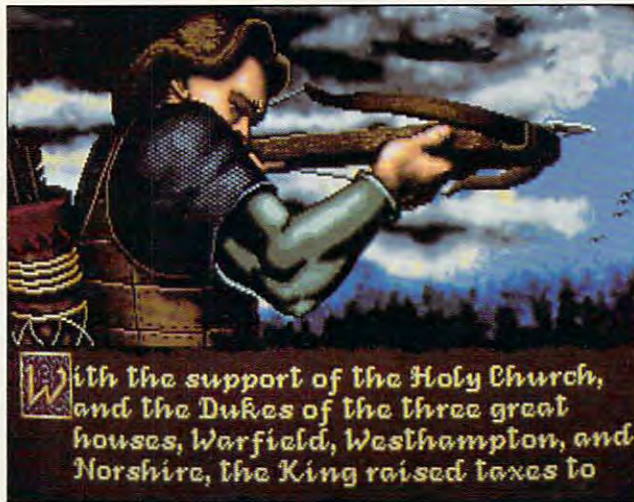
ROBERT BIXBY

Scheduled Release: November 1991

IBM PC and compatibles, 2MB RAM, Windows 3.0—\$595

SOFTWARE PUBLISHING
3165 Kifer Rd.
Santa Clara, CA 95051
(408) 986-8000

Circle Reader Service Number 327



As the monarch in *Castles*, it's up to you to learn the politics and policies of building a castle in the Middle Ages.

CASTLES

The age of castles passed centuries ago, but their mystery and romance remain. In the hearts of fantasy role-players everywhere, there lingers the urge to show medieval peasantry what separates the lords from the vassals. Stone fortresses and armies, of course, make all the difference, and Interplay's *Castles* sets the stage for some memorable days of monarchy.

As king and architect, surveyor and overseer, you determine the course of history. Make the mistakes of an aloof leader or usher in an age of

prosperity through your benevolent rule. Either approach teaches that castle building isn't the least bit romantic.

As surveyor, you'll find a suitable castle site soon enough, but your duties as overseer require considerably more perseverance. You'll hire and fire diggers, carpenters, carters, masons, and other laborers. From this pool of personnel, you assign crews to wall sections, towers, and gates. Keep an eye on the treasury, or your

er, is the tutorial on how to construct a castle; it takes the form of a lengthy dialog, and tends to obscure some necessary facts. Much better would be an optional list of itemized dos and don'ts that would have players laying cornerstones much sooner.

The king's encounters with his subjects require you to choose from a very limited number of options. Players are likely to grimace in frustration when obvious actions aren't listed as choices.

With their jerky animation and lack of detail, combat sequences leave much to be desired. As a castle simulator, though, *Castles* does an admirable job of presenting your growing stone edifice in three-dimensional color. Accompanying music echoes your industriousness, but as with most short, repetitive soundtracks, the *Castles* theme eventually wears thin.

Castles falls short of being a true Middle Age construction set, however, dealing with nothing more than castles themselves. Villages don't spring up around your fortress, and if you choose to sponsor a combat tourney, you won't see a bit of the action. In short, educational value is primarily limited to the pages of the manual.

Still, those who dream of watching sunsets from towering parapets will play *Castles* often enough to warrant the purchase price. Raise high your banners, Lords and Ladies; *Castles* can make monarchs of us all.

DAVID SEARS

IBM PC and compatibles; 555K RAM; CGA, VGA, or Tandy 16-color; supports Ad Lib, Roland, and Sound Blaster—\$59.95

INTERPLAY
3710 S. Susan St., Ste. 100
Santa Ana, CA 92704
(714) 549-2411

Circle Reader Service Number 328



The greatest hero for the Hyborean Age was a fierce barbarian born of the harsh northlands,

CONAN THE CIMMERIAN

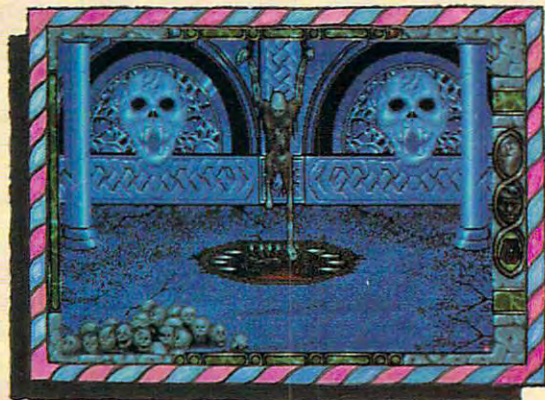
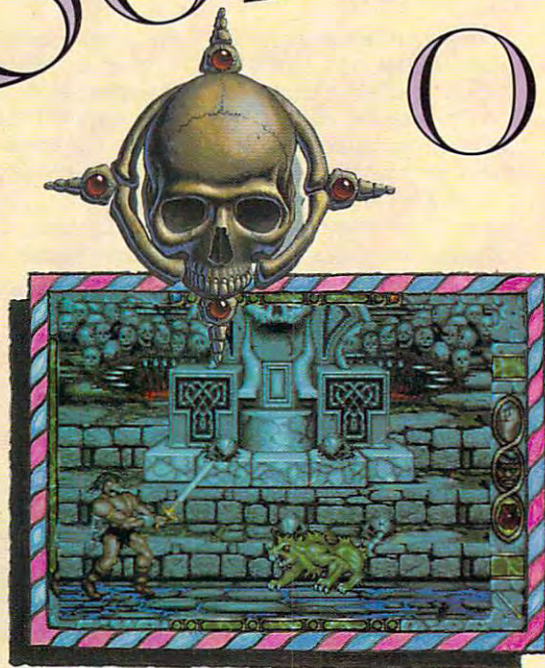
You have heard the tales of Conan's adventures. Only now will you have the opportunity to live the life of this fierce barbarian from the land of Hyborea.

Our odyssey begins with murder most foul. When Conan's village is massacred by the ravaging hordes of Thoth Amon, high priest of the vile cult of Set, Conan vows to avenge the death of his family and friends.

In your search for vengeance, you as Conan, will explore Hyborea to seek out its hidden secrets and learn of its powers. Visit over 200 locations – taverns and inns, crypts and dungeons, temples and tombs, lavish homes and poor hovels – to learn the mysteries of Hyborea's sorceries to help Conan overcome its many natural and supernatural perils.

Only with luck, courage and constant struggle will Conan have the chance to force a reckoning with the powerful Thoth Amon.

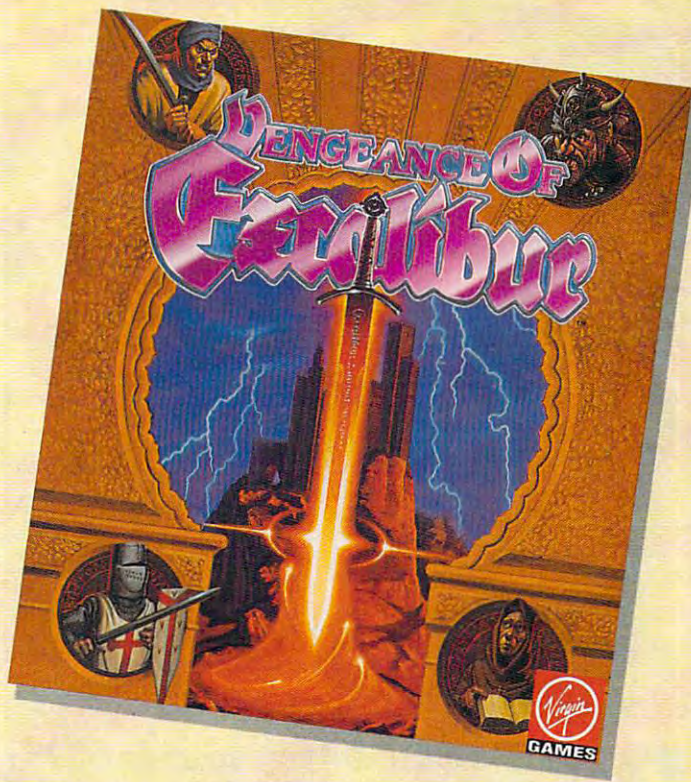
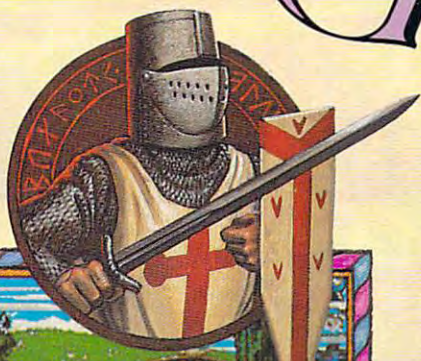
SOME OF



AVAILABLE FOR THE IBM AND AMIGA THIS SUMMER.
SUGGESTED RETAIL – \$49.99

TM and © 1991 Conan Properties Inc.
Cover illustration © 1990 Boris Vallejo.
© 1991 Virgin Games, Inc. All rights reserved.
Virgin® is a registered trademark of Virgin Enterprises, Ltd.
Virgin Games, Inc. 18061 Fitch Ave., Irvine, California 92714

THING LD



In Spirit of Excalibur, the Knights of the Round Table fought to defend medieval Britain from the evil sorceress, Morgan Le Fay. Morgan, dabbling in dark arts beyond even her ability to control, had summoned a great Lord of Demons, the Shadowmaster.

With Morgan's death, the Shadowmaster was freed to work his evil will against the unprepared folk of Britain. Striking in the night, he imprisoned the King with a spell, stole the greatest treasures of the realm and kidnapped Nineve, the court enchantress. With the loss of the sword Excalibur and the newly recovered Holy Grail, Britain begins to sicken and die. The Shadowmaster must be stopped!

Command knights and whatever followers they are able to recruit to track the Shadowmaster through hazardous, beautiful and mysterious medieval Spain. Explore the hundreds of villages and cities, fortresses and castles, dungeons and palaces and all the secret places where the Shadowmaster may dwell.

Seek what aid you can as you acquire and learn the use of the sorceries of Moorish Spain, for only with the aid of enchantments and the loyalty of strong allies will you stand a chance of ridding the world of the demonic Shadowmaster once and for all.

AVAILABLE FOR THE IBM, AMIGA, ATARI ST AND MAC THIS SUMMER.
SUGGESTED RETAIL - \$49.99

Developed by Synergistic Software.
© 1991 Virgin Games, Inc.

Virgin® is a registered trademark of Virgin Enterprises, Ltd.
Vengeance of Excalibur is a trademark of Virgin Games, Inc.
Virgin Games, Inc. 18061 Fitch Ave., Irvine, California 92714





SOME NE

ALSO TAKING OVER A
SEGA
GENESIS
NEAR YOU
THIS FALL

ARE YOU TOUGH ENOUGH TO TAKE ON THE 21st CENTURY AND SAVE MANKIND FROM HIS UNTIMELY DESTRUCTION BY A GENETICALLY ENGINEERED WAR MACHINE?!

Talk about your work-related stress! As a ZODIAC special agent, your job is to crack the complex security systems of the Universal Cybernetics Corporation and track down the mutant robot they have designed as the ultimate killing machine.

You'll arm yourself with a whole arsenal of weapons - everything from hologram projectors to special vision enhancement visors to thermal infra-red image intensifiers. If all else fails - you'll have to rely on your own psychic powers!

FEATURES INCLUDE:

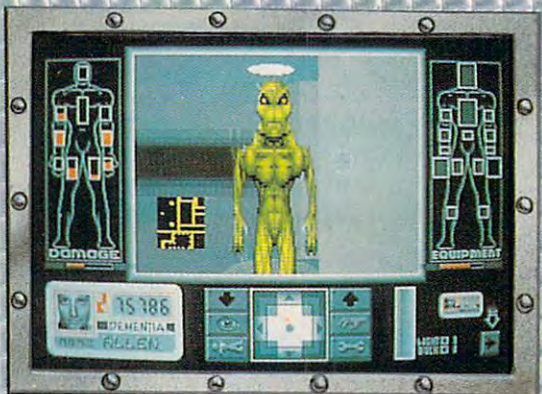
- 16-level 3-dimensional environment complete with fast, smooth scrolling
- Realistic action control of six characters: 2 male, 2 female and 2 droid
- 360 degree vision
- Environmental sound effects

"Tension and unease, with danger lurking around every corner.... This Number One European Hit will keep you on your toes and coming back for more."



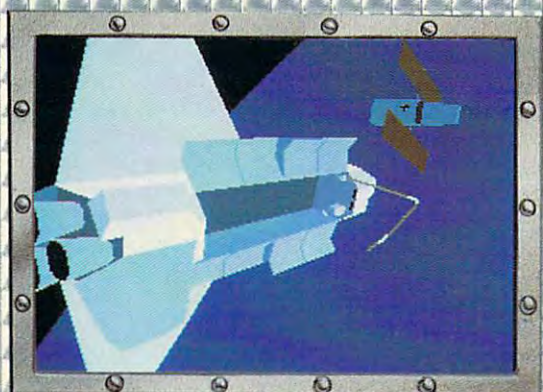
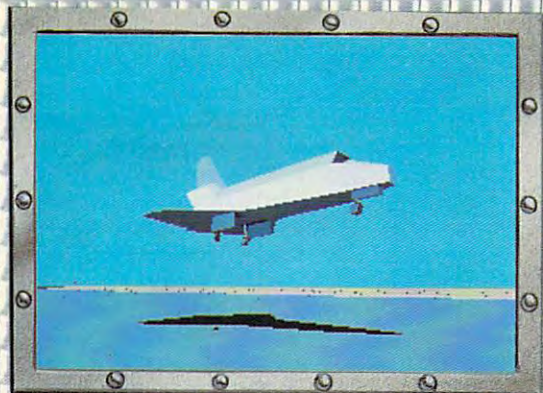
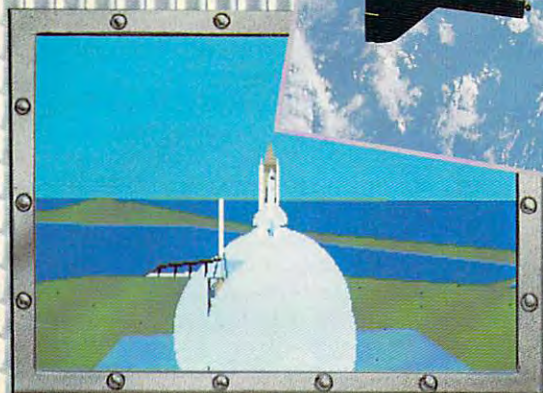
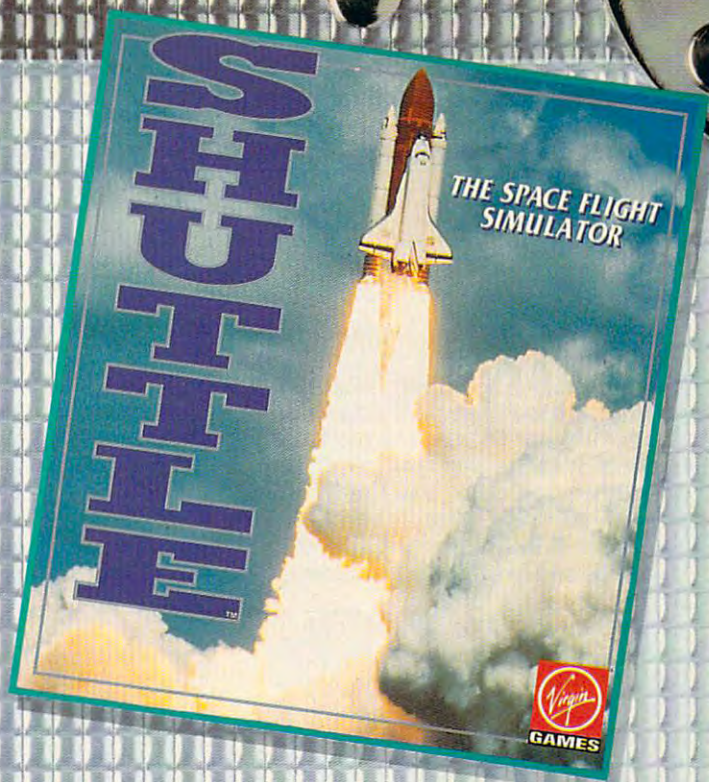
AVAILABLE FOR
THE IBM, AMIGA AND ATARI ST THIS SUMMER.
SUGGESTED RETAIL - \$49.99

TM and © 1991 Virgin Games, Inc. and Core Design.
All rights reserved.
Corporation & Virgin® are registered trademarks of
Virgin Enterprises, Ltd.
Virgin Games, Inc. 18061 Fitch Ave., Irvine, California 92714



SHUTTLE

W



She space flight simulator to end all simulators, SHUTTLE is the most accurate and comprehensive simulation of NASA's Space Shuttle ever produced for the home computer.

With the aid of Mission Control, you will master such challenges as deploying and repairing satellites, launching spy satellites, maneuvering your craft in zero gravity, attaining the correct re-entry trajectory, and pulling off complicated landings.

Advanced polygon and elliptical graphics, along with actual land and star maps were used to create the breathtaking 3D panoramas of the Orbiter and its environment, which can be viewed from any angle at any time.

Other features include:

- Authentic control panel display
- Detailed comprehensive training and reference manual
- Numerous training, scientific and "Star Wars" (SDI) Missions
- Multiple help levels from "novice" to "veteran"
- Various launch and landing sites
- Orchestral quality music
- Fold-out Shuttle flight deck poster

AVAILABLE FOR
THE IBM, AMIGA AND ATARI ST LATE SUMMER.
SUGGESTED RETAIL - \$59.99

AdLib™ and Roland™ sound boards supported on IBM Shuttle™ and Virgin® are registered trademarks of Virgin Enterprises, Ltd.

Virgin Games, Inc. 18061 Fitch Ave., Irvine, California 92714



Circle Reader Service Number 179

HP 95LX

Want something compact that does more than a pocket organizer? Hewlett-Packard's pint-sized gift to the world of computing, the HP 95LX, is a palmtop that runs DOS 3.2 and *Lotus 1-2-3* in ROM.

This machine weighs in at just 11 ounces, is slightly smaller than most paperback books, and fits easily in a coat pocket. Hewlett-Packard and Lotus Development merged a PC XT-class computer with a host of everyday applications and utilities to make the 95LX a real winner.

As a computer, this machine excels compared to talented but standard electronic pocket organizers like the Casio BOSS and Sharp Wizard. For starters, the 95LX runs DOS rather than a proprietary operating system. It has more than a glimmer of memory with 512K of RAM on board and RAM cards that can supply 128K (\$199.95) and 512K (\$399.95) of additional memory. As flash memory technology develops, 1MB and greater memory expanders will be available.

Furthermore, Hewlett-Packard seems to have solved the battery problem with a CMOS power scheme that uses only two AA batteries and can power the diminutive machine for up to six weeks.

If that isn't enough, the 95LX boasts a host of powerful software applications—all resident on a 1MB ROM chip. The lead application, of course, is *Lotus 1-2-3*, version 2.2, accompanied by a full-fledged personal information manager (not a scaled-down version of *Lotus Agenda*).

Also included are a communications application module, a file manager, a word processor, and a calculator. This makes the 95LX the most powerful Hewlett-Packard hand-

held calculator to date!

You can move data internally between the HP calculator, *Lotus 1-2-3*, the memo module, and the database. In addition, the 95LX uses infrared technology when you want to communicate with another 95LX. A number of long-distance telecommunications

tion tool that lets you zoom in to magnify a graph up to four times its initial size.

Most annoying, the 95LX keyboard runs on the small side. While no palmtop can hope to offer full touch-typing capabilities, this size does limit your access to full PC computing power. Spend a



No longer science fiction, the PC-compatible palmtop arrives, courtesy of Hewlett-Packard.

tools are being developed for this palmtop.

The 95LX is not without blemishes, however. Stacked next to some of the desktop organizers on the market, at \$699, it dwarfs others with its price. As a grownup computer in the body of a pocket calculator, though, it packs a heck of a wallop when you consider its functionality. Hewlett-Packard will have to overcome the objections of the penny wise by pushing this point home.

Other objections may not be so easy to address. Limited by its tiny screen size, the 95LX runs into some compatibility problems with certain DOS software. Since its screen offers only MDA (monochrome) graphics resolution, graphics suffer. However, the graphing module for *Lotus 1-2-3* has a magnifica-

tion tool that lets you zoom in to magnify a graph up to four times its initial size.

As for memory, even at 512K, no hefty *Lotus* spreadsheet will fit comfortably. Of course, the 95LX isn't meant to replace your desktop machine; it's a complement to its hulking desktop cousins.

Overall, this palmtop's assets clearly outweigh its shortcomings. Given the competition and ease of use integral to this Hewlett-Packard bantam prodigy, it's hard not to look at this miniature XT and wonder, "Why didn't someone do this before?"

PETER FRANCIS

HP 95LX—\$699

HEWLETT-PACKARD
1000 NE Circle Blvd.
Corvallis, OR 97330
(800) 443-1254

Circle Reader Service Number 329

EXPRESS PUBLISHER

Because of their high cost and hefty hardware requirements, many desktop publishing packages seem impractical to average users. PowerUp Software's *Express Publisher 2.0* may change that. Geared toward the non-professional desktop publisher, *Express Publisher* nevertheless compares favorably to the leading DTP programs, and it costs less, too.

PowerUp Software has added many new features to this upgrade of its popular entry-level program. The most noticeable, the TextEffects module, allows you to perform advanced text manipulations such as forcing text to fill a polygon, bend along a curve, run along an angled line, or grow or shrink from one character to the next. The TextEffects module also controls the text's justification, kerning, and character spacing.

Express Publisher doesn't skimp on typefaces. Version 2.0 includes five new "instantly scalable" typefaces, bringing the total to eight. You can scale the fonts on the fly in one-point increments from 6 to 144 points.

On-the-fly scaling eliminates the tedium of finding and loading each size and style of font you plan to use the way you do with bitmapped fonts, and it makes all sizes and styles continuously available. *Express Publisher* can also use standard LaserJet fonts, including HP soft fonts, Bitstream fonts, Micrologic MoreFonts, and AGFA Compugraphic's Express Fonts collections.

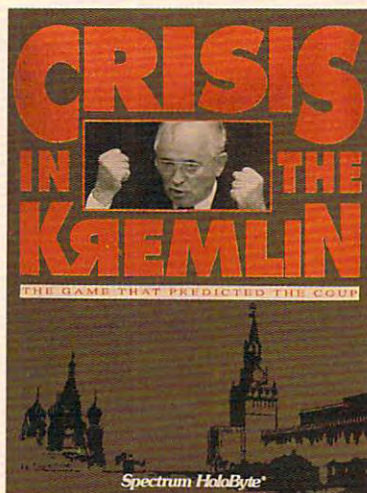
Express Publisher excels in its handling of high-resolution graphics. It supports all of the most popular graphics formats, including CGM,



THE GAME THAT PREDICTED THE COUP CHALLENGES YOU TO RUN THE SOVIET UNION.

It's true. Crisis in the Kremlin™, designed and programmed before the coup occurred, predicted an uncanny number of the coup's events.

The fall of the Communist Party. Gorbachev's mysterious "illness." The dissolution of the Soviet superpower. Crisis in the Kremlin simulates Russia's economic, political and social culture and



challenges you to make it work. As you try to meet the objective of staying in power for 30 years, you'll be kept on your toes by top Soviet officials, by live TV coverage that alerts you to the latest crisis — and even (nobody said it was going to be easy) your Russian mother. Good luck, Comrade President. You're going to need it.

Available for IBM and compatibles

Spectrum HoloByte®

A Division of Sphere, Inc. 2061 Challenger Drive, Alameda, CA 94501

For Visa/MasterCard orders call 24 hours a day, 7 days a week: 1-800-695-GAME (Orders Only)

For technical questions and availability call: 1-510-522-1164 (M-F: 9am-5pm PST)

Crisis in the Kremlin is a trademark and Spectrum HoloByte is a registered trademark of Sphere, Inc. All rights reserved.

Circle Reader Service Number 167

www.commodore.ca

TIFF, PCX, EPS, GIF, ART, IMG, and more. The software includes a clip art library and provides many advanced features, such as cropping graphics and scaling them either manually or by fixed percentage.

With its emphasis on novice DTP users, *Express Publisher* succeeds in ease of use. Using a standard point-and-click interface, a true WYSIWYG display, and a newly expanded online help system and tutorial, this program gets the beginner up and running as quickly as possible. The design makes it easier for occasional users to remember how to operate the software after not using it for awhile. Especially valuable, the help system reduces to a bare minimum the need to refer to the manual.

After reading the promotional literature that accompanied my review copy of the program, I decided to put its ease-of-use claims to the test. Just over two hours of trial and error later, I had successfully installed the program and produced a sharp, two-page, newsletter-style document with a logo and with text wrapped around an irregularly shaped graphic image—without once opening the manual. Beginners should have no problem learning to use this program.

Express Publisher contains many features designed to make page layout easier. First, a true WYSIWYG display accurately depicts the appearance of the printed page, eliminating much of the guesswork involved in correctly placing design elements. Second, editable zoom-in and zoom-out modes give you a view of either the entire page at once or a small portion of it in detail. Third, the alignment tools allow you to align an object either rela-

tive to another object or to a predefined grid. This helps keep your rows and columns straight. Finally, the program supports the design and printing of pages in both standard and landscape perspectives.

matic table of contents and index generation. Considering the modest requirements of the intended audience, however, such limitations shouldn't be too confining.

All in all, *Express Publish-*

plagued mankind for centuries: Is there life on Mars?

That year, at the Columbian Exposition, he unveiled plans for a manned mission to Mars and the colossal Space Cannon which made the journey possible. But bad luck was in the air. The cannon discharged a day early, sending many of the greatest minds of the nineteenth century hurtling on a one-way trip to the red planet.

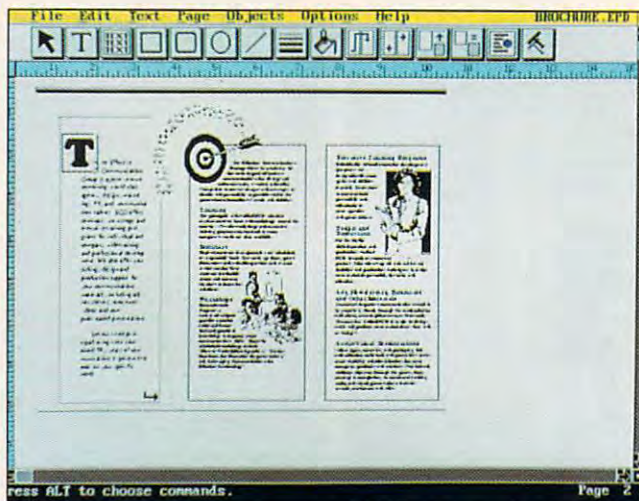
Now, two years after the disaster, you will lead a second mission in hopes of finding the stranded party—or what remains of them—and returning them safely to Earth.

So begins the latest offering from Richard "Lord British" Garriott and Origin Systems, *Ultima Worlds of Adventure 2—Martian Dreams*.

Blending history, fantasy, and mystery, along with the Lord British knack for designing knock-out adventure games, *Martian Dreams* presents a scenario guaranteed to challenge and amuse even the most jaded players. Additionally, the tried-and-true role-playing system—developed and refined throughout the *Ultima* series—warmly welcomes newcomers to computer role-playing adventures with its eminent playability.

The Mars you explore differs greatly from the one we know today. This Mars is a living planet, although one in decline. Due to its low gravity, it loses the equivalent of 60,000 gallons of water a day from its atmosphere in the form of hydrogen and oxygen gas. This makes survival difficult, though not yet impossible.

Life on Mars also differs from what you might expect. The creatures you find are strange blends of plant and animal, ranging from the size of a mouse to the size of a dinosaur. While these creatures' shapes and physical abilities



Geared toward novice DTP users, *Express Publisher* is easy to use.

Express Publisher contains numerous additional features, making it one of the most powerful entry-level DTP packages on the market. These features include support for PostScript printers, automatic hyphenation, automatic screen refresh and text rewrap, the ability to save any part of a document as a PCX image, and the ability to fax a document directly from memory using the Intel Connection coprocessor.

Like any software, *Express Publisher* has its limitations. Most notable of these is its 32-page-per-document limit, essentially restricting *Express Publisher's* use to making short brochures and manuals. To produce a longer document, you would have to divide it into several files—a complicated process at best.

Express Publisher also lacks some of the advanced features of its more expensive cousins, such as auto-

er offers very good value for the money. Simple to learn, easy to use, and packed with features, this friendly program imparts more power than most users will ever need. For those who have only an occasional need for a desktop publishing package but value professional results, *Express Publisher* promises outstanding service.

RICHARD RAPP

IBM PC and compatibles; 640K RAM; CGA, EGA, MCGA, VGA, or Hercules; 3MB hard disk space; supports mouse; supports LaserJet, DeskJet, PostScript, and most dot-matrix printers—\$159.95

POWER UP SOFTWARE
2929 Campus Dr.
San Mateo, CA 94403
(415) 345-5900

Circle Reader Service Number 330

MARTIAN DREAMS

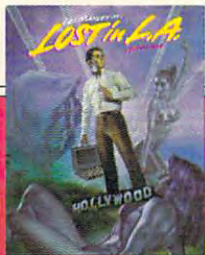
In 1893, American astronomer Percival Lowell set out to answer a question that has

Les Manley in:
Lost in L.A.

“SHE STOOD NAKED,

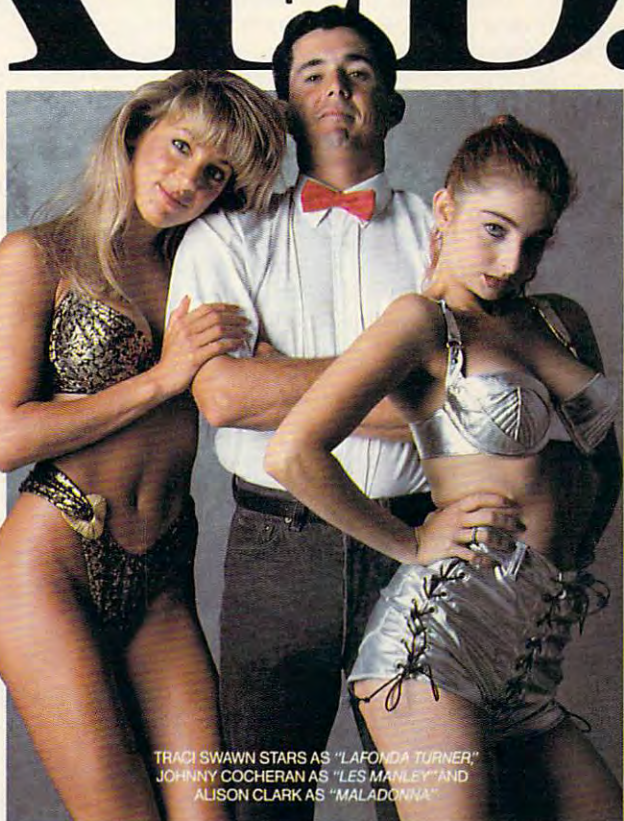
HER WET BODY BATHED IN BEVERLY

HILLS MOONLIGHT. THE STRANGER CREEPT
OUT FROM THE SHADOWS TOWARDS THE POOL. LIKE



THE STARLETS WHO HAD VAN-
ISHED BEFORE HER, SHE WAS
OBLIVIOUS TO HIS MENACING

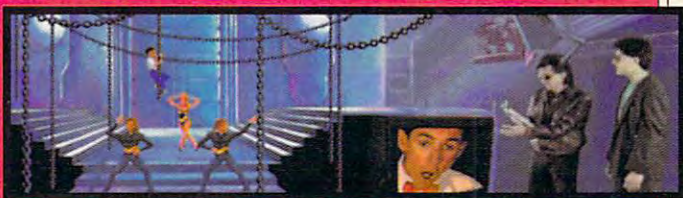
PRESENCE. HER
SCREAM WAS NOT
HEARD! THE HIPPEST
STARS IN HOLLYWOOD
ARE BEING KIDNAPPED.
AND ONLY ONE MANLEY
CAN SOLVE THE CRIME
OF THE CENTURY. *LES
MANLEY IN LOST IN L.A.*[™]
PLUNGES THE HERO OF
SEARCH FOR THE KING[™]
INTO A MEGA-MYSTERY
THAT SPANS ALL OF LA
LA LAND. MEET GOR-
GEOUS BABES, BODY
BUILDERS, ROCK STARS,
OUT-OF-WORK ACTORS—



TRACI SWAWN STARS AS "LAFONDA TURNER,"
JOHNNY COCHERAN AS "LES MANLEY" AND
ALISON CLARK AS "MALADONNA"

ALL FULLY ANIMATED AND DIGITIZED IN AWESOME 256 VGA CALIFORNIA COLOR. HERE'S A REALITY CHECK (LIST) ♦ LIVE VIDEO FOOTAGE OF REAL ACTORS AND ACTRESSES ♦ A POWERFUL PLOT AND DIALOGUE FROM A PROFESSIONAL SCREENWRITER ♦ REAL COOL CHARACTER SCALING WITH FULL ANIMATION ♦ ROCKIN' L.A. SOUND-TRACK WITH TOTAL MUSIC & SOUND BOARD SUPPORT ♦ REAL L.A. LOCATIONS—FROM

HOLLYWOOD BOULEVARD TO MULHOLLAND DRIVE MANSIONS ♦ REAL EASY 100% POINT & CLICK CONTROL ♦ SO IF YOU WANT A HOT STORY-LINE, A SHOT TO SOLVE A MYSTERY AND THE GLAMOUR AND GLITZ OF SOUTHERN CALIFORNIA, GET *LOST IN L.A.* LIKE IT'S TOTALLY REAL, DUDE. TO ORDER, VISIT YOUR FAVORITE RETAILER OR CALL 1-800-245-7744. **ACCOLADE**[™]



THE BEST IN ENTERTAINMENT SOFTWARE[™]

Les Manley, LaFonda Turner, Maladonna, and Les Manley in Lost in L.A. are trademarks of Accolade, Inc. © 1991 Accolade, Inc. All Rights Reserved. All other product and corporate names are trademarks and registered trademarks of their respective owners.

Circle Reader Service Number 201

www.commodore.ca

vary widely, they usually possess nasty temperaments.

You won't spend the whole time wandering through the harsh wilderness of the planet's surface, however. Your search for the stranded party—which includes such notables as Buffalo Bill Cody, Andrew Carnegie, George Washington Carver, and Thomas Edison—will lead you through magnificent cities and underground complexes constructed during the heyday of Martian civilization.

Along the way, you'll encounter many puzzles, tricks, and traps to overcome, including the riddle of the hallucination-inducing Martian dream machines.

Your rescue party also contains many historical figures who will accompany you on your travels. One of these is the father of modern psychoanalysis himself, Sigmund Freud, who plays a significant role in the process of creating your character when you begin the game. In this process, Freud con-

ducts a short interview, which includes dashes of Oedipal-complex psychobabble. Your answers to his questions determine your character's attributes.

To players familiar with previous games in the Ultima series, *Martian Dreams*' technical capabilities should come as no surprise. Its appealing graphics are rendered in 256-color mode, and its soundtrack supports all of the most popular sound boards.

While these features may not be revolutionary, that shouldn't be seen as negative. The game chooses to focus on an intriguing storyline rather than a few gee-whiz effects. The game's only real drawback is its hefty hardware requirements. For instance, if you store the game's files in their compacted format, they take up about 3.5MB on your hard drive. In expanded form, they swell to 5.5MB. Also, while the documentation claims that a 10-MHz machine will suffice, the pace seemed a bit slow even

on a 16-MHz 386SX.

A clever tale of nineteenth century space travel depicted in classic Ultima style—that sums up *Martian Dreams*. If you can meet the strict hardware requirements, do yourself a favor and spend this year's vacation on Mars.

RICHARD RAPP

IBM PC and compatibles; 640K RAM (plus 256K expanded RAM for music); EGA, MCGA, or VGA; hard drive; supports Ad Lib, Roland, and Sound Blaster; supports mouse—\$59.95

ORIGIN SYSTEMS

P.O. Box 161750
Austin, TX 78716
(800) 999-4939

Circle Reader Service Number 331

CUMULUS GLC

The Cumulus GLC arrived in a box so big, I immediately felt I was getting my money's worth. After trying out this well-equipped desktop machine, I've decided it does indeed offer a lot of value.

This computer is a sturdy, medium-sized desktop with nice lines. Opening the case

was simple: I took out four screws and popped the top. It came the way I like to see machines configured—standard with 4MB of SIMM (Single In-line Memory Module) memory, easily upgradable to 32MB on the board.

While I'm not a design engineer, I couldn't help but wonder if the motherboard design (two boards stacked closely on top of each other) would tend to overheat. The microprocessor, an Intel 33-MHz DX type, ran all test software with no problems. Four 16-bit expansion slots leave plenty of room for your favorite expansion cards.

While the handy integrated fax/modem/answering board did take up one slot, the remaining three should cover most of your add-on needs. The 40MB Conner hard drive checked in at 23 milliseconds read-access time, according to *SpinRite II*. I recommend a larger drive since, with today's hefty software, you can outgrow a 40MB hard drive pretty quickly. You should al-

LINKS

It's such a great time of year for a round of golf. Crisp fall air, awesome colors, pristine golf course...no crowds, no hassles, and unlimited tee times. Is this a dream? *Absolutely not!* This is LINKS The Challenge of Golf. The only golf simulator with the power to transport you to the finest championship golf courses in the world!



- 256 color VGA graphics
- Full 3-D contoured terrain
- Digitized graphics & sound
- Exact renditions of famous golf courses.
- Supports major sound boards

"Links from Access sets new standards for golf simulation software" - PC Magazine

"It's graphics are the best yet...far superior to any other computer golf game." - Golf World

(Torrey Pines Golf Course included with LINKS)
LINKS Retail Price \$59.95

If you enjoy golf, we guarantee you'll love LINKS!
30-day Money Back Guarantee if you're not satisfied.

To get on the course with LINKS, see your software retailer or give us a call at **1-800-800-4880**. VISA, MC & AMEX accepted.

ACCESS 4910 Amelia Earhart
SLC, UT 84116
SOFTWARE INCORPORATED 801-359-2900

Circle Reader Service Number 212



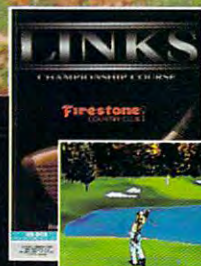
Best Sports Simulator

14th hole at Firestone C.C. South Course

CHAMPIONSHIP COURSES

Sold Separately • Retail Price \$24.95 ea.

The LINKS Design Team has taken special care in acquiring & producing some of the most outstanding golf courses in the world. Each course has its own unique challenge and personality. LINKS delivers graphics so realistic, you'll think you're there. **Experience the challenge!**



**Firestone Country Club
Akron, OH**

www.commodore.ca

so be aware that, because of the hardware configuration, this computer will probably require repair by Cumulus in the event of a breakdown.

Setup is easy. There were two setup guides (a standard "covers all" guide and a mouse setup guide), both to the point. The Cumulus GLC comes with software already installed. Plug in the monitor, throw the conveniently located power switch, and welcome your Cumulus home.

Controls for the Cumulus are very accessible; all are located conveniently in the front of the computer. The Reset and Turbo switches reside next to each other.

The standard VGA 640 x 480 monitor can support 256 colors if you take advantage of an optional memory upgrade. At .39, the dot pitch leaves room for improvement, and I recommend ordering a .28 pitch monitor from Cumulus. To support super VGA with all available colors, you'll have to purchase a Cumulus video memory upgrade,

which isn't user-installable.

The Cumulus also comes bundled with *Windows 3.0* and *Microsoft Works 2.0*. First-time computer buyers

running an application.

As for the Voice Data Fax (VDF), I skipped most of the documentation and worked directly with the software to



The rugged Cumulus GLC makes a good machine for both beginners and longtime PC users alike.

deserve more than C:> upon booting their machine. With *Windows* and *Microsoft Works* installed, you just turn on the computer, point the mouse, click it, and you're

access the board's powerful features, which says a lot about how well the software was written. The intermediate user shouldn't have any trouble figuring out how the VDF

board works. It sends and receives most commonly used graphic formats easily with very good resolution.

Technical support doesn't offer a toll-free number. However, if all lines are busy, a representative will take your number and call you back. Trying to find the Cumulus support number is easier than with most other computer makers; the telephone number was inside the front cover of every Cumulus setup manual.

PEER PLAUT

Cumulus GLC with 4MB RAM, 40MB hard drive, color VGA monitor—\$3,245

CUMULUS
23500 Mercantile Rd.
Cleveland, OH 44122
(216) 464-2211

Circle Reader Service Number 332

DESIGNASAURUS VERSION II

What's eight feet tall, ten feet long, and eats nothing but plants? An ankyronyasaurus, of course! Great

you'll think you're there.



Bountiful Golf Club
Bountiful, UT



Bay Hill Club & Lodge
Orlando, FL



Pinehurst Country Club
Pinehurst, NC



Dorado Beach Resort
Puerto Rico



Barton Creek Country Club
Austin, TX

at fending off enemies, it's also fairly fleet of foot. I know, because I created it.

What do I do with my anky? Send it to prehistoric times where it must struggle for survival. Sometimes I have it look for gigantodon geneprints that Dr. Max von Fusion scattered among 16 prehistoric worlds. If I don't bring them all back, the Foundation won't be able to continue its work.

This is *Designasaurus II*, a clever program that lets you create a dinosaur and explore prehistoric worlds or play an adventure game.

The VGA graphics are quite vivid. Trees and cactuses have realistic shadows. Arctic dragonflies flit and flutter about harmlessly. Abandoned nests may hold a clutch of eggs, have broken shells beside them, or be mysteriously empty. Bones and skulls litter the ground—an ominous sign.

Britannica consulted two paleontologists when designing the program, and everything appears in the appropriate time period. Everything except your dinosaur, that is; it can go everywhere.

To design your creation, select the forearms, head, body, and tail from any of ten existing dinosaurs—make an outrageous combination if you dare! Say you're feeling a bit conservative? Just select a premade dinosaur that actually lived.

Next, pick a geological period and climate. Each period offers a choice of two or three climates from a list of seven: desert, volcanic, oceans/lakes, mountains, plains/valleys, arctic, and varietal (some of everything).

In a prehistoric world, you have a godlike perspective. You control your dinosaur with the keyboard or joystick and monitor its vital statistics

by viewing three minicomputer screens on the right side of your main screen.

Put the world on hold and move through options on one of the tiny screens; you'll even see "your" finger pressing the buttons.

Now, explore! *Designasaurus*'s adventure mode, iden-

while mashing the fire button; the directions neglect to mention this. Also, an option to restart with the same dinosaur in the same world without having to teleport back and forth seemed like an illogical omission to me.

The *Designasaurus II* box states that the game is intend-



Designasaurus II lets you create a dinosaur and explore prehistoric worlds or play an adventure game.

tical to exploring except that you don't choose the period, requires you to retrieve geneprints. You still must struggle to eat, drink, fend off enemies, and defend friendly dinosaurs' eggs.

I would locate a corner at the end of the world (as far left and south as there are graphics, for instance) and cover the terrain systematically. Eventually I would locate a blue geneprint square. Locating the teleporter to return my dinosaur to the lab, though, proved to be the hardest part of the game.

Do I have any complaints about the software? Just a few, and at best, they're marginal. Contrary to what the manual says, sound can't be toggled off, and it grows tiresome in the lab.

To configure the joystick, you must press and hold it

ed for players between the ages of 7 and 14, but unless your young children are good with manuals, they'll need help playing initially. And I enjoyed the program tremendously—although I'm far above the age limit.

Frantically searching for water to save my anky, I thoroughly enjoyed the thousands of tiny details I found along the way. *Designasaurus II* engages saurians of all ages, and you'll play well into the next geological era.

KAREN LEE SIEPAK

IBM PC and compatibles; 512K RAM; EGA, VGA, or Tandy 16-color; 9-pin printer required to print certificates; joystick recommended—\$39.95

BRITANNICA SOFTWARE
345 Fourth St.
San Francisco, CA 94107
(800) 572-2272

Circle Reader Service Number 333

THE ULTIMATE COMPUTER SOFTWARE BUYER'S GUIDE

Everyone enjoys making a great computer deal that stretches your hard-earned dollars even further. With its new product, *The Ultimate Computer Software Buyer's Guide*, Lilac Akiko may help you find a bargain on your next software purchase, and it will definitely make the search less strenuous.

The Guide contains information on almost 600 programs and 35 mail-order vendors. Mail-order companies aren't saddled with a traditional retail store's overhead costs, so they can offer prices substantially lower than those at most local computer centers. A quick search of the database allows you to compare prices, shipping charges, payment methods, and several other factors to find the best overall deal on the software you want.

Because software prices change constantly, Lilac Akiko updates *The Guide's* information monthly. It distributes *The Guide* by subscription, which assures you of always having the most current data. Both 6- and 12-month subscriptions are available, or you can purchase a single trial issue. And *The Guide* is growing. Upcoming issues will contain information on more than 1000 programs and 40 vendors.

The Guide's design makes it very easy to use. Its character-mode interface uses pop-up menus to input user selections and text windows to display product and vendor information. You can locate product information by entering the name of a specific program or by search-

A whole new look! A whole new way to play!

SHADOW SORCERER

AN ANIMATED
FANTASY ADVENTURE

SHADOW SORCERER combines elements of role-playing with strategy, exploration and animated action. It's an exciting new way to play computer AD&D fantasy gaming!

Control four characters at the same time — even during fully-animated real-time combat! All in 3-D isometric perspective!

Select your party from 16 different heroes, each with pre-made attributes. You've got nothing but trouble ahead: hundreds of refugees who desperately need your help to find safe haven. Strange monsters that inhabit the vast wilderness, caverns and dungeons. An army of Draconians led by a red dragon!

When the spells and weapons start flying, you'll love the simple "point-and-click" interface!

**IBM
AMIGA**

Clue Book
available!

Advanced
Dungeons & Dragons[®]
COMPUTER PRODUCT

POWER TO PLAY
INSIDE THE BOX
\$750.00
TO BUILD THE ULTIMATE GAME STATION

IBM VGA DISPLAYS



Control four characters at once even during real-time combat!



Play in the DRAGONLANCE game world—in 3-D isometric view!



One of the many colorful characters who can help you on your quest.

SHADOW SORCERER.
It's a whole new experience
in fantasy gaming!

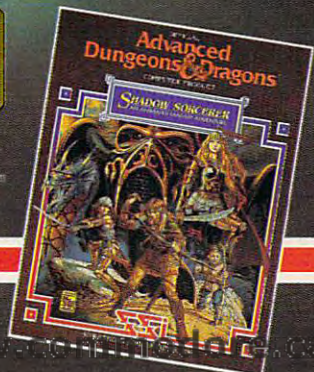
TO ORDER BY VISA/MC: call
1-800-245-4525 (in USA & Canada).

To receive SSI's complete product catalog,
send \$1.00 to: SSI, 675 Almanor Avenue,
Suite 201, Sunnyvale, CA 94086.



ADVANCED DUNGEONS & DRAGONS, AD&D, DRAGONLANCE and the TSR logo are trademarks owned by and used under license from TSR, Inc. ©1991 TSR, Inc. ©1991 Strategic Simulations, Inc. All rights reserved.

STRATEGIC SIMULATIONS, INC.[®]



ing all the programs in one of *The Guide's* 16 categories.

This package has only one flaw; it needs a database of product features. Currently, you have no way to compare features to find the program that best suits you. This ability would make *The Guide* truly indispensable rather than just useful. Still, for those of you who know what you want but need some help finding the best deal, *The Ultimate Computer Software Buyer's Guide* can be a valuable tool.

RICHARD RAPP

IBM PC and compatibles; 512K RAM; CGA, EGA, or VGA—\$25 for 6-month subscription, \$45 for 12-month subscription, \$5 for one trial issue

LILAC AKIKO

1500 S. Palm Canyon Dr., Ste. 6
Palm Springs, CA 92264
(800) 659-4135

Circle Reader Service Number 334

DEMONIAK

In today's world of full-color graphic adventure games, an old-fashioned text game appears out of place. It would seem more at home in a museum next to a dinosaur dis-

play than on the new releases shelf at your local computer store. But Palace Software's *Demoniak* proves that text adventures aren't quite ready to follow those reptilian giants into oblivion.

Created by British author Alan Grant, who has worked on such popular comic books as *Batman*, *The Punisher*, and *Judge Dredd*, *Demoniak* takes you on an interplanetary quest filled with humor and plenty of science fiction high adventure. Your mission sends you in search of a way to close a gateway into our universe, thereby foiling the planned invasion by the Hoards of *Demoniak*.

And just who is *Demoniak*, you ask? Simply put, *Demoniak* embodies evil, and he wants to destroy the good parts of our universe. Fortunately, your quest isn't alone.

Your motley group of adventurers includes Sondra Houdini, radical feminist and world-class psychic; Madlok, a powerful sorcerer and suspected serial killer; Flame, a pyrokinetic and frustrated superheroine; and Doctor Cortex, super-

genius and possible cause of the imminent invasion.

Proteus, the world's first living spaceship, provides your transportation. Most of the time, you play the role of Johnny Sirius, a human-alien halfbreed and the star of the world's most popular television show, "Man Alone."

British-based Palace Software spawned this engaging epic via its new Pure Fiction adventure game system. Whereas most text adventures present you with a set story line, this system simulates a world which the player can freely explore.

Independent, artificially intelligent characters populate the world, constantly interacting with each other and with you. They all have unique personalities, and their attitudes change according to the game's events. Even the members of your own party maintain their independence, refusing to slavishly follow your orders. In fact, they won't listen to you much at all until you have earned their trust.

Another of the Pure Fiction system's unique features allows you to switch characters anytime you want. In something like the adventure game world's version of possession, you literally jump from one character to another, seeing the world through the new character's eyes and retaining any and all of his special abilities.

This definitely adds a new strategic dimension to the game, forcing you to decide not only where to go and what to do, but also who it is most advantageous to be. The only characters I've found that you can't become are Proteus and *Demoniak*.

The two main drawbacks of text adventures have always been their heavy dependence on keyboard input and their limited parsers.

Due to *Demoniak's* traditional keyboard interface, you can't count on much relief from finger fatigue. For the nontouch-typists among us, such adventure games always present difficulty. When it comes to parsers, however, *Demoniak* illustrates just how far computers have come toward understanding standard English.

Demoniak understands a relatively large vocabulary and handles complex and even recursive sentences. You won't often find yourself rewording and retyping your commands; it usually understands you the first time.

Despite the heavy typing requirement, *Demoniak* still earns top marks, especially with those who lament the passing of the keyboard as the input device of choice.

Here the strong cast of characters, witty story line, and intriguing new features combine to create an entertaining game in a genre many had written off as dead. *Demoniak* proves there's still some life in those old bones.

RICHARD RAPP

IBM PC and compatibles; 640K RAM; CGA, EGA, MCGA, VGA, Hercules, or Tandy 16-color; supports Roland MT-32 and Ad Lib sound—\$49.95

Also available for Amiga—\$49.95 and Atari ST—\$49.95

PURE FICTION
20432 Corisco St.
Chatsworth, CA 91311
(818) 709-3692

Circle Reader Service Number 335

THE BUGS BUNNY CARTOON WORKSHOP

Cartoon favorites Bugs Bunny, Elmer Fudd, Tweety, Sylvester, Daffy Duck, and others come to life on the computer screen in *The Bugs Bunny Cartoon Workshop*.

STATEMENT OF OWNERSHIP

Statement of ownership, management and circulation (Act of August 12, 1970; Section 3685, Title 39, United States Code). 1. Title of publication: COMPUTE. 2. Date of filing: September 03, 1991. 3. Frequency of issue: Published monthly. 4. Location of known office of publication: 1965 Broadway, New York, NY 10023-5965. 5. Location of headquarters of general business offices of publisher: 1965 Broadway, New York, NY 10023-5965. 6. Names, addresses of publisher, editor and managing editor: Publisher: Bob Guccione, 1965 Broadway, New York, NY 10023-5965. Editor: Clifton Barnes, 324 West Wendover Ave., Greensboro, NC 27408. Managing Editor: David English, 324 West Wendover Ave., Greensboro, NC 27408. 7. Owner: The names and addresses of stockholders owning or holding one percent or more of total amount of stock: Compute Publications Int'l., Ltd., 1965 Broadway, New York, NY 10023-5965; General Media Publishing Group, Inc., 1965 Broadway, New York, NY 10023-5965; General Media International, Inc., 1965 Broadway, New York, NY 10023-5965. A trust for the benefit of the R. C. Guccione Family, Grand Cayman, Cayman Islands, B.W.I.; R. C. Guccione, 1965 Broadway, New York, NY 10023-5965. 8. Known bondholders, mortgagees, and other security holders owning or holding one percent or more total amounts of bonds, mortgages, or other securities: None. Average number of copies of each issue during preceding 12 months: (A) Total number of copies printed: 451,806. (B) Paid and/or requested circulation: 1. Sales through dealers and carriers, street vendors, counter sales: 43,948. 2. Mail subscriptions paid and/or requested: 304,556. (C) Total paid and/or requested circulation: 348,504. (D) Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies: 1,511. (E) Total distribution: 350,015. (F) Copies not distributed: 1. Office use, left over, unaccounted, spoiled after printing: 6,760. 2. Return from News Agents: 95,030. (G) Total: 451,806. Actual number of copies of single issue published nearest to filing date: (A) Total number of copies printed: 444,723. (B) Paid and/or requested circulation: 1. Sales through dealers and carriers, street vendors, counter sales: 39,100. 2. Mail subscriptions paid and/or requested: 287,000. (C) Total paid and/or requested circulation: 326,100. (D) Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies: 1,500. (E) Total distribution: 327,600. (F) Copies not distributed: 1. Office use, left over, unaccounted, spoiled after printing: 6,572. 2. Return from News Agents: 110,551. (G) Total: 444,723. I certify that the statements made by me are correct and complete: Patrick J. Gavin, Vice President/Finance and Chief Financial Officer.

KEEP YOUR FRIENDS ON THE CUTTING EDGE OF COMPUTING WITH A GIFT SUBSCRIPTION TO COMPUTE!



**SAVE UP TO
\$25.43**

Kee your friends up-to-date on the latest news, technologies, hardware, software and lots, lots more in the world of home office computing. Give them a holiday gift subscription to COMPUTE!

Special Options

Every month COMPUTE is published in four different editions, each with a special section devoted to a specific computer type... IBM & Compatibles, Amiga, Commodore 64/128 and the multi edition which includes all three special sections. You choose the edition that will be best for your friends.

Added Value

Take your friends beyond the pages of the magazine! Give them the COMPUTE Disk, a bi-monthly, hands on companion to COMPUTE Magazine... and a valuable addition to your gift!

Special Low Holiday Prices

The first 12 issue gift subscription you give is only \$12.97. That's a savings of \$22.43 (63%) off the newsstand price. Each addi-

tional gift is only \$9.97—a huge savings of \$25.43 (71%). To include the COMPUTE Disk with a subscription, add an additional \$30 per subscription.

Use the coupon below to send us your gift list. As soon as we receive it we'll send you attractive gift cards you may use to announce your generous gifts to your friends.

YES, send a one year (12 issues) subscription to COMPUTE to my friends as listed below.

Send to:

Name _____

Address _____

City _____ State _____ Zip _____

Check magazine edition:

- IBM/IBM Compatible Amiga
 Commodore 64/128 Multi Edition

Also, send the companion disk along with the subscription

Send to:

Name _____

Address _____

City _____ State _____ Zip _____

Check magazine edition:

- IBM/IBM Compatible Amiga
 Commodore 64/128 Multi Edition

Also, send the companion disk along with the subscription

	First Gift	Each Additional Gift
MAGAZINE ONLY	\$12.97 (SAVE \$22.43)	\$9.97 (SAVE \$25.43)
MAGAZINE & DISK	\$42.97	\$39.97

From (You must fill out this portion):

Name _____

Address _____

City _____ State _____ Zip _____

Payment enclosed Bill me

Charge VISA MasterCard

Account # _____ Exp. Date _____

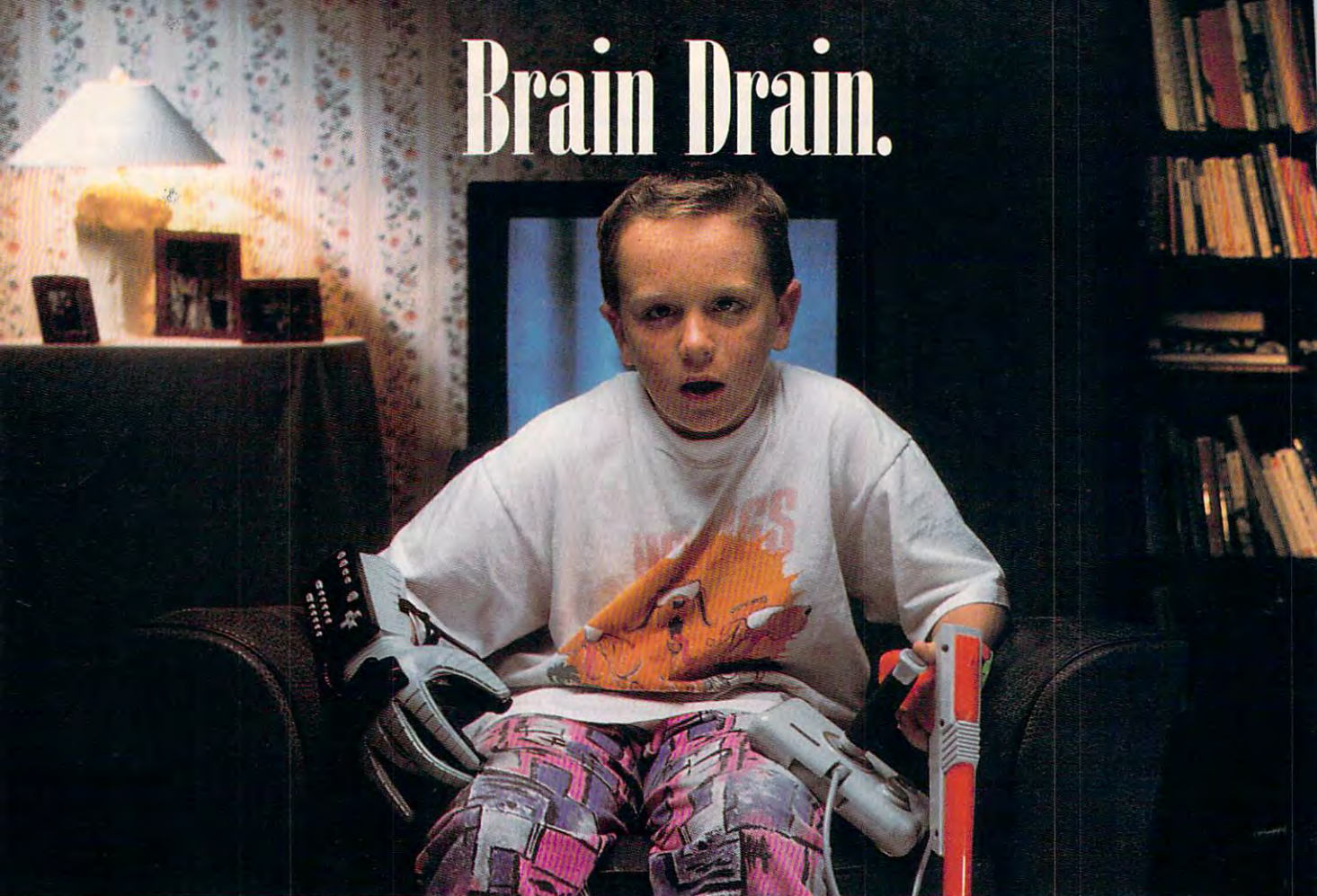
Signature _____

Please allow 6-8 weeks for delivery of first issue. Regular subscription price is \$19.94 for 12 issues. All foreign orders add \$10 per subscription for postage & handling. Canada add \$10 plus 7% G.S.T. Payment acceptable in U.S. funds only. Gifts cards will be sent to you to announce your gifts.

YYON8

Mail to: COMPUTE P.O. Box 374 • Harlan, Iowa 51593 www.commodore.ca

Brain Drain.



This animation construction set has both Junior and Master modes, so even young children can create their own cartoons. A point-and-click icon-based interface along with a library of animated actors, props, settings, and sound effects simplifies cartoon construction.

Several ready-made Junior and Master mode cartoons are available for use as study aids or cartoon-creation jumping-off points.

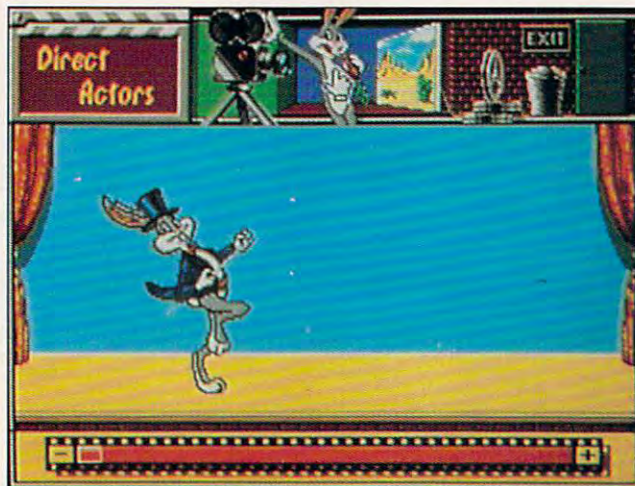
Cartoon Workshop runs from floppies or a hard disk. An installation program automatically copies all the necessary files to a hard drive partition you specify.

Although program tools can be activated from the keyboard, you'll find it easier to position characters and props on-screen with the click and drag of a mouse. With keyboard input, you must select icons and perform activities via menus or toolboxes.

Cartoon Workshop has an intuitive interface. At the top of the Main Workshop screen

you see a menu bar with several icons representing activities or submenus you activate with the click of the mouse. If you move the pointer to a

ed into computer memory. Once begun, the animation repeats until you stop it. Click on the icon of Bugs Bunny and activate the Direct Ac-



Orchestrate new Road Runner and Wile E. Coyote desert chases with The Bugs Bunny Cartoon Workshop.

specific icon, a brief description identifies it. You can access context-sensitive online help from each submenu.

Select the movie camera icon to show a cartoon load-

ors menu to place a new actor or prop in the picture.

Animators can have up to eight actors or props on-screen simultaneously. Actors come with a style book,

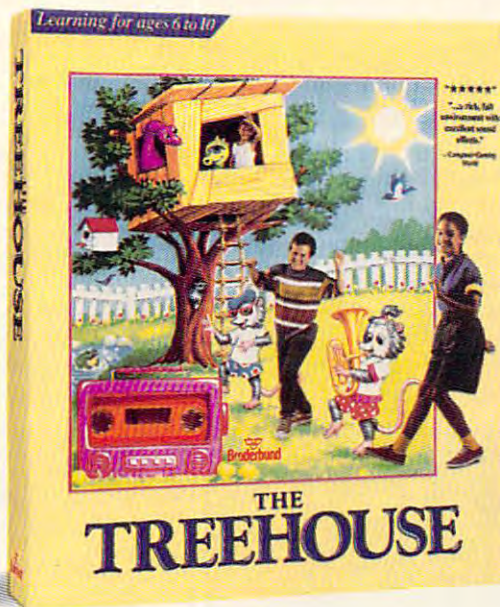
or repertoire, of animated actions you direct them to perform. You can also add a number of props, many of them animated (balloon up, balloon pop, bird cage, exploding bomb, dust ball, and others), to a scene.

An artist's palette lets cartoonists paint objects using 16 colors. Other tools allow you to flip an actor horizontally or vertically or reposition the actor onscreen. Unfortunately, every time you make a selection from the Direct Actors (or any other) submenu, the program annoyingly returns you to the Main Workshop screen. You must reselect a particular icon for each edit or modification you want to make to a cartoon frame.

Animators build cartoons in the central portion of the Main Workshop screen. They select items (action, stages, and characters), frame transition effects, audio clips, and animation speeds and durations from special list boxes. For example, choose the stage icon from the Main Work-

Brain Gain.

Why let your kids play games with their future? Instead, give them Brøderbund's newest computer program, *The Treehouse*. And help them play it smart. ¶ Rather than shoot-em-ups, monsters, and mayhem, *The Treehouse* features science, math and music. Not to mention language arts, social studies and creativity. ¶ Our earlier best-seller, *The Playroom*, gives preschoolers a playful place for learning. Now, *The Treehouse* gives



6- to 10-year-olds their own world to explore. ¶ Both programs feature a treasure-trove of subjects. And they're both chock full of fun. So learning becomes play, not work. ¶ *The Treehouse* runs on MS-DOS (coming soon for Mac and Apple II). See it at your dealer for \$59.95 (suggested retail). **SAVE 25% Call 1-800-521-6263** ¶ And teach your child to shoot for the moon, instead of blasting aliens and UFOs.



For a free catalog, write to us at 500 Redwood Blvd., Novato, CA 94948-6121.

Apple and Macintosh, and MS-DOS are registered trademarks of Apple Computer, Inc. and Microsoft Corporation, respectively. © Copyright 1991, Brøderbund Software, Inc. All rights reserved.

Circle Reader Service Number 171

20 COM

shop screen and you can select a background for the current action or scene. Three stage options (mountains, desert, and snow) simulate animated movement when they appear onscreen. This is a handy illusion if you have an actor running or walking.

A Film Slider (filmstrip icon) at the bottom of the screen makes it possible to move through the cartoon (forward or backward) one frame at a time. You can save individual picture frames to disk as LBM files (*DeluxePaint* compatible) or print them. Cartoon files automatically save in a FILMS subdirectory of the *Cartoon Workshop* directory with either a CM1 (Master mode) or CJ1 (Junior mode) extension.

A special archive feature called Demo Version allows you to save a runtime version of your cartoon so that it can be viewed by individuals who don't own a copy of *Cartoon Workshop*. You'll need a blank, formatted disk with 200K of available free space. Unfortunately, Demo

only works with disks placed in drive A, meaning you won't be able to take advantage of the extra space available on 3½-inch floppies if they insert in drive B.

Cartoonists who design their animations in Junior mode (the program default) have limited customizing options. For example, the Effects menu (for setting the number of frames in a scene, adjusting action speed, selecting screen transitions, or adding sound) isn't available. In addition, youngsters can only build cartoons consisting of a single scene.

Animators who design cartoons in Master mode (invoked by toggling the F5 key) have more tools at their disposal thanks to the Effects menu. In addition, they can build longer, more complex cartoon animations consisting of different sets of actors and multiple scenes. You can't display or modify in one mode cartoons that are created in the other mode.

The Bugs Bunny Cartoon

Workshop offers good value for your money. It's elegant and affordable, and the whole family can enjoy this product. Instead of passively watching Saturday morning television, you now have the tools to create and show original computer animations complete with audio effects and speech bubbles.

CAROL HOLZBERG

IBM PC and compatibles, 640K RAM, EGA or VGA—\$49.95

HI TECH EXPRESSIONS
584 Broadway, #509
New York, NY 10012
(212) 941-1224

Circle Reader Service Number 336

FAXBUILDER

In this age of worldwide fax communication, the folks at Unison World have decided that fax senders also need some canned creativity. Like a book of clip art, *FaxBuilder* provides a seemingly endless array of pictures, logos, and borders to accompany fax transmissions.

While I don't go for flashy faxes myself, the *Print Shop* crowd will make frequent use of *FaxBuilder's* at-the-ready graphics capability.

The illustration on the front of *FaxBuilder's* box shows a fax message with the somewhat redundant heading "FAX MESSAGE" in bold, inch-high letters, along with an unnecessary border. After enduring the long wait for *FaxBuilder* to load onto your hard drive, you'll find little innovation. There's a vase full of flowers with "HAVE A NICE DAY!" taking up half a page, a passenger jet heading into the sunset for a "While I'm Away" message, and all manner of pushpins, flags, and maps.

Patching together one of these pictures for transmission takes a little time, though *FaxBuilder* does walk you through a relatively simple, straightforward process to create personalized faxes. As you work, *FaxBuilder* displays each change or addition clearly.

Automatically filling in some names and numbers from a permanent phone book, the program is set up to create cover sheets, text pages, and trailing sheets using a healthy variety of type sizes and styles.

In the end, unless a pair of shaking hands below the caption "Have I Got a Deal for You . . ." sounds appealing, using *FaxBuilder* as a sophisticated word processor to create distinctive documents may be its most suitable use. While clip art has appeal, the ability to easily manipulate fonts and typefaces seems a far more significant feature.

EDDIE HUFFMAN

IBM PC and compatibles; 640K RAM; CGA, EGA, VGA, or Hercules; hard disk; supports over 150 dot-matrix, ink-jet, and laser printers—\$49.95

UNISON WORLD SOFTWARE
1321 Harbor Bay Pkwy.
Alameda, CA 94501
(800) 444-7553

Circle Reader Service Number 337

RIGHTWRITER

Software applications that help you decide what to say and how to say it, assisting in the creative process, need further development. However, applications like Que Software's *RightWriter*, which deal mostly with the mechanical structure of a document, will help you grammatically.

To a lesser degree, this program will also provide assistance in increasing the creative quality of your documents by flagging clichés, slang, awkward phrases, and jargon. Such prose violations often come under the catchall heading of style.

RightWriter uses 5500 grammar rules to check for signs of weak, confusing, or incorrect writing. Reportedly, *RightWriter* detects more than 25,000 kinds of writing

errors (not all, one would hope, in a single document).

The program offers three primary levels of word processor compatibility. With wide-selling word processors such as *WordPerfect*, *Microsoft Word*, and *WordStar*, you can conveniently hot key directly into and out

of the program to understand the program's objection to what you've written or more help with solving the problem, you can turn directly to examples in the manual.

RightWriter's comments follow its analysis format. You can expect commentary on such classic mistakes as sub-

stitution. In time, you'll know them well enough to avoid them.

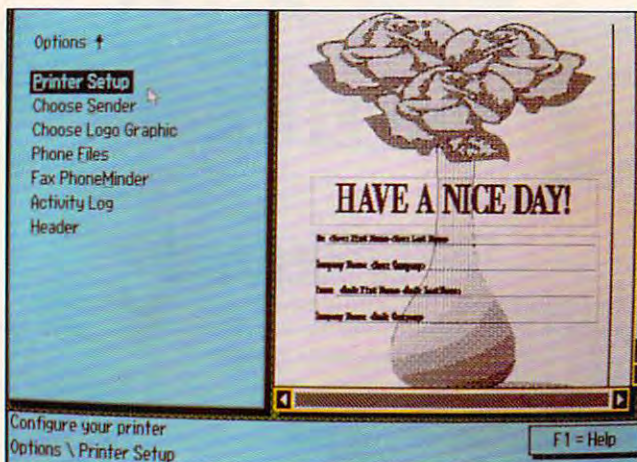
After completing its analysis, *RightWriter* presents a report that summarizes eight aspects of your work. Readability notes the ease of reading your text expressed in terms of education level. For example, a document with a readability index of 8.5 will make sense to anyone who reached the eighth grade or higher. Generally, business writing should fall within the sixth- to tenth-grade levels.

Strength measures the number of clichés, negative expressions, and passive terms you've used. The index's parameters range from 0 to 1. Clichés seriously diminish your quality of writing. You should avoid them like the plague.

An analysis of the number of adjectives and adverbs helps you avoid extremes of choppy and verbosity. Jargon, too, merits its own section, pinpointing buzz words and similar problems. Sentence Structure recommends general changes to improve a document's cadence and flow. Word List flags words that might be misspelled, abstruse, slang, or sexist.

Word Frequency recaps all the words in the document and the number of times you've used each word. Statistics quantifies a multitude of sentence and word statistics such as word count, number of sentences, number of unique words, average number of words per sentence, and the number of syllables per word.

To appeal to both grammatical purists and the casually concerned, *RightWriter* allows you to include or exclude any or all of the rules it uses to analyze your grammar, punctuation, usage, and style components. Likewise, the Customize Summary option enables you to pick and



Create distinctive documents, or construct the friendliest faxes in your office with FaxBuilder.

of *RightWriter*. This spares you from the save-exit-load-exit-reload routine.

With a dozen or so other popular word processors (*XyWrite*, *PC-Write*, *PFS* series, *Bank Street*, and so on), *RightWriter* will analyze documents created in their native format. However, you must be in *RightWriter* to initiate the error-detection process (save, exit, load, and so on). Finally, *RightWriter* will even accept text in ASCII format.

RightWriter creates, analyzes, and records its comments in a duplicate copy of your document. You have the option to name the clone file. When *RightWriter* finds a problem, it inserts a comment to flag the word or punctuation in question and usually offers a suggestion to solve the problem.

Comments are numbered, so if you need more informa-

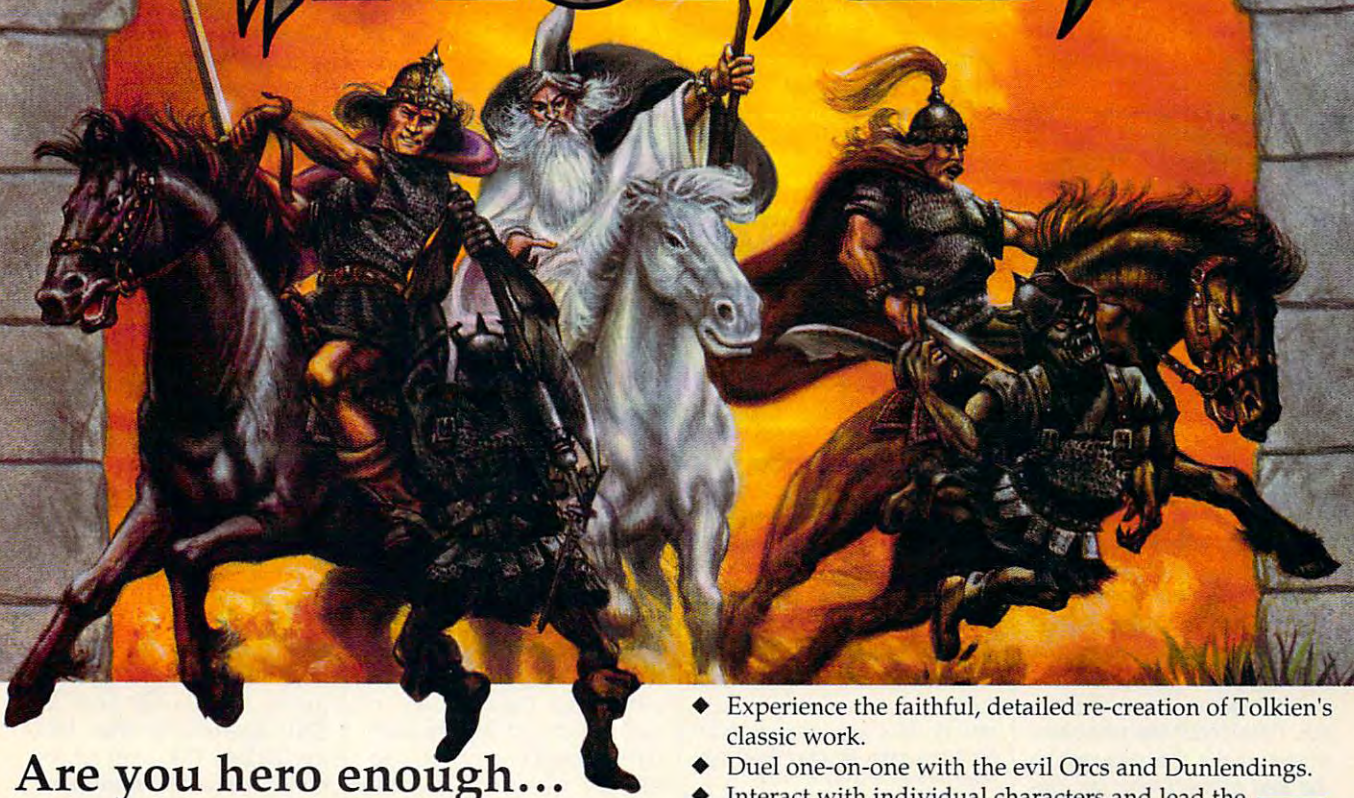
tion, you can refer to the subject-verb mismatch, run-on sentences, misuse of verbs and articles (which sounds more like a felony than a faux pas), and a whole range of punctuation problems.

RightWriter's usage rules help you avoid clichés, archaic language, sexist terms, and jargon. In addition, its usage rules address some fascinating and common errors such as modified absolutes ("almost perfect"), redundancy ("two twins") and euphemisms. Style comments alert you to a wide range of possible errors including passive voice, ambiguity, overly long sentences, and negativism.

Usually you aren't aware of the slips; you've allowed them to creep into your writing style over a period of years. So just as your English teacher once did, *RightWriter* draws your attention to the er-

NOW AVAILABLE
J.R.R. Tolkien's

Riders OF Rohan



Are you hero enough...

...to ride with Gandalf, Aragorn, and the other Fellowship characters against the forces of the traitorous wizard Saruman?

Then explore the all-new fantasy adventure game based on J.R.R. Tolkien's *The Lord of the Rings*.

- ◆ Experience the faithful, detailed re-creation of Tolkien's classic work.
- ◆ Duel one-on-one with the evil Orcs and Dunlendings.
- ◆ Interact with individual characters and lead the elite cavalry of Rohan as they battle across realistic 3-D terrain, or let the computer handle the details of combat.

KONAMI®



Actual IBM screens



One of the Istari, sent to Middle Earth to unite the Free Peoples against Sauron. Transformed after his defeat of the Balinog into Gandalf the White, he would now contend with Saruman as well.



Available for IBM PC and true IBM compatibles. The program is published with the cooperation of the Tolkien Estate and their publishers, George Allen & Unwin (Publishers) Ltd. The plot of Riders of Rohan, the characters of the Hobbits, and the characters from The Lord of the Rings are copyright George Allen & Unwin (Publishers) Ltd 1966, 1974, 1979, 1981. All brand names and trademarks are the property of their respective holders. Konami® is a registered trademark of Konami Co., Ltd. Image Works™ is a trademark of Mirrosoft Ltd. © 1991 Mirrosoft Ltd. © 1991 Konami, Inc. (708) 215-5111. All Rights Reserved.

Circle Reader Service Number 124

www.commodore.ca

choose from the summary's eight components to report on only those you want included or considered.

RightWriter's simple, self-explanatory menus deal equally with understanding the techniques of measuring clarity and running the program. You can start *RightWriter* directly from the command line. Add the requisite arguments, and you can control where it creates and what it names the marked-up duplicate copy.

One minor problem that arose concerned transferring corrections from the annotated copy back to the original. Some (but not all) of *RightWriter's* warning flags warrant altering your original text. Ideally, *RightWriter* should allow you to make the corrections you agree with and transfer the corrected text in a batch back into the original document. However, it doesn't work that way.

Instead, you must use a split screen (scrolling the corrected copy in one window while correcting the original in the other) or print out the corrected copy and use it as a guide to enter corrections in the original document.

After some experimentation, I decided to read the comments, make the changes in the text of the clone file, delete all comments, and then use the corrected copy as my original. Although I'd love to take credit for this technique, *RightWriter* anticipated it and contains a menu command that strips out the comments in a batch mode.

Detecting strictly mechanical errors (unpaired parentheses, missing periods, missing quotation marks) is easy. To detect the more subtle errors, *RightWriter* uses two artificial intelligence (AI) techniques to locate and correct writing errors.

The first, a parser, analyzes a sentence and then breaks it into its major components. After identifying dependent and independent clauses, the parser subdivides each clause into its subject and predicate and continues to analyze every word in every sentence to identify its purpose. The second AI technique uses what's popularly called fuzzy logic to compare the use of words and phrases against programmed guidelines. This, in turn, generates *RightWriter's* suggestions for correcting what it perceives as errors.

Despite the extensive data crunching *RightWriter* performs as it analyzes every word, it chewed through a 6000-word document in less than two minutes, providing some helpful suggestions and some comments I felt I could do without. *RightWriter* and I would seem to have the same relationship that many students share with their English teachers—I'm happy to have the assistance but still willing to break a few grammatical rules for the sake of more distinctive, snappier writing.

HOWARD MILLMAN

IBM PC and compatibles; 512K RAM; two floppy drives or one floppy drive and a hard drive—\$99

QUE SOFTWARE
11711 N. College Ave.
Carmel, IN 46032
(800) 992-0244

Circle Reader Service Number 338

ANDREW TOBIAS' MANAGING YOUR MONEY

Fed up with being broke, with not knowing where all the money from your paycheck has gone? For a little over \$200 and a few hours

of patient work per week, you and your personal computer can gain control of your financial life.

The award-winning *Managing Your Money* software has been revamped to compete with marketplace newcomer, *Quicken*. *Quicken* lists for less (at about \$60) and for most will seem easier to use. Furthermore, with *Quicken's* interface to the \$250 *Wealth Builder* program, *Managing Your Money* paled by comparison. Until, that is, the introduction of version 7.0.

Managing Your Money now features pull-down menus, multiple windows, hot keys, colorful graphics that support VGA, a pop-up report generator, and a window-based database module. Friendlier than previous versions, the new *Managing Your Money* remains a bit clunkier to use than *Quicken*. We can't have everything, after all.

Where *Managing Your Money* really outshines the *Quicken* and *Wealth Builder* double-team is the online help information from financial wizard and best-selling author Andrew Tobias. Just hit the F1 key (no longer the confusing Escape key of old), and you immediately have access to over 450 pages of wit and wisdom penned by Tobias. The program is almost as good as having your own personal accountant or financial planner in your computer.

Arranged like a book of eight chapters, *Managing Your Money* consists of File, Desk, Money, Tax, Insure, Analyze, Portfolio, and Net Worth options. Each of the eight options was put in place when the program originally came on the market, and over the years they have been refined by the suggestions and comments

of numerous users. The resultant program combines the talents of thousands of people, including Tobias.

The core of *Managing Your Money* provides for the paying of bills electronically or by printing checks, tracking income and expenses, creating and monitoring budgets, and keeping track of multiple bank accounts, cash management accounts, and credit cards. A very convenient new feature alerts you when your bills are due and must be paid.

For the individual and professional alike, *Analyze* proves an impressive tool. You may make many financial calculations and projections associated with financial decisions. The program allows you to compute answers concerning loans, annuities, retirement and tuition planning, mortgage refinancing, rental property analysis, and investment analysis. These features were enough to keep me busy for quite a while.

Managing Your Money allows for the integration of the Tax and Portfolio options with two other award-winning MECA programs: *Managing the Market* and *Tax Cut*. *Managing the Market* allows the user to log on to Dow Jones and download current prices, stock market trends, and articles from the *Wall Street Journal*. *Tax Cut* is a sophisticated personal tax preparation software package.

Insure allows you to compute the cost of an adequate life insurance policy tailored to your individual financial needs. *Insure* provides a vital financial and estate record file in preparation for the ultimate event.

Net Worth provides the unique feature of tracking your personal net worth and

*Elvira II:
The Jaws of Cerberus*

"THE EARTH OPENED. ONE BY ONE THE MOST HIDEOUS MONSTERS

OF GOTHIC HORROR
CRAWLED THROUGH THE PORTAL.
THE NIGHTMARE HAD BEGUN!"

PRESENTING ELVIRA II: THE JAWS
OF CERBERUS,[™]
A FANTASY
QUEST OF EPIC
PROPORTIONS.



AN EVIL
FORCE HAS PENE-
TRATED OUR UNIVERSE
AND ABDUCTED ELVIRA
HERSELF. YOUR TASK?
FIND AND RESCUE
ELVIRA INSIDE THREE
CAVERNOUS MOVIE
SETS—A GRAVEYARD,
HAUNTED HOUSE AND
CATACOMBS—THEN
FIGHT A FINAL CATA-
CLYSMIC BATTLE WITH
A NETHERWORLD EN-
TITY OF AWESOME
FURY. ♦ EXPLORE
THREE HUGE AND HOR-
RIFYING WORLDS WITH
NEARLY 4000 LOCA-
TIONS—FIVE TIMES
LARGER THAN THE
ORIGINAL ELVIRA

♦ OVER 120 HOURS OF SUSPENSE-INTENSE GAMEPLAY ♦ MORE THAN 700
DEADLY WEAPONS, SCROLLS AND OTHER TOOLS OF THE TRADE ♦ FULLY ANI-
MATED ENCOUNTERS WITH HUNDREDS OF FORMIDABLE NEW OPPONENTS ♦
NEW ON-SCREEN SPELL BOOK GENERATOR ♦ NEW ON-SCREEN HIT-POINT
ALLOCATION SYSTEM ♦ NEW ON-SCREEN 360-DEGREE ENEMY DETECTOR & TRACKER
♦ THE VGA GRAPHICS? STUNNING. THE SOUNDTRACK? HAUNTING. AND 100% "POINT
& CLICK" CONTROL MAKES IT SO EASY TO PLAY IT'S FRIGHTENING. THE BOTTOM
LINE? ELVIRA II IS THE FANTASY BLOCKBUSTER OF THE YEAR. TO ORDER, VISIT
YOUR FAVORITE RETAILER OR CALL 1-800-245-7744.

ACCOLADE[™]



THE BEST IN ENTERTAINMENT SOFTWARE[™]

Actual game screens from IBM PC VGA version of the game. Elvira and Mistress of the Dark are the trademarks of Queen "B" Productions. The Jaws of Cerberus is a trademark of Accolade, Inc. All other trademarks and registered trademarks are properties of their respective owners. Elvira image © 1991 Queen "B" Productions. Game © 1991 Horror Soft Ltd. All other materials © 1991 Accolade, Inc. All rights reserved.

Circle Reader Service Number 202

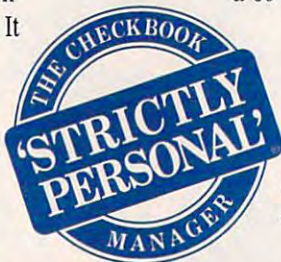
www.commodore.ca

Just what you need to manage your checkbook. And just what you don't.

If all you need is an easy way to manage your checkbook and budget, why buy an accounting software program laden with confusing jargon? Amortization and payroll capabilities? Properties tracking? It doesn't make sense.

'Strictly Personal' is an easy-to-use checkbook management and budgeting program. Period. It works just like a checkbook, but takes less paperwork and time.

The program organizes and balances your checking account, lets you set up a yearly budget with up to 90 expense categories and



tracks it on a quarterly basis. The program also provides banking activity reports and prints checks. Just what you need.

Plus, you get free telephone support. With answers to your questions in a language you can understand — English. And a 60-day, money-back guarantee.

So, if all you've been looking for is a checkbook management and budgeting software program, look no further. 'Strictly Personal' is all you need.

Call **1-800-682-2140** now to order your copy—just \$39.95 + \$3.50 shipping. SC residents, add 5% sales tax. If not 100% satisfied, return within 60 days for a full refund (shipping excluded).

PERSONAL CHECKBOOK MANAGEMENT AND BUDGETING. PERIOD.

Order from 9 a.m. to 9 p.m. EST, 7 days a week. VISA & MasterCard. IBM® PC, XT, AT, PS/2 and 100% Compatibles, Hard disk, Monochrome/color. PC/MS-DOS version 2.0 or higher. ©1991 The Merryall Group, Inc. All rights reserved worldwide. Merryall Software Div., The Merryall Group, Inc., P.O. Box 100, Bluffton, SC 29910. 'Strictly Personal' is a registered trademark of The Merryall Group, Inc. All other trademarks acknowledged.

Circle Reader Service Number 191

providing printed statements for personal and business endeavors on a monthly basis at the press of a key, provided you keep all the information in *Managing Your Money* up-to-date. These statements can be helpful in providing the bank with the information needed in applying for a loan.

Managing Your Money has an improved Desk option that provides utilities such as a reminder pad, a card file, a word processor, a five-memory full-function financial calculator, and a date display. Another feature allows for multiple data files for family members and businesses. An accountant could also use this option to track different business and personal clients.

Managing Your Money supports 256-color VGA with a variety of eye-dazzling graphs and displays that can be printed for ready reference. Many types of printers and modems are supported via the existing printer files

and modem setup program.

Mouse and hot-key keyboard action makes moving from one screen to another a logical and rapid process.

Bill paying and bill printing seem better implemented in this version than before.

Did I have any problems with *Managing Your Money*? The program suffers a substantial increase in processing time with operations over 1000 transactions long. The support line suggests that you either limit the period from which you are extracting reports or use version 6.0 until the problem is solved. There is no 800 number, and the wait on the toll-call support line is described by support people themselves as being extremely lengthy. The whole time you're waiting for assistance you pay long-distance rates.

In summary, no package on the market today can compete with *Andrew Tobias' Managing Your Money* on the basis of number of features in one package. While

not as versatile as *Lotus 1-2-3* or as easy to use as *Quicken*, *Managing Your Money* does what all the rest do in one complete financial planning package.

ALFRED C. GIOVETTI

IBM PC and compatibles; 512K RAM; CGA, EGA, MCGA, or VGA; two disk drives; hard drive recommended—\$219.95, upgrade with four quarterly newsletters—\$49.95

Also available for Apple II series—\$99.00 and Macintosh—\$219.95

MECA SOFTWARE
327-D Riverside Ave.
Westport, CT 06880
(203) 226-2400

Circle Reader Service Number 339

ZOOM/ FAXMODEM FC 9624

If all fax/modem boards are not created equal, at the very least they necessarily share a number of similarities. Most of them transmit data at a speedy 9600-baud rate for fax transmis-

sions and 2400 baud for modem communications. The ZOOM/FaxMODEM shares these capabilities.

Most of these boards readily plug into an expansion slot, providing an extra jack for a telephone; so, too, does the ZOOM/FaxMODEM. Most come with software for sending and receiving fax transmissions as well as traditional modem communications. But it's in the software that the similarities come to an end.

For quick, workmanlike transmission by fax and modem, the ZOOM/FaxMODEM serves as well as any board made for that purpose. And unlike some boards on the market, this one receives faxes.

If your COM1 and COM2 are permanently assigned for other purposes, you'll certainly appreciate the ability to choose from among four COM port assignments and four interrupts. The board comes with a seven-year warranty. Its accompanying software—*ProComm* for modem

Advertisers Index

Reader Service Number/Advertiser	Page	Reader Service Number/Advertiser	Page	Reader Service Number/Advertiser	Page
107 Abracadata	150	Historical Simulations	158,159	121 Software of the Month Club	156
212 Access Software	132,133	117 Holosoft Technology	A-25	119 Software Toolworks	22,23
202 Accolade	143	The Hunter Group	122	133 Software Toolworks	25
200 Accolade	109	216 ICD	A-3	SOGWAP	G-17
144 Accolade	108	218 Konami	IBC	167 Spectrum Holobyte	129
203 Accolade	87	124 Konami	141	108 Spectrum Holobyte	95
217 Accolade	29	213 Konami	96,97	SSI	135
201 Accolade	131	136 Konami	119	130 Starware Publishing Corp.	151
American Institute of Computer Science	152	Kyocera Electronics, Inc.	79	191 Strictly Personal	144
110 A.R.C. Software	62	168 Livingsoft	154	221 Superior Micro Systems	G-15
199 Barbi/Software Craffhouse	120	183 Lucky Computer	155	170 Tenex	G-5
106 Bare Bones Software	A-29	127 LWS Software	153	132 The Other Guys	A-13
211 Blue Ribbon Software	A-11	214 MediaVision	15	140 The Software Labs	151
160 Blue Valley Software	155	146 Meggido Enterprise	A-27	195 Universal Memory	45
171 Brøderbund	138,139	MicroLogic	41	198 Villa Crespo	13
219 Cineplay	113	138 MicroMiga	A-25	178 Virgin Games	124,125
166 Citizen American Corporation	37	164 MicroSphere	A-7	179 Virgin Games	126,127
112 Commodore	71	152 Micro Tech USA	69	Weaselgraphics	G-15
150 Compsult	155	174 Mission Control	81	172 Wedgwood Computer	155
103 CompuServe	17	186 Montgomery Grant	A-5	161 Zero's and One's	149
CompuTeach	92	187 Montgomery Grant	G-3		
118 Computer Business Service	152	176 My Story Books	154		
114 Computer Direct	50,51	153 New World Computing	147		
141 Computer Production	155	104 Origin	117		
137 Covox	153	PC Habit	156		
139 Creative Labs	3	169 Pixel Perfect/Dr. Schuler's Home Medical Advisor	91	1991 Gazette Index	G-15
125 Creative Specialties	G-16	185 Poor Person Software	A-23	Amiga Disk Resource	A-17
165 Data East	107	143 Prodigy	30	Amiga Disk Subscription	146
148 Davidson	43	193 Professional Cassette Center	59	COMPUTE Books	G-11,G-3,53,57,101,148,149,156
206 Davidson	27	163 Psynosis	77	COMPUTE Demo Disk	105
120 DCS Industries	67	111 Psynosis	61	COMPUTE Subscription	137
131 Demo Source	154	196 Quantum Quality Productions	93	COMPUTE's Quantum Q-Link	G-9
Disk-Count Software	152	134 Radio Shack	IFC	COMPUTE's SharePak Disk Subscription	19
215 Dr. T's Music Software	A-19	129 ReadySoft	11	COMPUTE/America OnLine	73
181 Electronic Arts	63	116 SeXxy Software	153	COMPUTE/Genie OnLine	75
210 Event Horizons	155	189 Shark Byte Software	A-17	Gazette Disk Subscription	G-14
197 E!nie	39	154 Sierra OnLine	BC	Gazette Productivity Manager	G-21
155 GeoWorks	5	220 Signs Etc. By D. Knox	A-29	Gazette Programming Software	G-13
156 GeoWorks	7	109 Smart Luck Software	151	Gazette Speedscript Disk	G-17
157 GeoWorks	9	209 SoftDisk Publishing	1	Mean 18 Golf Course	A-21
135 Hayes Microcomputer	35	126 SoftShopper, Inc.	151	PC Productivity Manager	47

transmissions and *BitFax* for sending and receiving faxes—gets the job done, providing just enough services and not too many complicated layers to plow through.

Comparing the two pro-

grams, *BitFax* does its job better. Like its companion communications software, *BitCom*, *BitFax* appears on-screen ready to roll with the punch of a key or two, insisting on no obscure key com-

binations for either sending or receiving faxes.

Its onscreen display of documents, whether those received or about to be transmitted, is generally clear and large enough to be fully legible. A scheduler allows the user to transmit automatically when phone rates are low, and a readily accessible phone book makes it easy to send faxes repeatedly to oft-called machines.

Like the program itself, you'll be glad to know the user's manual for *BitFax* is clearly organized and easy to use.

While *ProComm* gets its job done almost as easily as *BitFax*, the program does have a disadvantage or two. For one, the main screen displays no choices for action. You're required to either memorize several key combinations or call up a help menu everytime the program is used. Another annoyance is that every action generates an unusual electronic sound effect that, while cute in concept, I found grating in

execution. Also, there's no manual for the program, although the help file seems generally adequate.

Installation of the ZOOM/FaxMODEM's software was refreshingly easy, and configuring the board itself took only slightly more time.

Several jumpers had to be adjusted before installation. Instructions for doing so were detailed in the board's somewhat primitive manual. Once installed, the software merely had to be adjusted to reflect the proper port, and transmission could begin.

The ZOOM/FaxMODEM isn't flashy; it's just a sturdy tool for doing more than one task. For day-to-day communications, most users should find it more than adequate.

EDDIE HUFFMAN

IBM PC and compatibles—\$199

ZOOM TELEPHONICS
207 South St.
Boston, MA 02111
(800) 631-3116
(617) 423-1072

Circle Reader Service Number 340

CREDITS

Page 6: Michel Tcherevkoff/Image Bank; pages 20–21: Comstock; page 31: James Marsh/Artbank International; page 33: Mark Wagoner; page 34: Mark Wagoner; page 38: Mark Wagoner; page 40: Mark Wagoner; page 44: Mark Wagoner; page 48: Mark Wagoner; page 49: Mark Wagoner; pages 54–55: Steven Hunt/Image Bank; page 74: Turner & De Vries/Image Bank; pages 84–85: Mark Wagoner; page 86: Ellen Schuster/Image Bank; pages 88–89: Steven Hunt/Image Bank; page 94: Steven Hunt/Image Bank; pages 98–99: Mark Wagoner; page 102: Bob Norrington/Artbank International; pages 110–111: Mark Wagoner; pages 114–115: Myron J. Dorf/The Stock Market; pages A-8–9: Larry Kennan/Image Bank; page A-9 (inset photo): Mark Wagoner; page A-12: Mark Wagoner; page A-14: Dominique Sarraute/Image Bank; page A-32: Hans Welder/Image Bank; page G-6: Comstock.

Available exclusively by subscription!

COMPUTE's Amiga Resource edition

Your authoritative source for Amiga information

Amiga owners: Each month, the Amiga Resource edition of *COMPUTE* brings you all the news, reviews, and home office information found in the regular newsstand edition of *COMPUTE*, plus a special section devoted exclusively to Commodore's multitasking marvel—the Amiga. Whether you use your Amiga for multimedia, games, video, desktop publishing, or home office work, you'll find plenty of useful information in the Amiga Resource edition.

Amiga Resource includes:

**PREVIEWS OF NEW AMIGA SOFTWARE
INDUSTRY NEWS AND RUMORS
AMIGA ART GALLERY
COLUMNS BY AMIGA EXPERTS
HARDWARE AND SOFTWARE REVIEWS
A BIMONTHLY DISK SECTION
AND MORE!**



SUBSCRIBE TODAY and get a year (12 issues) of *COMPUTE* with Amiga Resource for only \$12.97!
Or get 12 issues and 6 bimonthly disks packed with original software for just \$49.95.

Mail completed coupon to

COMPUTE's Amiga Resource
P.O. Box 3244
Harlan, IA 51593

or call 1-(800)-727-6937

- YES! Send me a 1 year subscription to the Amiga Resource edition of *COMPUTE* for only \$12.97.
- Send me 1 year of the Amiga Resource edition of *COMPUTE* (12 issues) and the Amiga Resource Disk (six disks) for just \$49.95.

Payment Enclosed Bill Me

Name _____

Address _____

City _____ State _____ ZIP _____

Canadian residents add \$4.91 (postage and Canadian Goods and Services Tax) for magazine only; add \$7.50 for magazine and disk. Other foreign orders add \$4.00. U.S. funds only.

If you're a *COMPUTE* subscriber who wishes to receive the Amiga Resource edition instead, send a photocopy of your cover and mailing label along with a request to Amiga Resource Subscriptions, 324 W. Wendover Ave., Ste. 200, Greensboro, NC 27408, or call toll-free (800) 727-6937.

MICROSOFT FLIGHT SIMULATOR AIRCRAFT AND SCENERY DESIGNER

If you're one of the thousands of armchair pilots who earned their wings with Microsoft's *Flight Simulator*, you know that the program's realism and attention to detail make it one of the most rewarding simulations to master. However, by now you probably also realize that the program is deficient in one important area—scenery.

Oh, sure, you can buzz the Statue of Liberty, loop under the Golden Gate Bridge, or fly rings around the Sears Tower in Chicago. But where are all the really important landmarks like your house, your old school, or the building where you work? Microsoft's *Aircraft*

and *Scenery Designer* not only lets you add these buildings but also allows you to customize the landscape with other types of static scenery, including trees, rivers, mountains, highways, cars, and even navigational aids and runways. Dynamic scenery such as moving ground traffic, sailboats, and aircraft can also be added to bring the area around your local airport to life. You dictate the movement patterns and decide whether the movement should be continuous or begin only when you enter the specific scenery area.

Although *Flight Simulator* already includes an aircraft design option, *Aircraft and Scenery Designer* surpasses the features of this mode by allowing you to modify a much wider variety of design parameters. These include color, instrumentation, aerodynamics, and visual design.

If, after all your hard work designing scenery, you're too tired to design a new aircraft from scratch, you can

still cruise around in a new plane. *Aircraft and Scenery Designer* comes with four new aircraft—a Piper Cherokee Archer, a Beechcraft Starship, a Boeing 747-400, and a seaplane. With all these planes and scenic improvements, *Flight Simulator* holds its own against the current flock of simulators.

BOB GUERRA

IBM PC and compatibles, *Microsoft Flight Simulator* version 4.0 or later—\$39.95

MICROSOFT
One Microsoft Way
Redmond, WA 98052-6399
(800) 426-9400

Circle Reader Service Number 341

ALPHA FOUR

Clumsy and complex—that's how many people describe the databases they use for creating, maintaining, and extracting information. To the rescue comes *Alpha Four*, which permits you to define the format of your database, enter the data,

and recover what you need with a minimum of effort. And, as a relational database manager, *Alpha Four* allows you to include information from several specialized databases in a single report.

When you design a database, the program permits as many as 128 fields. There are five kinds of fields, and four of these (character, numeric, date, and logical) are traditional fixed-length format. A memo field points to a file that can contain 5000 characters of text. After defining your fields, you can define field rules—a powerful aid. The rules speed up data entry, ensure consistency, and help to prevent you from entering invalid data.

With the field rules, you can specify whether an entry is calculated from other fields or user entered. You can perform case conversion, design templates to speed up data entry, define masks to ensure typing accuracy, set maximum and minimum values for numeric and

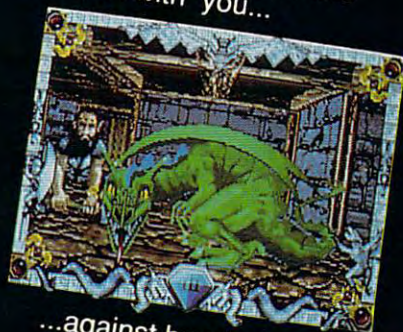
Might and Magic III

Marking 5 years
of the
Might & Magic
series
Over
500,000
Might & Magic's
Sold Worldwide

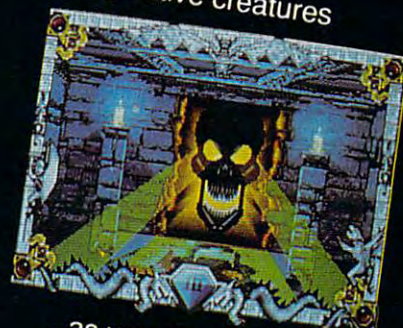
Isles
of
Terra



Extraordinary personalities
will join with you...



...against hundreds of
imaginative creatures



...as you discover the
wonder of magic



...in this world of fantasy
sights & sounds !

Feel the Power. Experience the Magic.

- ★ A swashbuckling adventure that will keep you riveted for hours!
- ★ Mesmerizing graphics created by the industry's top animators.
- ★ Stunning music, sound fx and speech adding a "3rd dimension" of play!
- ★ Easy to start playing, instantly absorbing, addictively challenging.
- ★ NOTE: Former experience with previous Might & Magic's is not required.

Available at your local software retailer or direct from New World at **1-800-325-8898**
(or, **1-818-999-0607** outside U.S.) • P.O. Box 4302 Hollywood, CA 90078-4302

copyright © 1991 Might & Magic is a registered trademark of New World Computing, Inc. • IBM screens shown. Actual screens may vary.

Distributed in the U.S. by Electronic Arts Distribution.

www.commodore.ca

**NEW
WORLD
COMPUTING™**

Circle Reader Service Number 153

Conquering Super Mario Bros.®

Here's the book you need to beat all three Super Mario Bros. games. No matter where you're stuck, this is the book that will help you get back on the winning path. Bowser doesn't stand a chance!

To Order send \$7.95 plus \$2 shipping and handling for each book (\$4 Canada, \$6 foreign) and applicable tax* to:

COMPUTE Books
c/o CCC
2500 McClellan Ave.
Pennsauken, NJ 08109

* Residents of NC, NJ, and NY add appropriate sales tax. Canadian orders please add 7% Goods and Services tax.

All orders must be paid in U.S. funds drawn on a U.S. bank. Please allow four weeks for delivery.

Offer good while supplies last.

Super Mario Bros. is a registered trademark of Nintendo of America, Inc.

DEC91CSM

IMPORTANT NOTICE FOR COMPUTE DISK SUBSCRIBERS

COMPUTE offers two different disk products for PC readers; the *SharePak* disk and *PC Disk*. *SharePak* is monthly and has a subscription price of \$59.95 for 5¹/₄-inch disks and \$64.95 for 3¹/₂-inch disks. A subscription to *SharePak* does not include a subscription to the magazine. *PC Disk* appears in even-numbered months and has a subscription price of \$49.95, which includes a subscription to the PC edition of *COMPUTE*. You can subscribe to either disk or to both, but a subscription to one does not include a subscription to the other.

REVIEWS

date fields, specify mandatory entries, automatically skip fields if specified conditions are met, and define many other features of data entry.

Of particular value, the lookup rule seeks information from another database or from a table. Use the rule to define a list of choices for a field as optional, mandatory, or unpermitted. These options appear in a lookup window in which the selection can be highlighted for easy entry into the record.

As part of its relational scope, *Alpha Four* offers sets that allow you to use multiple databases without needless duplication of information. To define a set, you specify separate databases and the fields of interest within them. The program links those databases and creates a virtual database. You can then call up this virtual database, or set, and use it just as if it were a single database. The key point of relational databases is that they allow you to eliminate data duplication. The set provides convenient and powerful implementation of this capability.

View records either one at a time (with multiple pages if there are too many fields for a single screen) or in a browse mode with 20 rows to a screen and each row a record. In either mode, an index you define determines the order of the records. Each database can have seven indices, and these can be simple, such as a single field, or complex, with primary and secondary indices, exclusions, conditions, and ranges. Changing from one index to another requires little effort.

Alpha Four provides two modes of searching a database. The faster mode searches only the index you've chosen, including only those re-

ords the index admits. Incomplete words are permissible; if you're searching on a name, for example, you can use only the first few letters as a search pattern. This mode, unfortunately, doesn't permit sequential search. The search stops with the first match and won't search further. The other mode, a string search throughout the database, uses the fields you specify and will do sequential searches. Since the memo field contains descriptive text, this mode can be very useful indeed.

The program accepts files from such spreadsheets as *Lotus*, *dBASE*, and *VisiCalc*, or from ASCII files. It can export files to those programs as well as to *WordPerfect* and *MultiMate*. Compatible with a large number of printers, *Alpha Four* provides excellent routines for printing form letters and mailing labels, and attractive customized reports.

The documentation more than sufficiently explains the use of the software. The program is menu driven, and I fault it on only two counts. It lacks mouse support and forces the user to conform to DOS conventions in naming files and fields.

Alpha Four provides a powerful database management tool capable of performing sophisticated tasks for the experienced user and, at the same time, offers an easy means of database upkeep and use for the novice.

CHARLES IDOL

IBM PC and compatibles, 512K RAM; hard disk recommended—\$549, competitive upgrade (with proof of purchase of another database manager)—\$99

ALPHA SOFTWARE
One North Ave.
Burlington, MA 01803
(617) 229-2924

Circle Reader Service Number 342

ZERO'S & ONE'S PC WAREHOUSE

EARLY CHRISTMAS SHOPPER SPECIAL

ACT FAST and SAVE 5%!!! Order before Thanksgiving and we'll slash 5% off this ad's already low prices.
I B M Compatibles



BRING MUSIC INTO YOUR HOME COMPUTER WITH A SOUND BOARD FROM ZERO'S AND ONES.

Roland LAPC1	399.95	Sound Blaster	
Sound Blaster	129.95	Microchannel	219.95
Sound B Pro	209.95	Sound Master II	149.95
Sound B C/MS	25.95	Thunderboard	99.95

TAKE CONTROL OF YOUR GAMES WITH OUR JOYSTICKS AND MICE

Thrustmaster		Mini-joystick	11.95
Throttle	89.95	MICE	
Joystick	89.95	2-Button	15.95
CH Product		3-Button	17.95
Flight Stick	41.95	Logitech	
Mach II	24.95	Mouseman	71.95
Mach III	29.95	Microsoft	79.95
Winner		Z-Nix, cordless	66.95
Pistol	24.95		
Yoke	49.95		

REACH OUT AND TOUCH SOMETHING WITH OUR MODEMS AND FAXES

Atlas 2400 USA made	49.95
Atlas 9600 V.32/42 bis/MNP5 USA	369.95
Atlas 9600 Snd&Rec Fax/2400 modem	105.95
Edison 2400	41.95
Edison 9600 v.32/42 bis/MNP5	349.95

BE VERY CALCULATING WITH OUR MATH CO-PROCESSORS

2C87-10	77.95	3C87-20	169.95
3C87SX-16	119.95	3C87-25	173.95
3C87SX-20	132.95	3C87-33	185.95

GIVE A CHILD THE GIFT OF KNOWLEDGE THIS HOLIDAY SEASON. LEARNING WILL BE FUN.

ACT Studyware	29.95	Nigel's World	35.95
Alge-Blaster Plus	29.95	Oregon Trail	29.95
Algebra Plus, v.1	32.95	Out Numbered	29.95
Chal Anc Empire	29.95	PC Globe 4.0	36.95
CYPHER	29.95	PC USA 2.0	36.95
Destination Mars	34.95	Phonics + (4-8)	26.95
D Tracy Print Kit	14.95	Playroom	27.95
Geo Jigsaw	19.95	Reader Rabbit 2	29.95
Hare Rais.Havoc	29.95	SAT PersnlTrainr	29.95
Headline Harry	29.95	2nd Math (7-16)	29.95
Kid Pix	34.95	Spell-a-Saurus	29.95
Magic Spells	24.95	Spell It +	29.95
Marvin Moose	31.95	SuperMunchers	29.95
Math Blaster +	29.95	Think Quick	31.95
Math Mystery	29.95	Treasure Mtn	29.95
Math Rabbit	25.95	Typing Tutor 5	29.95
McGee	24.95	What's my Angle	
McGee at Fair	24.95	Geometry (14+)	29.95
Mickey's ABC	24.95	Win w/Phonics	24.95
Mickey's 123	31.95	Write & Publish	
Midnite Rescue	29.95	Children (7-14)	39.95
My Letters(2-6)	26.95	Young Math(4-8)	26.95

A-10E Tank Killer	35.95	Flight of Intruder	32.95	Martian Memo.	34.95	Star Saga I	19.95
ADD Savg Frontr	29.95	Flight Sim 4.0	37.95	Mean Streets	35.95	Star Saga II	19.95
ADD Pool Drknes	36.95	Flight Sim IPS-E	59.95	Mechwarrior	29.95	Star Trek	39.95
ADD Shdw Sorcr	29.95	Flight Sim IPS-W	59.95	Medieval Lords	35.95	Stellar 7	24.95
Action Stations	29.95	Fit Sim Scnry dsk	19.95	MegaFortress	36.95	Stratego	29.95
Act&Scen Dsgn	27.95	Future Wars	29.95	MegaTraveler II	32.95	Street Rod II	25.95
Adv.Destroy.Sim.	19.95	Galleon of Glory	27.95	Microleag.Ftbl	24.95	Strip Poker	29.95
Amer.Civil War, I	24.95	Genghis Khan	35.95	Midwinter	17.95	Stunt Driver	29.95
Andretti Racing	29.95	Gold of Aztecs	29.95	MIG-29 Fulcrum	49.95	Sword Samurai	14.95
Animate,Disney	77.95	Golden Axe	16.95	Might & Magic III	36.95	Team Yankee	38.95
Armada 2525	29.95	Grailquest	24.95	Millennium	19.95	TeenNinja Turtle	24.95
Armor Alley	26.95	Gunship 2000	39.95	Mixed M.Goose	24.95	Terminator	32.95
ATP Flight Assgn	36.95	Hard Nova	19.95	Monopoly	24.95	Test Drive III	34.95
B.A.T.	19.95	Harpoon	38.95	Monty Python	14.95	Their Finst Hour	37.95
Back to Future II	24.95	H:Challngr Pak	54.95	Nascar Challeng	29.95	Theme Prk Myst	29.95
Back to Future III	26.95	Heart of China	35.95	NFL Football	44.95	Time Quest	34.95
Bane Csmic Frge	34.95	Hero's Quest	35.95	Nobnaga Amb I	35.95	T LaRussa BB	29.95
Bard Tales III	29.95	Hocky Leag.Sim	14.95	Nobnaga Amb II	35.95	Trivial Pursuit	26.95
Battle Chess vga	30.95	Hoverforce	29.95	Nuclear War	31.95	Twilight 2000	34.95
Battle Command	22.95	Immortal, The	26.95	Oper'n Combat	29.95	Typhoon of Steel	38.95
Battle Isle	29.95	Indy Jones VGA	25.95	Overlord	29.95	Ultima VI	41.95
Battlestorm	29.95	Indy Jones IV	38.95	Panzer Battles	29.95	Ultima VII	44.95
Battletech II	28.95	JNicklaus Golf	34.95	Perfect General	35.95	UMS II	29.95
Boxing, 4D	31.95	JN Clip Art	15.95	Pick 'n Pile	25.95	Vaxine	19.95
Breach 2	19.95	JN Crse disks	14.50	Pirates/Sw.Sam.	14.95	Veng.Excalibur	29.95
Bridge,Gr.Slam	21.95	JBond:Stith Affr	32.95	Planet's Edge	36.95	Vid Poker la crte	24.95
Cardinal Kremlin	23.95	Jeopardy 3Pak	17.95	Police Quest 2	29.95	W.Gretzky Hockey	33.95
Carmen San Diego		Jettfighter II	39.95	Police Quest 3	34.95	Warlords	29.95
in Europe	29.95	Joe Montana Ftb	29.95	Prince of Persia	25.95	Weaver Basbl II	31.95
in Time	29.95	Jones Fast Lane	24.95	Pro Soccer	14.95	Western Front	37.95
in U.S.A.	29.95	Jones F L - CD	34.95	Pro Tennis Tr II	31.95	Willie Beamish	34.95
in World	29.95	Jhn Madden Ftb	29.95	Quest for Glory II	35.95	Wing Comder I	38.95
Amer.Past	35.95	Key to Maramon	14.95	Red Baron VGA	35.95	WCI:Sec.Missn I	18.95
Deluxe	47.95	Khalaan	29.95	Rengade Legion	37.95	WCI:Sec.Missn 2	18.95
Castles	36.95	King's Bounty	19.95	Rise of Dragon	34.95	Wheel Fortune	23.95
Checkmate	39.95	Kings Qst I	29.95	Rmnc 3 Kngdms	41.95	Wing Comder II	44.95
Chessmstr 2100	27.95	Kings Qst II	29.95	Rmnc 3 Kng II	39.95	WCII Speech Ac.	13.95
Colonels Bquest	35.95	Kings Qst III	29.95	RR Tycoon	32.95	Wide Wrld Boxg	29.95
Command HQ	35.95	Kings Qst IV	34.95	Rules Engagmnt	36.95	Wonderland	35.95
Conan	29.95	Kings Qst V vga	39.95	Savage Empire	35.95	Wordtris	44.95
Conspiracy:DF	32.95	Knights of Sky	29.95	Scrabble	24.95	Wrld Chmp Boxg	19.95
Countdown	31.95	Leis.Suit Larry I	35.95	Scrabble Deluxe	35.95	Wrld Clas Soccr	25.95
Covert Action	35.95	Leis.Suit Larry II	35.95	S.D.I.	14.95	Worlds at War	29.95
Crime Ds NtPay	29.95	Leis.Suit Larry III	35.95	Search for King	35.95	Wrath of Demons	29.95
Crossword Mgc	31.95	Leis.Suit Larry V	35.95	Sec Mnky Is vga	37.95	Yeager Air Cmbt	36.95
Dealer's Choice	29.95	Lemmings	29.95	Sec Wpns of Luft	42.95		
Decsn Gettysbrg	14.95	Lexi Cross	29.95	Shanghai II	19.95	HINT BOOKS	
Defendr Crown	14.95	LHX Chopper	25.95	Sharkey 3D Pool	18.95	CALL FOR PRICES	
DRAGON Force	27.95	Life & Death	23.95	Siege	36.95	HARDWARE	
Dragon's Lair	25.95	L&D II:The Brain	31.95	Silent Service II	31.95	I/O card 2s1p1g	15.95
Dragon's Lair II	35.95	Lightspeed	34.95	Sim City	29.95	Econ. game card	9.95
Drakkhen	32.95	Links	36.95	Sim City Graphic	21.95	Turtle Game card	17.95
Elite Plus	29.95	L: Bay Hill	15.95	Sim Earth	42.95	Monitors & Cards	
Elvira 1.1	35.95	L: Dorado Beach	15.95	Sinbad	14.95	VGA .41	CALL
Faces	29.95	L: Firestone	15.95	Sorcerian	35.95	SVGA .28	CALL
Fam.Ties (tree)	19.95	L: Pinehurst	15.95	Sorcrcrs Get Girls	32.95	EVGA .25	CALL
F-117A Nitehawk	39.95	Loom	19.95	Space 1889	28.95	Oak 256k	CALL
F-14 Tomcat	26.95	Lord of Rings, v1	32.95	Space Ace	34.95	Tseng 1Mb	CALL
F-15 Strk Eagle II	29.95	Lost Admiral	35.95	Sp Quest IV vga	37.95	Hard Drives	CALL
F-19 Stealth	35.95	M1 Tank Platoon	39.95	Spellcast 201	42.95	Floppy Drives	59.95
F-29 Retaliator	31.95	MacArthur's War	29.95	Spiderman	24.95	DC2120	19.95
Falcon 3.0	39.95	Magic Candle I	24.95	Spirit Excalibur	29.95	5 for	95.95
Final Orbit	18.95	Magic Candle II	36.95	Star Control	29.95	DC2250	22.49
						5 for	107.95

7525 Rosecrans Ave., #203, Paramount, CA 90723 * 213-630-3551 (Information) 8-5 M-F * 213-634-7745 (FAX) 24-hours

800-788-2193 (orders) 8-6 M-F, 9-4 Sa

VISA

Prices and availability subject to change. All sales final. Exchanges for defects require RMA#. We do not guarantee compatibility. Shipping: 1st game \$3; add'l games add \$1 each in Cont. US. 2nd Day Air \$6 1st game, add'l games add \$1 each in Cont.US. COD add \$4. CA residents add 7.75% tax. All prices are in US \$

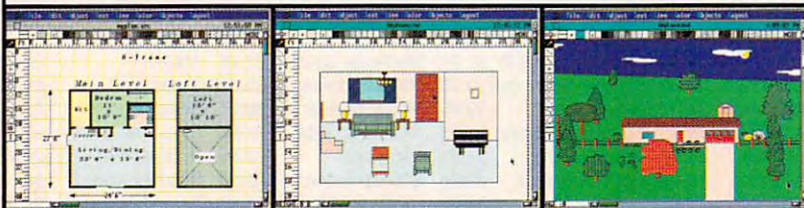
MasterCard

DESIGN SOFTWARE

Affordable
and easy
to use

Abracadata
the source of plan-making software
SINCE 1985

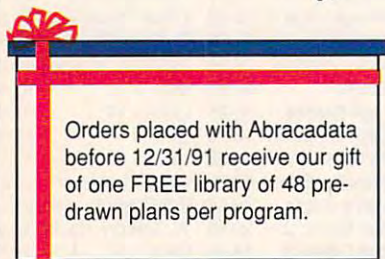
DESIGN YOUR OWN HOME™



ARCHITECTURE
Draw floor plans and structural details—prints plans to scale.

INTERIORS
Draw room plans, arrange furniture and explore color schemes. Great for kitchen & bath design!

LANDSCAPE
Create complete landscape plans, age plants to determine correct placement, and prepare shopping list for your trip to the nursery.



Orders placed with Abracadata before 12/31/91 receive our gift of one FREE library of 48 pre-drawn plans per program.

...I love programs [Architecture] that give you 90% of the job for 2% of the cost.

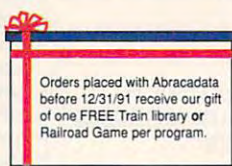
—Macintosh Construction Forum

Retail Price Per Program

Apple II/Laser 128, 64K.	\$69.95
Apple IIGS, 1MB.	\$89.95
IBM, 640K.	\$99.95
Macintosh, 1MB.	\$99.95

DESIGN YOUR OWN RAILROAD™

Design Precision, To-scale, (HO, N, Z, O, S, G) Layouts and Run Realistic Railroad Simulations.



Orders placed with Abracadata before 12/31/91 receive our gift of one FREE Train library or Railroad Game per program.

IBM, 640K. . \$59.95
Apple II/Laser
128, 640K. . \$49.95
To order or receive a
FREE Color Catalogue
CALL 1-800-451-4871
FAX (503) 683-1925

To order by mail: Add \$7 shipping first program plus \$2 each additional. Send VISAMC # (with exp. date) or check to Abracadata, Ltd., P.O. Box 2440, Eugene, OR 97402

COMPUTE's Product Mart

is a special advertising section designed to benefit you, the PC direct marketer, by letting you advertise directly to the readers that buy. We offer:

• Marketing Assistance

Each ad receives a complementary reader service number that generates a targeted sales lead mailing list.

• Qualified Readers

Our readers search the Product Mart for quality hardware, software, and peripheral products they can buy.

• Guaranteed Audience

Our rate base is guaranteed at 275,000 per issue, with an actual monthly circulation of over 328,000.

• Cost Effectiveness

Ad sizes range from 1/9 (2 1/8 x 3) to 2/3 page, and you can request frequency rates of up to 12 times per year. B/W, 2/color and 4/color availability.

Space closing: First day of the second month preceeding issue date (for example, November issue closes Sept. 1). Space limited to a first-reserved, first-served basis.

For ad specifications or more information call
Lucille Dennis
Telephone (707) 451-8209 • Fax (707) 451-4269

Call now to reserve your space!

The World's Largest Shareware Distributor

Selected by IBM

As Their Supplier
For Software Testing

See why IBM chose our professionally tested virus-free library

Call TOLL-FREE or write for our world famous 100 page catalog with exclusive 10 FREE DISK offer

800-359-9998
FAX: 213-559-3405

C1191

THE SOFTWARE LABS

3767 OVERLAND AVE #112 LOS ANGELES, CA 90034

Circle Reader Service Number 140

BEAT THE LOTTERY

Gail Howard's ALL NEW Smart Luck ADVANTAGE PLUS™

Use ADVANTAGE PLUS™ & you'll trash all your other lottery software. It's the most complete, fastest & easiest to use—in a class by itself. Nothing can begin to compare!

- NO OTHER SOFTWARE HAS MORE SCIENTIFIC TOOLS FOR PICKING WINNERS.
- Let Smart Picks™ help you pick the winning numbers instantly, automatically!
- A MAJOR BREAKTHROUGH! Just one single key stroke lets you test, game by game, the past accuracy of Smart Picked numbers.
- Scoreboard tallies best picks from all charts and sorts numbers from most chosen.
- Has ALL data for ALL 42 state Lotto games.
- A \$295.00 Value. Your introductory price for a limited time only: \$79.95 + \$3.00 S/H.

SMART LUCK SOFTWARE

Dept. C-12, P.O. Box 1519 • White Plains, NY 10602
800-876-GAIL (4245) or 914-761-2333

29 Lotto Jackpot Winners **WON \$71.3 MILLION** with GAIL HOWARD'S SYSTEMS!

Circle Reader Service Number 109

SOFTSHOPPE, INC.

ASP Member

- ☑ Selected Programs
- ☑ Latest Versions
- ☑ As Low as \$1.50

**FREE CATALOG
IBM PD/SHAREWARE**

POB 3678, Ann Arbor, MI 48106

Call 800-829-BEST (2378)
or 313-761-7638
Fax 313-761-7639

Circle Reader Service Number 126



Aerial photo of Devil's Island from #901 Mother Earth



The Space Shuttle cargobay from #902 Space Things

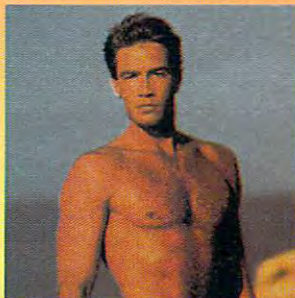


A sidewinder in the sand from #903 Amazing Animals

RAD
Graphix

1992 Swimsuit Calendars

Simply the highest quality 800x600x256 PCX images



- Makes a great gift
- Dazzle your friends
- Use with your favorite word processor, publishing or graphics application
- Use as Windows Wallpaper
- DOS & Windows viewing utilities included
- Hard drive not required
- Windows users convert files to BMP, GIF, IMG, PCX, PIC, TIFF and WPG
- Over 5MB in every volume, comes on high density diskettes

#901 Mother Earth - vol I One volume \$29.88, two volumes \$44.88, three volumes \$59.88
Breathtaking views of our planet. Includes images of oceans, deserts, islands, & sunsets.

#902 Space Things - vol I A must have for any computer user. Contains stunning views of Earth, galaxies, and satellites.

#903 Amazing Animals - vol I An educational look at mysterious animals around the world. A most unique product.

#904 Lovely Ladies Calendar First calendar \$29.88, each additional calendar only \$24.88
Every month features beautiful women sporting the latest in swimwear fashions.

#905 Hot Hunks Calendar This year add some spice to your computer. Sure to inspire you to new heights.

#900 Graphix Starter Kit sold separately for only \$10
A collection of DOS and Windows utilities with Preview Images of all RAD Graphix and 1992 Swimsuit Calendars. Included with every order and every calendar.

Special Holiday Prices 800-354-5353

Limited Time Offer

24 hour / 7days Order Hotline
US & Canada

Send check or money order to: Starware Publishing Corp.
Add \$3 for S&H P.O. Box 4188, Dept. 54
Add \$3 for Foreign Deerfield Beach, FL 33442
Add \$3 for 3.5" disks For more information call
FL add 6% sales tax (305) 426 - 4552



XXX-RATED CD-ROM
THE BEST VALUE IN ADULT SOFTWARE \$59.88
\$500 of VGA movies & images for only \$59.88

Circle Reader Service Number 130

www.commodore.ca

A HIGHER DEGREE OF

SUCCESS

Earn Your College Degree In Computer Science At Home

Now you can get the opportunity and earning power a college degree confers—without leaving home and without spending thousands of dollars.

The AICS curriculum features:

- B.S. and M.S. college degree programs
- Approved Ada course available
- Most courses interactive
- ALL COURSES BY CORRESPONDENCE

Proven acceptance in business and industry.

Many leading corporations have approved the AICS program for their employees. More than 75 employers have paid the tuition for their employees, including a number of Fortune 500 Companies.

AICS lowers the cost of a college degree without lowering the standards.

The academic program includes in-depth courses using the same textbooks used in major universities. Qualified instructors are available on telephone help lines.

For Information on Admissions and Enrollment Call:
1-205-323-6191
FAX: 1-205-328-2229

AMERICAN INSTITUTE FOR COMPUTER SCIENCES

2101 CCX Magnolia Ave. Suite 200 Birmingham, AL 35205

The leading edge of learning

DISK-COUNT SOFTWARE

800-448-6658 908-541-8768
Lowest Delivered Price including shipping
We will beat any advertised price

Age Blaster 31	Kid Works 31	Secret Weapon/Lutwale 38	BUSINESS & UTILITY	SOUND CARDS
Algebra Made Easy 25	King's Quest Bundle 37	Sesame Street Tri-Pack 19	386 Max 5.1 69	Ad Lib 80
Back to the Future II 26	King's Quest V (VGA) 36	Shanghai 30	Adobe Type Manager 61	AdLib Microchannel 139
Bane of Cosmic Forge 36	Legend of Faerghall 32	Shuttle 37	AdLib PCMS 31	AdLib PCMS 115
Bards Tale III 32	Leisure Suit Larry I (VGA) 37	Sim City 32	Ami Pro 2.0 285	Ad Lib Gold CALL
Batfiches (all versions) 31	Leisure Suit Larry Bundle 54	Sim City Graphic 1 or 2 22	Auto Map 41	Ad Lib Software avail. CALL
Bill Elliott NASCAR 31	Leisure Suit Larry 5 37	Space Ace 36	Automenu 36	SoundBlaster 145
Buck Rogers: Countdown 32	Lerrings 25	Space Quest Bundle 34	Backer Tools 2.0 49	SoundBlaster MCA 219
Bushback, Chams, Viking 31	Lexcross 16	Space Quest IV 37	Calendar Creator 4.0 77	SoundBlaster Prof. 205
Captain Comic II 16	Life and Death 2 37	Spell-It Plus 32	Central Point Anti Virus 31	Voice Editor 52
Castles 37	Links 16	Spirit of Excalibur 30	Check-It 80	SoundMaster II 149
Challenge of Ancient Emp 31	Links - Course disk 16	Stunt Driver 37	Copy II PC 23	Sound Spectrum 249
Children's Writing & Publ. 42	Managers Challenge 26	Stunt Driver 37	Corel Draw 2.0 349	Thunderbolt 99
Chuck Yeager Air Combat 38	Gen. Mgr./Owners Disk 19	Stickybear Reading Tutor 30	Corel Grammar/Wind. 30	Roland LAFPC-1 395
Complete Lottery Tracker 31	Mario Andretti Racing 37	Street Rod 2 27	DacEasy Accounting 89	MIDI INTERFACE
Compuserve DOS 24	Martian Dreams 37	Stunt Driver 37	Definitions Plus 60	Music Quest Midi Card 95
Conan: The Cimmerian 31	Martian Memorandum 37	Super Munchers 31	Desyview 2.3 69	MOX-16 145
Conflict: Middle East 37	Math Blaster Mystery 31	Tank 30	DR DOS 5.0 upgrade 49	Roland MPU-IPC 135
Conspiracy: Deadlock File 33	Math Blaster Plus 31	Team Yankee 24	Dvorkon on Typing 36	Voyetra Jr-22/Pak 129
Corporation 31	Math Rabbt 31	Teenage Mutant World 23	Express Publisher 23	Voyetra Sr-22/Pak 199
Crossword Magic 4.0 32	McGee at the Fun Fair 32	Tennis Cup 25	Facelt 65	Cakewalk 95
Das Boot 32	MegaFortress 88	Terminator 39	Form Tool Gold 57	Cakewalk Pro 169
Death Knights of Krynn 33	Megatraveler 2 23	Theme Park Mystery 37	Geomworks Ensemble 35	Copyist App. 2.0 95
Deluxe Paint II Enhanced 28	Memory Lane 26	Treasure Mountain 31	Grammatik IV or Wind. 119	Master Tracks Pro 254
Designasaurus II 83	Mickey's ABC or 123 31	Troika 22	Harvard Graphics 3.0 375	Music Printer Plus 419
Diag Tracy 31	Micro Cookbook 15	Trump Castle II 31	Hiak 66	JOYSTICKS
Dragons Lair II 31	Microligague Football 33	Twilight 2000 31	Home Lawyer 66	CH Flightstick 44
Dream Team NBA 31	Midnight Rescue 31	Ultima VI 26	Label Pro Laser/Dot Mat. 47	CH Mach III 32
Ducktales: Quest for Gold 15	Milliken Storyteller 32	U.S.S. II 31	Labels Unlimited 3.0 49	Eliminator 3MHz Card 28
Earl Weaver II 33	Ninja Turtle 32	U.S. Atlas 37	Laplink IV Pro 88	Gravis Joystick 35
Elite Plus 31	Nuclear War 42	Vaxne 24	Lotus 1-2-3 v2.3 319	Kraft KC3 18
Entertainment Pak/Wind. 31	Number Muncher 30	Vengeance of Excalibur 32	Lotus Works 84	Kraft Thunderstick 28
Eye of the Beholder 32	Onion Trail 19	Warlords 30	Math Type 24	Quickshot Warrior 18
EZ Cosmos 42	Once Upon a Time 1, 2, 3, ea. 31	Wayne Gretzky II 35	Microsoft Game Shop 36	Thrustermaster 88
F-15 Strike Eagle II 18	Outnumbered 31	Where is Carmen in USA 31	Microsoft Quik Basic or C 65	2 Player Game Card 15
F-15 II Scenario Disk 19	Overford 30	What's My Angle 31	Money Counts 6.5 27	MICE & TRACKBALLS
F117a Stealth Fighter 2 32	P C Globe or USA 37	Where is Carmen in USA 31	Money Matters 32	Apport Mouse Pro/Par 70
F-29 Retaliator 32	P C Study Bible 90	in Europe 37	Norton Utilities 6.0 115	CH Roller Mouse (serial) 85
Falcon 3.0 42	Personal Pro Golf 31	in Time 40	Pagemaker 4.0 459	CM 290 E Mouse 24
Family Tree Maker 42	PGA Golf 32	in World (DeLuxe) 49	Pascal for Windows 114	Expert Mouse Serial 95
Firehawk-Thexder II 21	Phonics Plus 25	Wing Commander II 48	PC Paintbrush IV+ 99	Microsoft Bus Mouse 115
Flight Simulator A.T.P. 37	Pick'n'File 27	Windows Entert. Pak 29	PC Anywhere IV 95	Microsoft Serial Mouse 95
Gateway Savage Frontier 37	Play room 28	Windows Productivity Pak 40	PC DOS 5.0 Upgrade 55	Mouseman Cordless 135
GeoJigsaw 25	Police Quest 3	Wondarland 35	PC DOS 5.0 Upgrade 55	Mouseman Serial 69
Gold of the Aztec 32	PrintShop 31	World Atlas 36	P C Kwik Powerpak 65	Trackman Serial 79
Gunship 2000 42	PrintShop Companion 31	World Class Soccer 31	PC Paintbrush IV+ 99	MODEMS & FAX CARDS
Hard Nova 32	PrintShop Graphic (ea.) 20	Wrath of Demon 37	P C Tools 7.0 99	Frecom Fax 96 139
Headline Harry Paper Race 31	PrintShop II or II 22	X-Men II 25	PFS: First Choice 75	Frecom 96 One-Liner 185
Heart of China 37	PrintShop III 27	37 Your Personal Trainer SAT 31	PFS: First Publisher 75	MaxFax 9624 119
Hole-in-One Mini Golf 20	Random House Encyclop. 69	37 Keyboard Skins (specify make and model) 15	PFS: Widow Works 105	PM 2400 Internal 129
Hoyles Book Games 1or2 22	Reader Rabbit 2 17	5 Xtree Gold 5	Pro Screen Saver 61	Sportster 2400 Internal 129
Iron Lord 37	Red Baron 37	Master Card, Visa, Discover, and American Express cards accepted. No surcharge on credit cards. No C.O.D.'s. To order by mail: P.O. Box 3, Carteret, N.J. 07008. All products are new. We do not guarantee compatibility. No returns. Exchange on defective merchandise ONLY. NO EXCEPTIONS! Shipping charges: To the contiguous 48 states \$4. Alaska and Hawaii \$10 1st pc. \$1 ea. add. APO/FPO boxes \$6. Canada \$8 1st pc. \$1 ea. add. N.J. residents add 7% sales tax. Call for price & availability. NEW TITLES STOCKED DAILY. IF IT'S RELEASED, WE HAVE IT!	Quicken 4.0 36	Sportster 2400 External 149
Jack Nicklaus' Unlimited 17	Rise of the Dragon 37	Quicken Quick Pay 34	Quicken 4.0 36	Zoom External 2400 89
J. Nicklaus Course Disk 14	Savage Empire 37	Quicken Quick Pay 34	Quicken 4.0 36	Zoom Internal 2400 79
James Bond Stealth Affair 32	Scrabble Deluxe 36	Sibtask for DOS 79	Quicken 4.0 36	
Jefffighter II 42	Secret Monkey Island 2 38	Turbo Card 2.0 82	Quicken 4.0 36	
Joe Montana Football 31		Word Perfect 5.1 239	Quicken 4.0 36	
Kraabon 39		Xtree Gold 5	Quicken 4.0 36	

Why Buy A Computer That Can't Make You Any Money?



If you buy our complete computer program, we will give you software with it and provide training to run ten different businesses. Use your computer for whatever you want, but also use our programs to pay for your computer—plus start your own business from your home.

FREE CASSETTES

We have recorded four hours of cassette tapes that explain our complete program. See how other couples and individuals, just like you have become financially independent for the rest of their lives.

For your FREE cassettes and color literature, call toll-free:

1-800-343-8014, ext. 303
(in Indiana: 317-758-4415) Or Write:

Computer Business Services, Inc.
CBC Plaza, Ste. 303, Sheridan, IN 46069

Circle Reader Service Number 118

IF YOU'RE NOT RECYCLING YOU'RE THROWING IT ALL AWAY.

1-800-CALL-EDF

EDF Ad
www.commodore.ca



ADULT SOFTWARE

CONNOISSEUR COLLECTION

Disk #1 • An unbelievable visual encounter - MUST SEE!
Disk #2 • **NEW!** 3 encounter games for friends and lovers guaranteed to shed both clothes and inhibitions.
Disk #3 • An anatomical arcade game with unusual ammunition.
Disk #4 • 2 more incredible visual encounters - impress your friends.
Disk #5 • Create your own fantasies about friends & lovers.
Disk #6 • **NEW!** View, print, or edit ten sizzling pictures including celebrities.

ALL NEW! In 256 Color VGA!!
Disk #CC1 • ★ **YOU BE THE STAR** ★ The FIRST CUSTOMIZABLE movie allows you to write the dialog and the title. You can star with the partner of your choice. Incredible scenes display with your dialog. ONLY AVAILABLE FROM US!
Disk #CC2 • **THE FIRST SOUND MOVIE!** The first computer movie with SOUND. See the incredible 256 color VGA graphics while hearing the actual dialog. OURS EXCLUSIVELY!
Disk #CC3 • **THE BEST MOVIE!** The best computer movie available. Only for the serious collector. 256 stunning VGA colors.
 1 Movie \$29 2 Movie \$49 3 Movie \$65
 All CC Disks Require VGA monitor and hard disk —over 1 MB of action.

SeXXcapades

The FIRST adult game with TRUE SOUND and 80 sizzling color VGA scenes!

- Options for gender preference and game intensity
- Play with 2-8 close friends • Over 5MB of pure action!
- Fulfill your carnal passions with new experiences
- Find out how you and your partner can better relate.

\$79 — Special offer: **\$69** with purchase of any CC1, CC2, CC3 disks above
OURS EXCLUSIVELY!

ADD \$3 S/H • 3.5" OR FOREIGN ORDERS ADD \$2 PER DISK • IN PA ADD TAX. MUST STATE AGE OVER 21.

VISA/MC Orders only
800-243-1515 Ext. 600FO

24 HRS./7 DAYS • Or check/MO to:
 SeXXy Software, 2880 Bergey Rd., Dept. 600FO, Hatfield, PA 19440
THE COMPETITION ISN'T EVEN CLOSE!!

Circle Reader Service Number 116

you can bet on



STRATEGIC™ VIDEO POKER

the casino-style video poker simulator and tutor



VERSION 3.0 is here!
 Now play Jacks or Better, Joker Wild, Deuces Wild & Tens or Better.

We've selected 25 popular game versions and added loads of new features for your entertainment. With on-line strategy advice, hand-tester and hold-tester, you'll play like a pro. Select from Standard or Expert modes. Use the Simulator to run millions of hands. Set your own payoffs, bet, coins, and bankroll.

Use the on-line tutor to sharpen your skills, then print out any of the optimum playing strategies to take with you to the casino. You don't even have to figure out payoffs or create a strategy — just use our pull-down menus to select games, print rankings, run the Simulator, or change parameters.

Play all the Joker Wild strategies of Bradley Davis, renowned author of **Mastering Joker Wild Video Poker.**

For all IBM PCs and compatibles. True high-res VGA graphics. Also supports EGA, CGA, Hercules, & Mono.

NOT COPY PROTECTED!

A gift that's a sure winner!



LWS Software
 Dept 4C • PO Box 688
 Broomall PA 19008
 215-449-9767

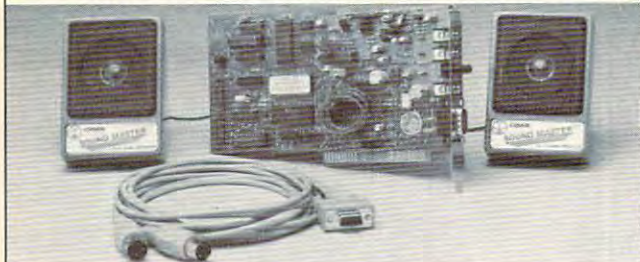
Only **\$49.95** + \$5 s/h (PA add \$3.30);
 \$6 Canada; \$10 outside U.S. territories

MC/V: **800-828-2259 ext. 410**

Circle Reader Service Number 127

SOUND MASTER® II

THE MOST COMPATIBLE PC-AUDIO CARD IN THE WORLD



- 100% AdLib™ compatible. 11 Voice FM Music Synthesizer.
- Exclusive OVERLORD™ sound file conversion software. Operates "Sound Blaster" compatible titles -- WITH GREATER CLARITY!
- Covox Voice Master®, Speech Thing®, MIDI Maestro™ compatible.
- VOICE COMMAND software.
- 8 bit DMA sound digitizer. Sample rates to 25Kbytes/sec with "direct to disk" recording and playback option.
- Full duplex MIDI interface with MIDI software and cables.
- Built in audio amplifier with volume control.
- Speakers included.
- Internal PC speaker supported.
- Low power, low noise design.
- Extensive software tools and support, including compression and editing utilities.
- Supported by the largest library of software titles in entertainment, business, music, and education.
- Made in USA by Covox — THE microcomputer audio specialist since 1975.

Your Best Choice for Multi-Media Sound
 ONLY \$229.95 (plus \$5 shipping & handling)

ORDER HOTLINE: (503) 342-1271 M-F 8 AM TO 5 PM PST.
 VISA/MC/AMEX phone or FAX orders accepted. NO CODs. 30 day money back guarantee if not completely satisfied. One year warranty on hardware.

TRADE-IN OFFER: Your current sound card brand is worth \$\$\$ toward the purchase of a Sound Master II. Contact Covox for details.

CALL OR WRITE FOR FREE PRODUCT CATALOG



COVOX INC. 675 Conger Street • Eugene, OR 97402

Phone (503) 342-1271 • FAX 503-342-1283



Circle Reader Service Number 137

EASY ACCESS TO OVER 50,000 TITLES

900 Software, Inc.

Presents **Shareware & Public Domain**



That you can have **INSTANTLY** using your 1200 or 2400 Baud modem
FOR ALL IBM COMPATIBLE PC's

No Disk Fees • Tested Virus Free

Call Now & Get It Now! Avoid The Mail Order Mess & Risk

No need to order and wait, download and use it now. SHAREWARE, the "Try Before You Buy" concept is brought to you instantly. Most titles transferred in 7 minutes or less*

Windows 3.0 Utilities + 100's of Icons

THE BEST TITLES . . . THE MOST TITLES . . . NOW!

TOP NAME SOFTWARE FROM CATEGORIES INCLUDING:

- Business
- Desktop Publishing
- Education
- Games
- Children's Programs
- Programming
- Power Users
- Special Interest
- Windows 3.0
- Desk Top Organizers
- Utilities
- Graphics
- Communications
- Reference
- Computer Aided Design (CAD)

CALL NOW! AVAILABLE 24 HOURS

1-900-RUN-SOFTWARE

1-900-786-7638 • Set Modem to N,8,1
 98¢/min. - \$2.50 1st minute - * 2400 Baud Modem

SEND \$2.00 FOR CATALOG ON DISK OR DOWNLOAD IN 3 MINUTES*

"Use Your Modem To Select From A Menu of Over 50,000 Titles Organized For Easy Selection By Even Inexperienced Modem Users"

Welcome Authors, Mail Us Your Shareware

900 Software, Inc. Voice Line (714) 289-0287
 4642 E Chapman Suite #285 • Orange CA 92669

Circle Reader Service Number 159

www.commodore.ca

Own your own telephone company!



VOICEMAIL MACHINE

Make thousands of dollars effortlessly by installing a *BigMouth* voice board & our menu driven software in your IBM 286/386 or clone. Use it to answer your office telephones, rent pocket pagers, advertise mail order products, or operate a pay-per-call service using credit cards, passwords, or nationwide 900 #.

Our \$25 *Entrepreneur's Toolkit* contains all the information you need to get started & its cost is applied to future purchases.

A Few Home Based Ventures Featured In Our \$25 Toolkit!

NAME	DESCRIPTION	PACKAGE	DEMO KIT
BigMouth	Voice Mailbox Services	\$295.	call 818 718-9560
SmartDialer	Outbound Telemarketing	\$1200.	\$25.
QuickLine	Write Programs in Basic	\$1125.	\$25.
ElderChek	Senior Citizen Monitor	\$1625.	\$25.

DemoSource 1 800 283-4759

24 hrs-Live Questions? Call us! COD's Welcome

8345 Reseda Blvd., Suite 202 - Northridge, California - 91324 - USA

Circle Reader Service Number 131

For Women Only*

New software for home sewers makes custom fitting a snap!



The secret is out—*Dress Shop™* is the answer to a prayer for home sewers! Say goodbye to hours of measuring and calculating to make patterns fit. Now you can print your own *custom-fitted* clothing patterns quickly and easily. Dresses, blouses, skirts, slacks, blazers, vests are all tailored to 13 key measurements for the most flattering fit. For moderate to advanced sewers, no computer experience needed.

Money-back Guarantee!



To order, send \$99.95 to:

(CA Res. add 7 1/4 % sales tax)



LivingSoft
524 West Dolphin Ave.
Ridgecrest, CA 93555

Or call

(800) 626-1262 or (619) 371-9629

*Also planning men's and children's fitting programs for Spring. IBM PC with 640k required, and a dot matrix printer with form feed paper. Hard disk installable. Both 5 1/4" and 3 1/2" disks included.

Circle Reader Service Number 168

Personalized Children's Books



Cash In On High Profits
Home Based or On Location

- Join the Fastest Growing Personalized Children's Book Company in the Industry
- Unlimited Support For Your Success.
- High Quality Hard Bound Books
- Each Color Story . . . An Educational Tool
- Limited Number of Dealerships Available

For More Information,
Call or Write:

MY STORY BOOKS, INC.
11408 Audelia Rd.
Suite 4845

Dallas, TX 75243

1-800-245-7757

**A PROUD SPONSOR OF
CHILDREN'S LITERACY**

Circle Reader Service Number 176



The Official
Hint Book
from
Legend Entertainment Company

To order a copy of *Spellcasting 101 Hint Book* send \$9.95 plus \$2 shipping and handling (\$4 Canada, \$6 foreign) and applicable tax* to:

COMPUTE Books
c/o CCC
2500 McClellan Ave.
Pennsauken, NJ 08109

*Residents of NC, NJ, and NY add appropriate sales tax. Canadian orders please add 7% Goods and Services tax.

All orders must be paid in U.S. funds drawn on a U.S. bank. Please allow four weeks for delivery.

Offer good while supplies last. 12SP91C

OMNI TIME CAPSULES



Now the magazine of the future can be kept for the future. Store your issues of OMNI in a new Custom Bound Library Case made of black simulated leather. It's built to last, and it will keep 12 issues in mint condition indefinitely. The spine is embossed with the gold OMNI logo, and in each case there is a gold transfer for recording the date.

Send your check or money order (\$8.95 each; 3 for \$24.95; 6 for \$45.95) postpaid USA orders only. Foreign orders add \$1.50 additional for postage and handling per case.

To: OMNI MAGAZINE
Jesse Jones Industries, 499 E. Erie Ave.
Phila., PA 19134

CREDIT CARD HOLDERS (orders over \$15)
CALL TOLL FREE 1-800-972-5858
Or mail your order, clearly showing your account number and signature. Pa. residents add 6% sales tax.
SATISFACTION GUARANTEED

CLOSEOUTS For IBM/MS-DOS:

SSI SPECIALS \$19.50 each
Roadwar Europa, Phantasia 3, Star
Command, First Over Germany,
Heroes of the Lance, Red Lightning,
Waterloo, Hillstar, War of the Lance

AVALON-HILL \$10 each
Under Fire, Telegard, Super Sunday,
NBA Basketball, Gull Strike

INFOCOM DEALS \$15 each
Mines of Titan, Leather Goddesses of
Phobos, Hitchhiker's Guide to Galaxy

ACCOLADE \$10 each
Dambusters, Mean 18 Golf,
PSI 5 Trading Company

MICROPROSE \$16.50 each
Gunship, F-15 Strike Eagle,
Weird Dreams, The Punisher, X-Men

Dr. Doom's Revenge, Pirates!
Airborne Ranger, Savage, Solo Flight

MINDSCAPE \$15 each
Shadowgate, Uninvited, Dejavu

MORE GREAT DEALS!!

Apache Strike, by Activision \$14.50
Graveyard, by Activision \$14.50
Take Down, by Gamestar \$14.50
Demon's Tomb, Mastertronic \$5.00
Crossbow, by Microlusions \$9.50
Fire Power, by Absolute \$14.50
Galactic Gladiators, by SSI \$14.50
Tag Team, by Datasoft \$5.00
Honeymooners, by First Row \$5.00
PFS: Access, by PFS \$5.00
President Elect, by SSI \$9.50
Space School Simulator, CRL \$5.00
Gold of the Americas, SSG \$16.50
Fire King, by SSG \$16.50
Christmas Model Kit, Activision \$17.00
Portal, by Activision \$16.50
Neuromancer, by Interplay \$16.50
Cornerstone, by Infocom \$19.50
Sex Vixens from Space \$9.50
Bop 'n' Wrestle, by Mindscape \$9.50
3D Game Maker, by CRL \$3.50
Championship Golf, Activision \$14.50

CREDIT CARD ORDERS

\$25 minimum

1-800-676-6616

Orders Only, Please!!

COMPUSULT

P.O. BOX 5160

SAN LIS OBISPO, CA 93403

WE ALSO CARRY APPLE, MAC, C64/128, AMIGA, ATARI & MORE
To order, send check or money order to the above address. California orders
must include 7.25% sales tax. All orders must include shipping charges of \$4
for U.S.A., \$8 for Canada, or \$12 for International. For our complete catalog
send \$2 in U.S. postage stamps or cash. A catalog is sent FREE with any
order. Be sure to specify your computer type when ordering. For all inquiries
& additional information, call (805) 544-6616.

Circle Reader Service Number 150



"Powerful programs of growth
and adventure"

THE MAGIC MIRROR . . . a toolbox for
your mind. E. Kinnie, Ph.D., Clinical Psy-
chologist. \$39.95.

THE MAGIC MOUNTAIN . . . a journey
into another reality. Not for children.
Specify male or female version. \$29.95
each. Both, \$39.95.

MERLIN . . . an apprenticeship. \$29.95.

I CHING . . . ancient Chinese wisdom and
prophecy. \$29.95.

Programs for Children . . . call or write.
Created by an Educational Psychologist.

Blue Valley, 29 Shepard St., Walton, NY 13856

MasterCard/Visa

1-800-545-6172

(after 5 p.m.)

IBM/Compatibles

and AMIGA

Circle Reader Service Number 160

Where Adults Come To Play!

ODYSSEY

- Local Numbers Covering 700 U.S. Cities!
- CB-Style Group and Private Chat!
- 1000's Of Shareware Programs!
- Business and Personal Services!
- Travel & Flight Scheduling with OAG!
- Giant Message Forums & Classifieds!
- Live Multiplayer Games!
- Matchmaker Dating Database!
- Designed For Adult Users!

FOR YOUR FREE DEMO
AND A LOCAL NUMBER NEAR YOU CALL

818-358-6968

BY MODEM, 8/N/1-3/12/2400 BAUD

Computer Images



800 Toll-Free Credit Card Signup.
Then use same 800 # to Download.

1-800-GO-MODEM

Or use direct dial 64 Line BBS at
(503) 697-5100 8/N1

SuperVGA 1024x768x256

**ASTRONOMY • NATURE • SCENIC •
GRASP • ANIMATOR • 3D STUDIO
MOVIES • SOUND • GAMES • TARGA •
UTILITIES • IMAGE CONVERTERS**

Event Horizons Commercial BBS, thousands of
images and movies. Quality Color Super
VGA/VGA/EGA. 1200/2400 bps \$10/hr., 9600
bps \$40/hr., 800# \$6/hr. extra. Also Professional
Image Scanning from prints or slides to disk.

No Modem? Order our Mail Image Library with
samples \$9. World-wide shipment. Info voice
line 503-697-7700. All credit cards accepted.
Same day shipment. MS-DOS systems only.

Event Horizons

311 Ave. B, Ste. 209
Lake Oswego, OR 97034
Voice 503-697-7700,
BBS 800-466-6336,
or BBS 503-697-5100

Circle Reader Service Number 210

This Space
Available
1/9 page
Black and White
Frequency
Discount

Call today for details.

Lucky Computer Co.

386-33MHz
85MB SUPER VGA
\$1795.00

POWER SYSTEM FEATURES

- 4MB RAM exp. to 16MB (32MB option)
 - 16 Bit VGA Card, 512K Video RAM
 - 14" Color Monitor, 1024x768 res.
 - 85MB Hard Drive, 23ms access
 - 1.2 MB and 1.44MB Floppy Drives
 - Desktop or MiniTower Case, 220W
 - 101 Key Enhanced Keyboard
 - 1 Serial, 1 Parallel Port, 1 Game
- Non Interlaced SVGA add \$200.00

Complete Systems

1MB/Mono/40MB

286-12 \$645.00

386SX20 \$895.00

386-25 \$995.00

386-33 \$1195.00

Call for Complete

configuration info

486-33 ISA

Complete Desktop System

SUPER VGA, 4MB RAM

120 MB Hard Drive, 18ms

128K Cache, exp. to 256K

\$2795.00

NEW LOCATION!
12110 Westheimer
Houston, TX 77077
(713)497-7887

17338 Southcenter Pkwy
Tukwila, WA 98188
(1800)367-5825

10773 SW Bvrtn.-Hills. Hwy
Beaverton, OR 97005
(1800)348-5825

4151 Beltline, Suite 120
Addison, TX 75244
(1800)966-7687
Sunday open 12 to 5PM C.S.T.
above location only

Lucky Computer Co.



LUCKY STAR INTERNATIONAL

Since 1984
Locations Nationwide
Call for the one Nearest You!

Circle Reader Service Number 183

SOFTWARE PREVIEWS

are only a phone call away
. . . the mail takes a little longer.

1-800-433-2938

Wedgwood Computer
5312 Woodway Drive
Fort Worth, Texas 76133



Circle Reader Service Number 172

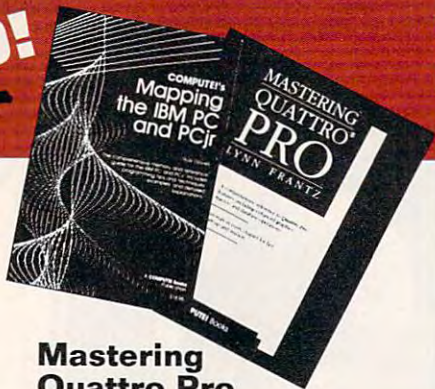
**JUST
REDUCED!**

**More than
50% off!**

Mapping the IBM PC

by Russ Davies
ISBN 0-942386-92-2
~~\$18.95~~ **\$9.00**

A comprehensive memory and reference guide for the IBM PC, this programmer's handbook includes programming tips and techniques, examples, and detailed explanations. In addition to comprehensive memory and port maps, the book provides in-depth discussions of the keyboard, video, and sound; cross-references the IBM documentation; and includes a complete list of BASIC tokens. For IBM PC, XT, XT/370, PCjr, Portable PC, or 3270PC. 336pp



Mastering Quattro Pro

by Lynn Frantz
ISBN 0-87455-222-2
~~\$24.95~~ **\$12.00**

Explore *Quattro Pro*'s numerous features in this comprehensive guide that's perfect for both new and experienced users. In this interactive tutorial, you'll learn how to design, create, and get the most from your own spreadsheets. This reference and guidebook will help you master the power of Borland's *Quattro*. 544pp

Order your copy today. Send the appropriate amount plus \$2 for shipping and handling for each book (\$4 to Canada, \$6 foreign) and applicable sales tax (if you live in NC, NJ, or NY) or GIS tax (if you live in Canada) to **COMPUTE Books, c/o CCC, 2500 McClellan Avenue, Pennsauken, NJ 08109.**

Please allow 4-6 weeks for delivery. Offer good while supplies last.

THE BIG BOOK OF PC SPORTS

BY KEITH FERRELL, EDITOR OMNI
PETER SCISCO, EDITOR IN CHIEF, COMPUTE

Here it is—the PC sports book that covers all the bases. If you're looking for a PC sports game, or need help with the ones you have, this is your ace in the hole. Collected here are in-depth reviews and strategies for more than 60 of the hottest PC sports games. Also includes software discounts worth over \$100. Order your copy today.

Send \$14.95 plus \$2 shipping and handling for each book (\$4 Canada, \$6 foreign) and applicable tax* to:

COMPUTE Books
c/o CCC
2500 McClellan Ave.
Pennsauken, NJ 08109

* Residents of NC, NJ, and NY add appropriate sales tax. Canadian orders please add 7% Goods and Services tax. All orders must be paid in U.S. funds drawn on a U.S. bank. Please allow four to six weeks for delivery. Offer good while supplies last.

11SP91C

**FREE -15 DISKS - FREE
FULL OF GREAT SOFTWARE**

TRY US! Get 15/5.25" or 6/3.5" disks of our bestselling no virus software. Business-Education-Programmer's Utilities-Graphics-Desktop publishing-Games-Finance. Also ask for our special Kid's Pkg, our Mac® font pkg, or our Clip Art pkg for IBM/Mac or Amiga. Credit cards only!

PAY ONLY \$5.00 FOR SHIPPING

**IBM® APPLEII® APPLE GS®
MAC® AMIGA®**

SMC SOFTWARE PUBLISHERS

ORDER TODAY - CALL



619 931-8111

since 1985



Circle Reader Service Number 121

Got a PC Habit?

AT LAST!

A T-Shirt for PC Lovers!
Top Quality, white cotton. Bold red/yellow letters and blue border surround a dazzling ebony PC! A unique, tasteful design by a top FLA. T-Shirt maker. Act now and receive the original Version 1.2! only \$16.50 & \$2.50 S&H Check or M.O. to:
PC Habit, Inc.
13876 SW 56 ST.
Suite 125,
Miami, FL 33175
Fl Res. Add
99c Tax
XXL Add \$2.00
Group Discount Avail.
GET A PC HABIT!



**This spot
is seen by
more than
328,000
readers
each month.**

www.commodore.ca

CLASSIFIEDS

BOOKS

DISCOUNT COMPUTER BOOKS. Thousands of titles available. Please call or write for your free catalog today. **BOOKWARE**, 344 Watertown Rd., Thomaston, CT 06787 (203) 283-6973 (800) 288-5662

THE SECRET GUIDE TO COMPUTERS makes you an expert! Covers PC's, Mac's, programming, applications-EVERYTHING! Send \$12.95 + \$2 s/h to: Computer Secrets, 8 Grant Street, 3rd floor, Cambridge MA 02138. (MA res add 5% tax)

BUSINESS OPPORTUNITIES

TRAVEL AGENCY

Start your own at home. \$2870. No license or bond. For free info/newsletter call: 1-800-926-5600

EARN \$2,000 A WEEK

word processing at home
FREE Report
call 503-488-1752

COMPUTER REPAIR

24 HOUR Computer Repair. Commodore, Amiga, IBM, Apple. A & M Computer Repair, 20 Guernsey Dr. New Windsor, NY 12553. 914-562-7271 1-800-344-4102

Auth. Comm. repairs C64/128, 1541/1571, SX64, 128D & Amiga. Selling DTK-comp computers. Quick service-30 day warranty. MOM & POP's Computer Shop. 114 N. 16th, Bethany, MO 64424 (816) 425-4400

EDUCATION

B.S. & M.S. in COMPUTER SCIENCE

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your Bachelor of Science and Master of Science degrees in Computer Science at home. BS subjects covered are: MS/DOS, BASIC, PASCAL, C, Data File Processing, Data Structures & Operating systems. MS program includes subjects in Software Engineering and Artificial Intelligence, and other topics.

AMERICAN INST. for COMPUTER SCIENCES

2101 CC Magnolia Ave. South, Suite 200
Birmingham, AL 35205

800-767-2427

CALL (205) 933-0339

GAMES

CIVIL WAR

A 2-player strategy game for MS-DOS Computers. You control your general, cavalry, infantry and artillery. Over 900 troop locations. Use our 16 pre-set battles or design your own. Defeat your opponent's general for total victory. **VGA REQUIRED. Only \$39.95! Free shipping! Order now!**

1-800-265-5555

Visa/MC or send check/MO to "Civil War"
#330, 736 - 8th Ave. S.W., Calgary, Alberta, Canada T2P 1H4

MISCELLANEOUS

THE TEE SHIRT FOR PC LOVERS! In Ash or White! Choose: "PC Habit" or "Modem Habit" S-XL: Send \$13.98 + \$2.50 p&h (XXL+\$2) to: PC Habit, Inc. 13876 SW 56 St. Suite 125C, Miami FL 33175. Guaranteed! FL res add tax.

SOFTWARE

IBM - COMMODORE 64 & 128 - AMIGA. 1000's of PD/Shareware programs on 100's of disks. Free listing or \$1 for large descriptive catalog (specify computer). **DISKS O'PLENTY INC.**, 7958 Pines Blvd., Suite 270B, Pembroke Pines, FL 33024

FREE

IBM shareware games on 5.25" disk (\$1 for 3.5"). Specify CGA/EGA/VGA. Send SASE to Dept. D, #1 Freeware, P.O. Box 131, Hatboro PA. 19040

PICK-3 & PICK-4 LOTTERY PLAYERS! LIP is the Lottery Inventory Program that gives you a fighting chance! IBM/Com. Only \$19.95 + \$2 s/h. OH add 6% tax. Specify 5 1/4 or 3 1/2 disk. OHIO res. ACT NOW and receive FREE 3-digit database (1980-1991 over 3700 entries) BL LIP Software P.O. Box 5044, Poland, Ohio 44514

FREE IBM SOFTWARE CATALOGS. \$1 mails your name to 12 dealers or 50 for \$4. DEALERS: your offer to this list \$25 a month. B. DUDEK, Box 58, Poolesville, MD 20837.

USED SOFTWARE—Free Brochure. Specify Amiga or C64/128. We also buy used software. Send list. Bare Bones Software, 940 4th Ave., #222, Huntington, WV 25701 or 1-800-638-1123.

Leverage Your Holiday Shopping!
Pick your lotto numbers and test your strategies with ease, fun, and confidence.
Lotto Leverage Features

- All US Pick-6 Lotteries
- Multi 3-D Number Graphs
- Full and Abbreviated Wheeling
- Performance Tracker
- History File Update
- Lotto Simulate Game
- FREE Winning Number History
- FREE Technical Support
- 30 Day Money Back Guarantee
- IBM compatible
- Lotto Leverage ... Play to Win!



To order call **1-800-829-6881** or send check or M/O with diskette size to: Technology Link, Inc. PO Box 1102 Libertyville, Illinois 60048 \$39.95 + \$4 S/H (Illinois residents add 6.5% sales tax)

IBM-C64/128-APPLE PD 7 SHAREWARE - Free catalog or \$2 for sample & catalog (refundable). Specify computer. CALOKE IND (B), Box 18477, Raytown, MO 64133

BUY/SELL used software! Lowest Prices! Free list. Specify 64/128. Amiga or IBM. Centsible Software, PO Box 930, St. Joseph, MI 49085. 616-428-9096

Call
516-757-3687
for
Classified Ad Information

SOFTWARE



HAVE YOU WON THE LOTTERY? DO YOU OWN LOTTO PICKER? WELL, WHAT DID YOU EXPECT!

LOTTO PICKER is your ticket to the richest **LOTTO PICKER** works by discovering the hidden biases in every lottery game worldwide. Using this info to your advantage Lotto Picker will tell you exactly which numbers to play - no guesswork involved. Your Lotto Picker card will be loaded with combinations and number patterns most likely to be selected! Plays all Pick 3, 4, 6, 7, 10, 11. Also plays games based on playing cards (MS-DOS only). FREE telephone support with each purchase. For MS-DOS, Apple II, and C64/128. **NEW LOW PRICE \$29.95** (+\$4.55 s/h). NY add tax. **SATISFACTION GUARANTEED OR YOUR MONEY BACK!**

ORDER TODAY! 1-800-484-1062

s-code 0644 or 1-718-317-1961

GE RIDGE SERVICES, INC., 170 Broadway, Suite 201-CP, New York, N.Y. 10038



FREE! IBM PD & SHAREWARE DISK CATALOG

Low prices since 1988! ASP Approved Vendor. Finto Software, Dept. M. Rt. 2, Box 44, Rosebud, TX 76570 or FAX (817) 583-2151.

WINDOWS-GEOS-GRAPHICS-UTILS-GAMES-MORE!

The BEST PD/Shareware for IBM or C64/128
Send stamp for FREE catalog-\$2 for disk sample (specify computer) to **DISCOVERIES** P.O. Box 9153, Waukegan, IL 60079.

PC Games Players!

Get a library card! Make a \$99 donation to: **THE ELECTRIC LIBRARY.**

Not a vendor, not shareware, new hot releases. You won't be sorry! Electric Library Dept A, 3664 15th Terr. S.E. Largo, FL 34641.

LIKE TO GO EXPLORING?

New computer maze game—Dungeon Thief. Simple, fun for all ages/abilities. Full game \$15, demo \$3. PC's/compatibles, color or mono. Specify disk (5 1/4, 3 1/2). Check/m.o. to: Sente Systems, Inc. Dept 57, Box 9439, Anaheim CA 92812.

CREATE SHAREWARE without programming!
PC GameBuilder makes it easy.
GameBuilder, Box 312-A1, Jackson, OH 45640.
614-988-2331. BBS 614-988-2307.

COMPUTE Classified is a low-cost way to tell over 328,000 microcomputer owners about your product or service.

Additional Information. Please read carefully.

Rates: \$38 per line, minimum of four lines. Any or all of the first line set in capital letters at no charge. Add \$15 per line for bold face words, or \$50 for the entire ad set in bold-face (any number of lines.)

Terms: Prepayment is required. We accept checks, money orders, VISA, or MasterCard.

General Information: Advertisers using post office box number in their ads must supply permanent address and telephone number. Orders will not be acknowledged. Ad will appear in next available issue after receipt.

Closing: First of the second month preceding cover date (e.g. October issue closes August 1.)

CLASSIFIED DISPLAY RATES
Classified display ads measure 2 1/4" wide and are priced according to height. 1" = \$275; 1 1/2" = \$400; 2" = \$525.

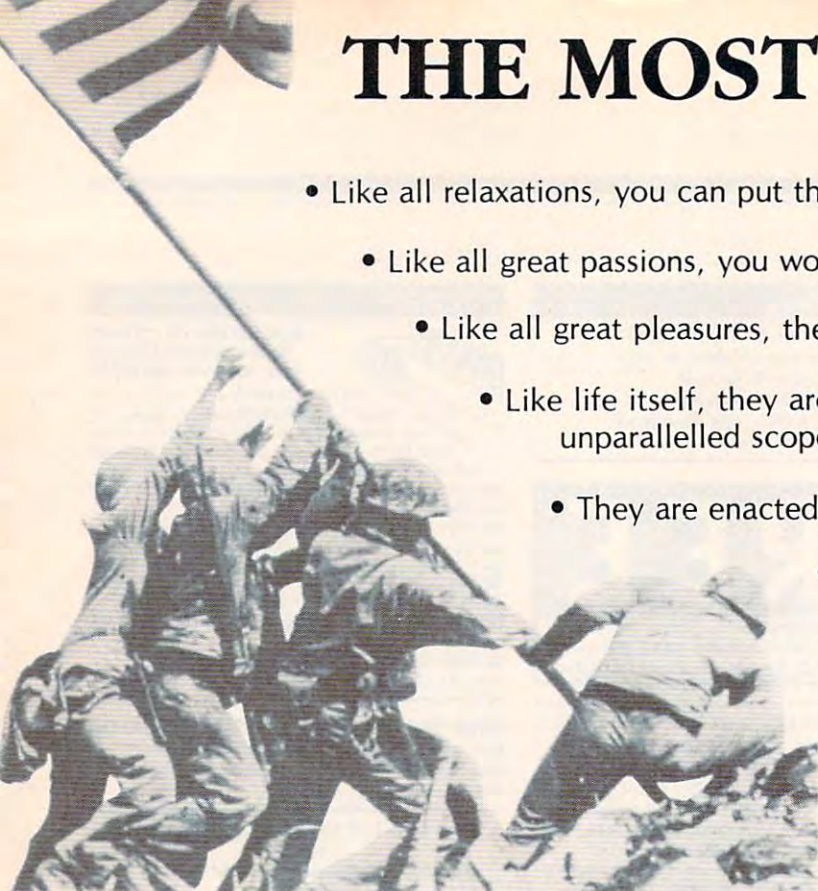
HOW TO ORDER

Call Maria Manaseri, Classified Manager, COMPUTE, 1 Woods Ct., Huntington, NY 11743, at 516-757-3687.

THE MOST REMARKABLE

- Like all relaxations, you can put them down whenever you like.
- Like all great passions, you won't be able to.
- Like all great pleasures, they last for years.
- Like life itself, they are a struggle of unparalleled scope and ardour.
- They are enacted on a stage of breath-taking landscapes.
- They demand brutal intrigue and ruthless leadership.
- Very soon all the vacancies will be gone.

• Book your place now—
and if you introduce a friend,
you can start **absolutely free**.



The Quebec Conference. From left to right, in the foreground: Mackenzie King, prime minister of Canada, Franklin Roosevelt and Winston Churchill.



It was a desperate plight in which the 14th Regiment of the Line found itself, the French square harshly pressed.

World War II, The Napoleonic Wars and Muskets & Mules are **revolutionary play-by-mail wargames**, reproducing with perfect historical accuracy the conflicts themselves. You play a key figure in the military-political hierarchy of a major power of the time. Each turn you will receive beautifully printed maps, on which the deployments of your proud subordinates or loyal troops are displayed. Each turn, you move your forces into strategic positions to frustrate your enemies or to support your allies within the game. Whether you are Napoleon Buonaparte, General George Patton, Adolf Hitler, or any one of countless others, you will be thrown into an unprecedented theatre of alternate history. In these unique and amazing interactive wargames, **you** direct the destiny of world history.



British ships of the line after Nelson's triumph at Aboukir Bay.