

ENTER THE COMPUTE TREASURE HUNT—DETAILS INSIDE

COMPUTE

YOUR COMPLETE HOME COMPUTER RESOURCE

\$2.95

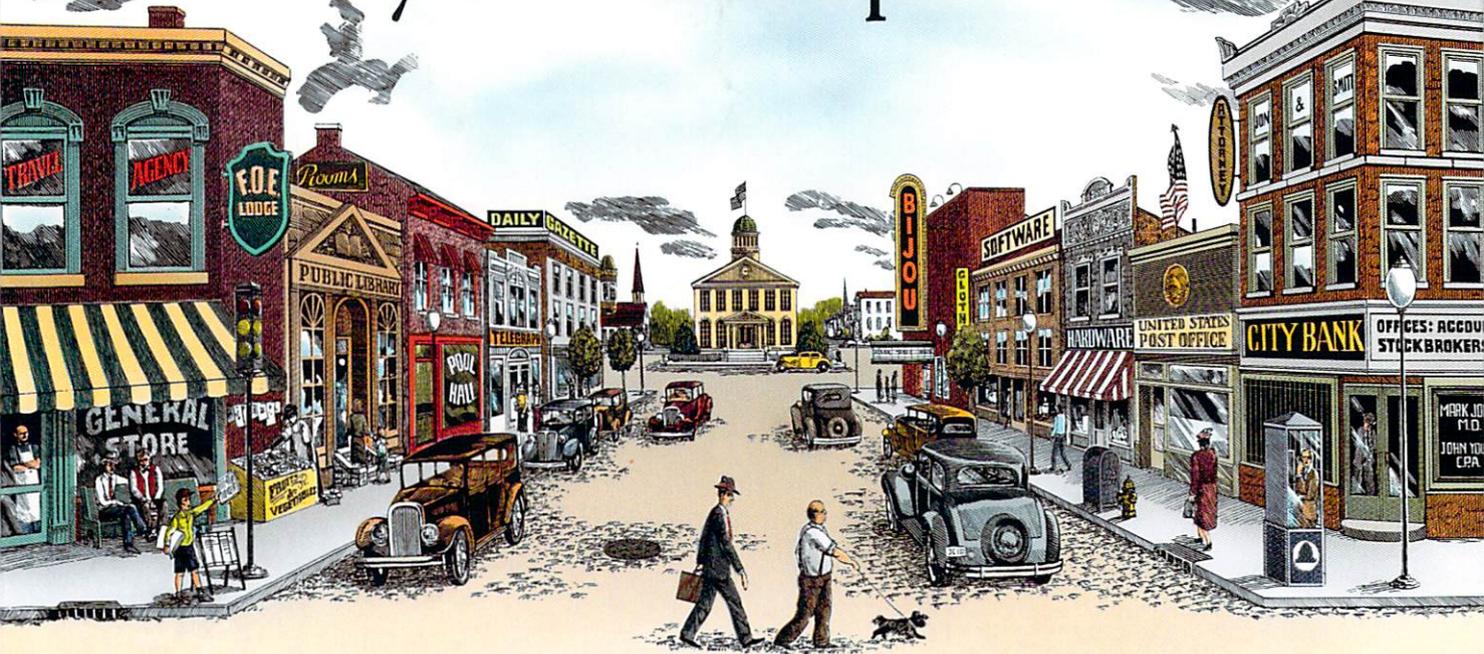
MARCH 1991

HARD FACTS ON HOME OFFICE HARDWARE

MASTER HOME FINANCES

COMPUTER MAPPING A CIVIL WAR SHIPWRECK

There's nothing new about having everything you need in one place.

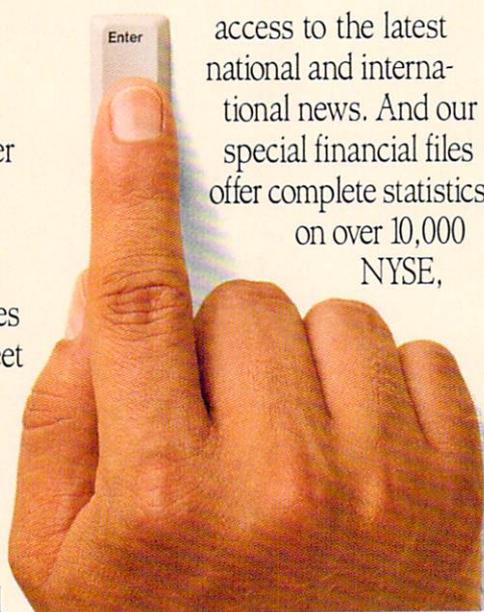


With CompuServe, it's all at your fingertips.

When you become a member of CompuServe, you join a vital, active community of over 750,000 friends and neighbors from all over the world.

Small-town friendly. We keep in touch with electronic mail and faxes, and by posting messages on our bulletin boards. We even meet in forums to discuss everything from science fiction to sharing software, and to get invaluable personal computer software and hardware support. And that's one of the best things about small towns: people helping people.

Big-city opportunities. But we can also shop coast-to-coast at hundreds of nationally known stores, and take advantage of a world-class library. We have



access to the latest national and international news. And our special financial files offer complete statistics on over 10,000 NYSE,

AMEX, and OTC securities.

We can even trade online with our local discount brokers.

And, just for fun . . . We've also got games — everything from trivia to TV-style game shows with

live entertainment to interactive space and fantasy adventures.

We've got airline schedules, so you can check out the bargains and book your own flights online. We even have listings from over 35,000 hotels.

It's not hard to get here. To get to CompuServe, all you need is a computer and a modem. We'll send you everything else, including a \$25.00 Usage Credit. In most places you'll be able to go online with a local phone call.

To buy a CompuServe Membership Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call today.

CompuServe
800 848-8199

Circle Reader Service Number 103

THINK OF OUR SOFTWARE AS AN ENDLESS SUPPLY OF FREQUENT FLYER MILEAGE.

At PC Globe, Inc. we thrive on making things simple. It's the concept that's allowed us to combine traditional maps and geography with world facts and statistics.

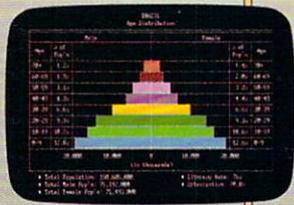
Simply put, you're able to bring the entire world to your computer without having to board a plane or manage a library.

PC GLOBE 4.0, THE WHOLE WORLD FOR \$69.95

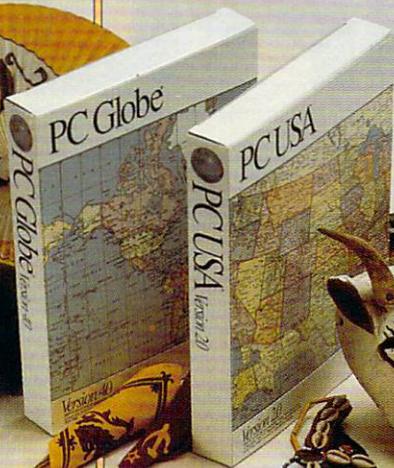
Here, in the efficient space of a few diskettes, is a simple to use "electronic atlas" that provides instant profiles, detailed maps and enhanced graphics for 190 countries and dependencies. What would ordinarily take hours to research becomes accessible in the split second it takes to press a button.

An almost endless combination of data may be displayed on detailed maps or via colorful bar charts.

What's more, PC Globe software supports popular programs for creating graphics and preparing text.



System requires IBM® PC/XT/AT/PS2 or compatibles with min. 512K RAM, floppy drive or hard disk. DOS 2.0+. Supports Hercules® monochrome, CGA, EGA, or VGA displays. PC Globe, Inc. makes other geography software products for business, travel, entertainment and learning. Selected titles are available for use with the Macintosh® and Apple IIe® personal computers.



PC USA 2.0, DISCOVER AMERICA

Packed with many of the same features as PC Globe 4.0, PC USA provides current and historical information for all 50 states and Puerto Rico. Included is a self-updating time zone map, detailed state and city data, colorful state flags and songs. It's as if you could take a tour of the states without ever leaving your chair.

Once again, simple to use. Once again, only \$69.95.

What we've done here is provide a new set of tools for living in a global world. Affordable programs that allow more time for understanding – and a better understanding of our times.

"PC GLOBE AND PC USA ARE SUPERB PROGRAMS THAT MAKE GEOGRAPHY COME ALIVE." Barry Simon, *PC Magazine*

Statistics are easily viewed with the touch of a key or click of a mouse. PC Globe software features an exclusive "point-and-shoot" system, simple pull-down menus, multi-use lab packs and availability of some programs in French, German, Spanish and Swedish versions.



PC GLOBE, A WORLD OF MAPS AND UTILITIES

- World, continent and country maps showing city locations
- Country maps outlining elevations, lakes, rivers, mountains and features
- Political alignment maps such as NATO, OPEC, etc.
- Automatic currency conversion and exchange rates
- Time zones for major cities with international dialing/ham radio codes
- Point-to-point distances and bearings
- All information updated annually



A WORLD OF COMPARISONS

- Each country's flag and anthem is reproduced with exceptional detail and music
- Major attractions, visa requirements, health conditions and languages
- Economic, political and population data
- GNP, import/export and commodities
- Data may be cross-compared between all countries or between regions
- Data and maps are easily exported to PC Paintbrush®, WordPerfect®, PageMaker® and Lotus 1-2-3®



AVAILABLE AT YOUR LOCAL
RETAILER, OR CALL US AT
1-800-255-2789



PC Globe, Inc.

4700 SOUTH McCLINTOCK
TEMPE, ARIZONA 85282

(602) 730-9000 FACSIMILE (602) 968-7196

SOFTWARE FOR EVERYWHERE.

COMPUTE

MARCH 1991

VOLUME 13 • NO. 3 • ISSUE 127

GAZETTE SUBSCRIBER EDITION

Special Coverage Follows Page 88

FEATURES

So You Want to Be a Sysop? G-6

RICK LEMBRÉE

If you've ever called an electronic bulletin board, you may wonder what it takes to set up a system of your own. It takes time, effort, and sometimes money to become a systems operator (sysop), but an expert who should know says the rewards can be many.

DEPARTMENTS

64/128 View G-1

TOM NETSEL

More than 30,000 people attended the eighth-annual World of Commodore held late last year in Toronto. For us at COMPUTE, it was a great opportunity to meet with our Canadian readers and see some new products.

News & Notes G-4

EDITORS

A terminal program and a paint program are two new products that should appeal to 128 owners who have 80-column monitors. For 64 owners there's a new fantasy adventure game and software to help you prepare your 1990 federal income taxes.

Feedback G-16

READERS

Readers want to share information about older Commodore products, learn about starting an electronic bulletin board, and replace the chips in a 64 with faster ones. Another reader has supplied a handy update to our *Electronic Billboard* program.

COLUMNS

D'iversions G-19

FRED D'IGNAZIO

Technology in the near future will be everywhere, but it will also be invisible. It may be under your clothing, inside a tooth filling, or on the tip of your tongue. For heavy-duty computing, though, you can mount a mainframe unit as a chic dog or cat collar.

Beginner BASIC G-20

LARRY COTTON

BASIC is a wonderful language, but what would you like to do with it? Would you like to gather data? Control appliances? Play music? Learn to type? Time reactions? Dial a phone?

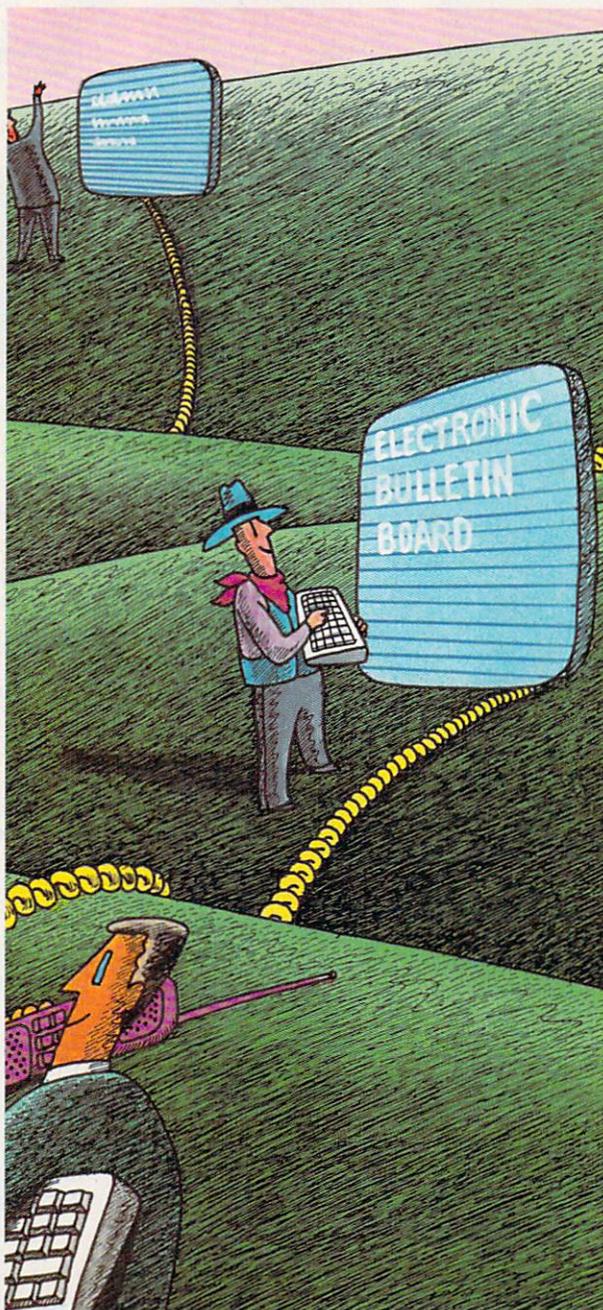


ILLUSTRATION BY DAVID CHEN

Machine Language G-22

JIM BUTTERFIELD

It seems pointless to have code that adds 0 to a number, or for that matter subtracts 0—after all, anything plus 0 gives an unchanged value. Yet there are times when it makes good sense. Here's a neat demonstration.

Programmer's Page G-24

RANDY THOMPSON

You stare at it all the time. BASIC's PRINT statement depends on it. Your software would be useless without it. Here are some tips designed to manipulate your computer's most visual component, the computer screen.

TYPE-IN PROGRAMS

Cross Aid G-25

LYSLE E. SHIELDS III

Many people enjoy spending time solving as well as making crossword puzzles, but finding the appropriate word is not always easy. A program such as *Cross Aid* can help.

Wired G-27

VICTOR BARBEE

On reconnaissance to a bleak and hazardous planet, you fall prey to the vile and loathsome Toiloots. You discover to your horror that the fiends have sabotaged your ship's wiring. The positive and negative terminals on all the circuits are clearly marked, but the connecting cables now resemble an upturned pot of spaghetti.

Termites G-31

GUS VAKALIS

Termites have infested Kelvin's four-story walkup, and the building is starting to collapse. Kelvin can escape this crushing fate if you help him jump over holes that appear in his path.

Graphics Converter G-34

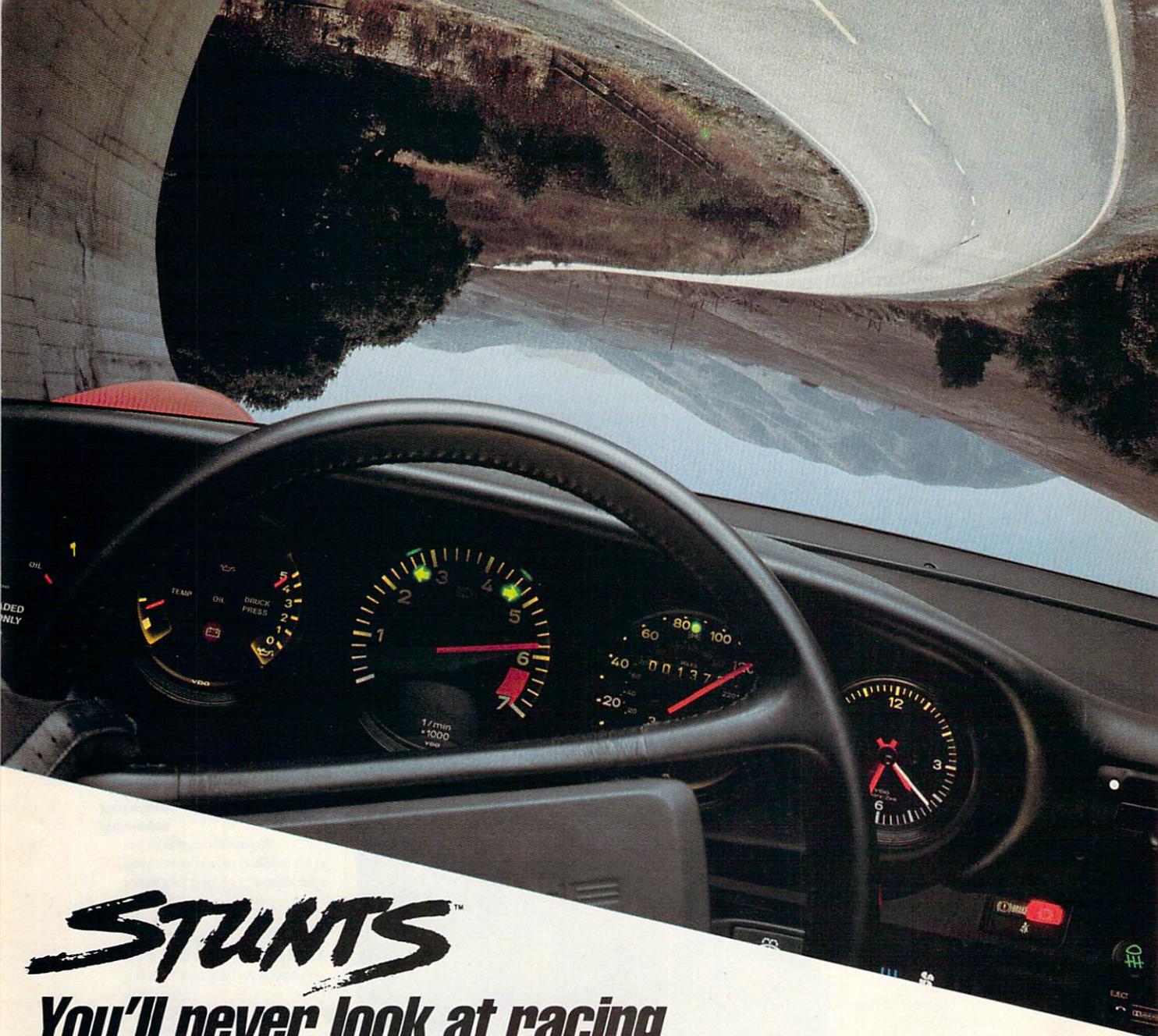
GUSTAVO FELIX HERRERA

If you've ever wanted to use a *Print Master* graphic or a piece of clip art from *The Print Shop* with a GEOS document, then *Graphics Converter* is the conversion program for you.

Metallix G-37

RICHARD PENN

You can only have three colors per character with the 64's multicolor mode, but *Metallix* provides a new graphics mode that displays seven colors per character.



STUNTS™

You'll never look at racing programs the same way again.

Stunts turns driving games upside down. Literally. It comes with 14 different hair-raising stunts, including pipes and corkscrews for white-knuckle, upside-down driving!

Not to mention loop-the-loops, slaloms and jumps! All so realistic you may want to bring along motion sickness pills.

Buckle yourself into one of eleven blistering cars. Each with a dead-on dashboard and downright amazing driving characteristics.

Race on five gut-wrenching tracks. Or use the Track Editor to build your own monster courses!



Watch replays from 3 video camera angles, or set your own.



Get a heart-pounding cockpit view with blazing 3-D polygon graphics.



Challenge any of six ice-in-their-veins competitors in 256-color digitized animation.

Stunts is published by Brøderbund and was developed by Distinctive Software, Inc., the same speed demons who designed Test Drive™ and The Duel: Test Drive II.™

But it's so far ahead, it's not even a race.

Stunts: So far ahead, it's not even a race.



See your dealer or call Brøderbund at (800) 521-6263 to order.

Brøderbund®

© Copyright Brøderbund Software, Inc., 17 Paul Drive, San Rafael, CA 94903-2101. All rights reserved. Stunts, AdLib, and Test Drive and The Duel: Test Drive II are trademarks of Brøderbund Software, Inc.; AdLib Inc.; and Accolade, Inc. respectively.



COMPUTE

Editorial License 6

PETER SCISCO

With millions of Americans working at home, it's worth considering what role home computers will play in the new workplace.

News & Notes 8

EDITORS

The latest news from the Winter CES in Las Vegas and an electronic games show in Canada.

Letters 10

EDITORS

Kudos for *COMPUTE*, monitor radiation hazards, interior design on the PC, and more from the mailbag.

Reviews 89

Hotware 104

Best-selling software from around the country.

**JOIN THE GREAT
COMPUTE TREASURE HUNT!
OVER \$40,000 IN PRIZES!**

Dig for Details on Page 40!

IN FOCUS

Home Office in Six Days 14

GREGG KEIZER

Give up that tiresome commute and telecompute instead. It just takes a lot of planning and courage to strike out on your own from home.

COMPUTE's March 26

SharePak Disk

RICHARD C. LEINECKER

Financial and inventory applications for maintaining a grip on your home-based business.

HOME OFFICE

COMPUTE Choice 28

HOWARD MILLMAN

Graphics displays, WYSIWYG, and improved memory management make *Lotus 1-2-3* release 3.1A a contender for the modern home office.

WorkPlace 32

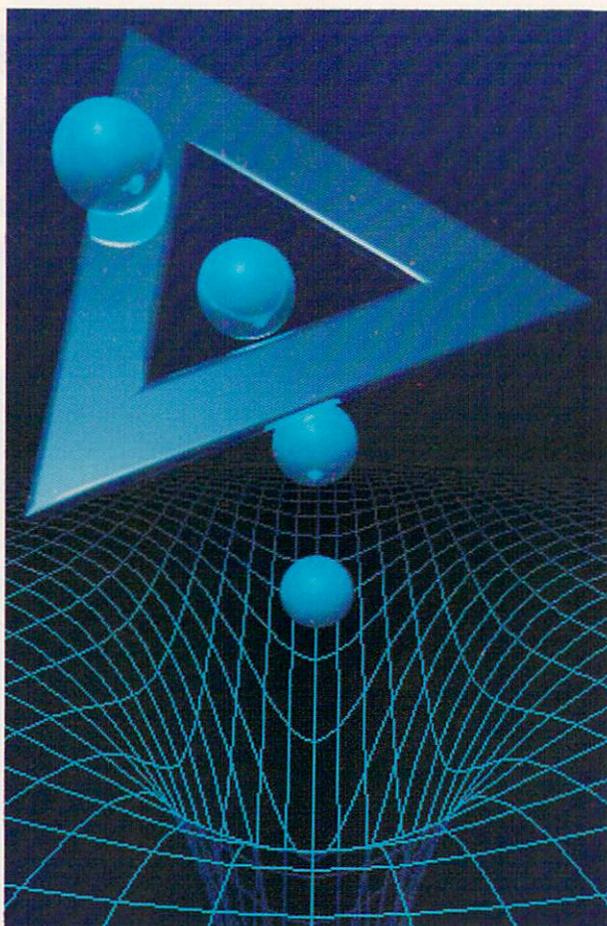
DANIEL JANAL

End the home office paper chase with some planning and the aid of a PC.

PC Promo 34

GREGG KEIZER

Put your best foot forward and make professional presentations and promotions from your home PC.



HIROMASA SUGIURA/WESTLIGHT INTERNATIONAL

ON THE COVER

Hiromasa Sugiura employed ray-tracing techniques on an NEC computer to develop the art featured on our March cover.

COMPUTE Your Complete Home Computer Resource (ISSN 0194-357X) is published monthly in the United States and Canada by COMPUTE Publications International Ltd., 1965 Broadway, New York, NY 10023-5965. Volume 13, Number 3, Issue 127. Copyright © 1991 by COMPUTE Publications International Ltd. All rights reserved. Tel. (212) 496-6100. COMPUTE is a registered trademark of COMPUTE Publications International Ltd. Printed in the USA and distributed worldwide by Curtis Circulation Company, P.O. Box 9102, Pennsauken, NJ 08109. Second-class postage paid at New York, NY and at additional mailing offices. POSTMASTER: Send address changes to COMPUTE Magazine, P.O. Box 3245, Harlan, IA 51537-3041. Tel. (800) 727-6937. Entire contents copyrighted. All rights reserved. Nothing may be reproduced in whole or in part without written permission from the publisher. Subscriptions: US, AFO - \$19.94 one year; Canada and elsewhere - \$25.94 one year. Single copies \$2.95 in US. The publisher disclaims all responsibility to return unsolicited matter, and all rights in portions published thereof remain the sole property of COMPUTE Publications International Ltd. Letters to COMPUTE or its editors become the property of the magazine. Editorial offices are located at 324 West Wendover Avenue, Suite 200, Greensboro, NC 27408. Tel. (919) 275-9809.

DISCOVERY

Pathways 43

STEVEN ANZOVIN

Mondo blendo is the latest computer art movement, bringing sources together in a pastiche of color and style.

Shipwreck! 46

HOWARD MILLMAN

Scientist Rod Farb makes an assault on a Civil War shipwreck in the graveyard of the Atlantic.

ENTERTAINMENT

COMPUTE Choice 52

WAYNE N. KAWAMOTO

Race at high speed through rain, snow, and dark of night when you belt yourself into *Test Drive III*.

GamePlay 58

ORSON SCOTT CARD

Old games get new life.

PC

PC View 61

CLIFTON KARNES

Many thanks to those of you who mailed in the readership surveys from the November 1990 issue. The results are surprising.

News & Notes 64

ALAN R. BECHTOLD

The race for an advanced, truly open architecture for PCs is still going strong.

Top PC Books 68

EDITORS

Whether you're a novice, a power user, or a programmer, books can help you get the most out of your PC.

Feedback 78

READERS

Learn how to blank the screen from BASIC (it's easier than you think).

Hot Tips 80

READERS

Manipulate your PATH statement with batch files.

Online 82

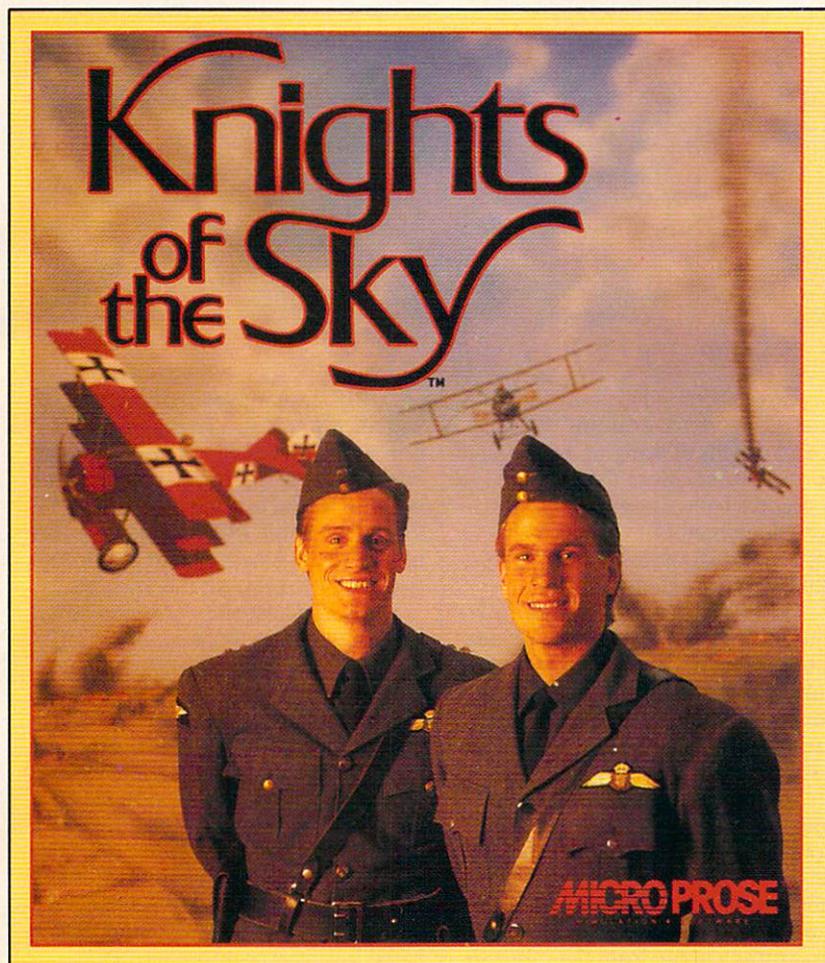
GEORGE CAMPBELL

Calling local or national BBS systems offers an opportunity to expand your horizons and make new friends.

Disk Update 84

JOYCE SIDES

ARGH! finally solved, hot news for SLED users, the latest in CHEX, easy installation for SETRam.



THE BEST OF THE PAST

Step into the past, and into the cockpit of a World War I biplane for thrilling dogfights against the greatest aerial aces of all time. The masters of combat flight simulation present the masters of aerial dogfighting in *Knights of the Sky*.

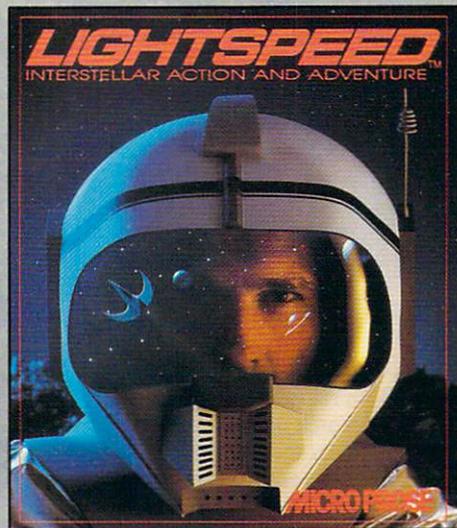
Play against the computer, or challenge a friend via direct link or modem. Dazzling Super 3-D Graphics and realistic sound deliver the action in unprecedented detail. Infantry units, trench lines and natural terrain features below are crystal clear — they'd better be: you have to navigate by them.

Flying without radar and at slightly

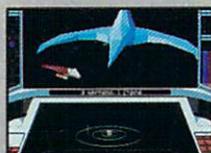
less than the speed of sound, your dogfighting skills are more important than ever. Your opponents aren't just specks in the sky — you'll see them close-up, shake your fists at them, perhaps even salute their skill.

But there's more at stake than just reputation. When you're not dueling you'll help the Allies win World War I. Lend support to ground forces during the war's major offensives; take part in legendary bombing raids; penetrate Axis territory on aggressive patrols.

The heroic adventures of times past re-created through the latest advances in modern technology. As always, MicroProse presents the Best of Times.

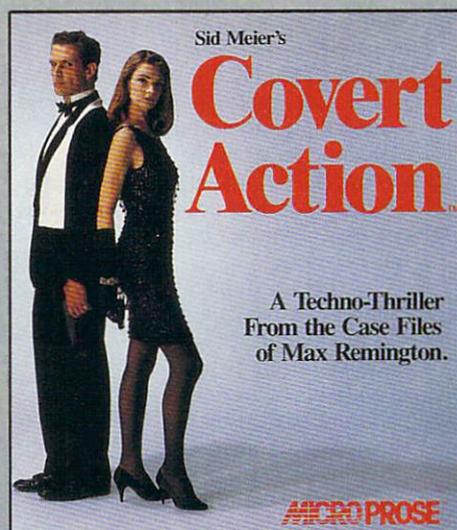


THE BEST OF THE FUTURE



Journey to the far future, to a time when Earth is uninhabitable, and you must find a new home for Mankind. The company that revolutionized combat flight simulation has

taken another bold step, in graphics technology, sound and role-playing sophistication.



THE BEST OF THE PRESENT

Experience the present world of international espionage by stepping into the shoes of special agent Max Remington. The first company to successfully merge simulation, role-playing and adventure now delivers espionage as it really is, with the scenarios and methods of operation you demand in an *authentic* spy thriller.



Join The MicroProse Squadron and Win Great Prizes!

MICROPROSE
SIMULATION • SOFTWARE

The Best of Times
All the Time.

Can't find these games? Call 1-800-879-PLAY for prices and ordering information. ©1990 MicroProse Software, Inc. All Rights Reserved.

Circle Reader Service Number 110



EDITORIAL LICENSE

P E T E R S C I S C O

No matter what study you read or which number you cite, it's clear that millions of Americans are working at home.

According to a study completed by New York-based LINK Resources in August 1990, 34.8 million workers are performing all or part of their jobs at home. Behind the figures is a population of mobile risk takers and anticipatory security seekers, all looking for the means to increase the quality of their lives.

The increasing number of home workers will define thinking along several fronts in the coming decade. Sociologists will examine how the at-home workplace affects families and institutions—schools, businesses, communities. No doubt some bright young anthropology student will write a dissertation about the burgeoning electronic societies that revolve around the phenomenon of the home office and, in particular, the role of the personal computer in those societies.

Apart from the humanities, the so-called *soft sciences*, the pragmatic (if not more practical) fields of urban planning, worker management, and business planning will all feel the effect of an expanding population of home-based workers. How will telecommuting affect traffic plans? How does a company track and motivate employees who are strewn over a wide area? How can home workers map out their personal objectives so that they coexist with and even enhance their economic objectives?

COMPUTE's stake in all of this—one part of its mandate to cover the world of home computing—is to provide information about the

role personal computers play in the home office and to examine the benefits and pitfalls of bringing a computer into your home. More than 200,000 of our readers have a home office, and they're looking for the productivity boosters and strategies that will help them reach their goals.

The phrase *home office* itself seems self-revealing; however, beyond the buzzword lies a multifaceted environment. It's an area of home computing that demands separate but equal doses of business tips, hardware hints, and software strategies.

The LINK study reveals one home worker population commonly associated with the term *extended office*. Over 4 million workers use their home computers for office work. These home workers are *time shifting*—coming home from the office to spend time with growing families, then hitting the PC at night to catch up on the day's business.

IBM has targeted that market with its PS/1. If you fit that description, COMPUTE will offer its support by featuring application strategies and tips that will help you get the most from your home PC. Features like this month's "Six Days to Your Home Office" will help you get the job done.

A second category of home office workers includes those who run full- and part-time businesses from their homes.

It's this population, some 3.5 million strong, that we usually mean when we read *home office*. The informational needs for this group are as varied as its members. These home workers need an entire support system at home, one that puts them in touch with the marketplace and keeps them competitive. Our look at computer-based business promotions, "PC Promo," is just one of many stories and articles COMPUTE uses to enhance the PC's role as a home-based business tool.

A third group of home office sites, one targeted by Tandy with its 1000RL, comprises what might be called the *home productivity* sector. These users believe that a computer can manage the deluge of information that overwhelms the late twentieth century American home. For these readers, we offer timely productivity tips, surveys of outstanding software packages, and a forum for sharing ideas.

None of these definitions exclude any of the others, a reflection of the power and flexibility of the home computer. COMPUTE will retain its own flexibility and expand its own power. Home computing is serious business—in or out of the office. □



YOU NEED A SET OF THESE



TO PLAY ONE OF THESE



These spheres represent the elements that contain mystic powers you must achieve... to stay alive in NEO-GEO's exciting new adventure, **MAGICIAN LORD**. As ELTA, you'll fight off brutal attacks by fiendish enemies as you travel through a terror-filled fantasy world. You'll need all the power you can get!

MAGICIAN LORD is just one of many challenging NEO-GEO action, sports & role playing fantasy games. All feature today's most advanced 4-dimensional graphics, with vivid detail and effects, 65,000 colors and an amazing 15-channel real voice stereo sound track. All pumped out by 330 meg hardware!

So NEO-GEO can deliver in-your-face realism that Nintendo, Sega, and NEC simply don't have the capacity to match.

NEO-GEO also has great Network capability, a unique Memory Card that lets you save your game at any stage, and coming soon, software applications for modem play, home shopping, banking and more.

NEO-GEO is clearly the system of choice for vid freaks of all ages. The question is, do you have what it takes?



A Quantum Leap Forward In Video Entertainment.

Call: SNK at (213) 787-0990 or Authorized SNK Dealers
• Video Express Inc. (800) 253-6665

The trademarks of "NEO-GEO" are registered by SNK Home Entertainment, Inc.
Circle Reader Service Number 151



NEWS & NOTES

Flying High with Lucasfilm

At Winter CES, held this past January in Las Vegas, Nevada, Lucasfilm Games previewed its upcoming *Secret Weapons of the Luftwaffe*, the latest—and most complex—of its series of World War II air-combat simulators. The VGA graphics go well beyond Lucasfilm's *Their Finest Hour: The Battle of Britain*. *Luftwaffe* recreates one of the longest and most bizarre air offenses in history—the campaign from 1943 to 1945 by the U.S. Air Force to paralyze the industrial might of Germany. One of the game's authentic German planes, the ME-163 rocket plane, looked like the current space shuttle. It was fast, but highly unstable—it was as dangerous to its own pilots as it was to the Americans.

DAVID ENGLISH

Logitech Takes a New Tack

Logitech is abandoning the one-size-fits-all approach to mice. It has developed the MouseMan in versions specifically designed for use by right- and left-handed computerists. The 400-dpi mice will also be released in sizes to fit small hands and large hands. (No, the large MouseMan is not called the RatMan.) The ergonomic redesign of the mouse illustrates Logitech's concern about the growing incidence of physical injuries from using improperly designed computer equipment. But that's not all. Zappacosta also announced a new cordless mouse technology incorporating low-frequency radio transmissions rather than the infrared technology used by other cordless mice. This means that the mouse need not be in line of sight with the computer to operate.

ROBERT BIXBY

Canadian Games

The first World of Electronic Games will be held at the Metro Toronto Convention Centre in Canada on March 16 and 17. Exhibitors at the show, which is open to the public, will include representatives of major video entertainment system manufacturers such as Nintendo, Sega, Atari, and NEC, along with computer games developers and dozens of electronic games retailers. We will also be exhibiting COMPUTE's line of computer and video entertainment books, magazines, and disks. For further information, contact The Hunter Group at (416) 595-5906.

BILL TYNAN

CES Wrap-Up

Origin announced the sequel to *Wing Commander*. The second installment, called *Vengeance of the Kilrathi*, brings a new assortment of fighting spaceships, new characters, and new missions to the original story line. Expect it on store shelves by mid June.

Electronic Arts hits the road with a new racing simulation—*Mario Andretti's Racing Challenge*—and a top-to-bottom overhaul of its popular *Earl Weaver Baseball*. With the new *EWB*, players can download stats directly from selected online sources and then use them to construct teams and play games. The new version also incorporates varied camera angles and graphical detail unavailable in versions 1 and 1.5.

Sierra On-Line talked about the imminent release of *Space Quest IV* and *Heart of China* (from its Dynamix division). It plans to release one game every two months through the rest of 1991, including *Leisure Suit Larry 5* and *Police Quest III*.

On another note, The Software Toolworks announced plans to bring its Miracle keyboard (an electric piano that hooks up to a Nintendo) to the PC. And you won't have to buy a MIDI card to play it—the company is licensing RealSound technology from Access Software.

PETER SCISCO



Earl Weaver Baseball gets a complete graphic makeover.

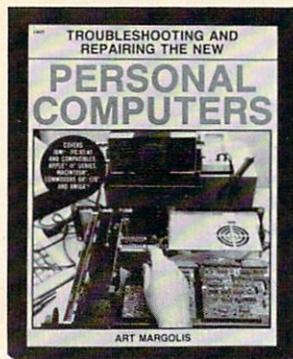


The Kilrathi are back in *Wing Commander II*, and they're really ticked off.

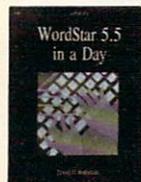
SELECT 5 BOOKS

for only \$4.95

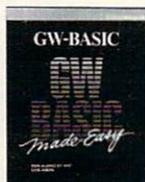
(values to \$140.75)



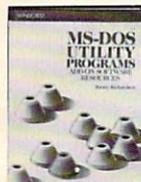
2809 \$29.95
Counts as 2



3330P \$19.95



15012P \$19.95



3278P \$24.95



15019P \$21.95
Counts as 2



3616P \$17.95



3441P \$24.95



2879P \$22.95



3368P \$19.95
Counts as 2



3417P \$24.95



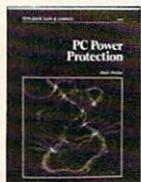
1540P \$17.95



3332P \$24.95



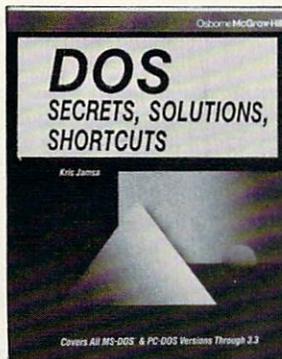
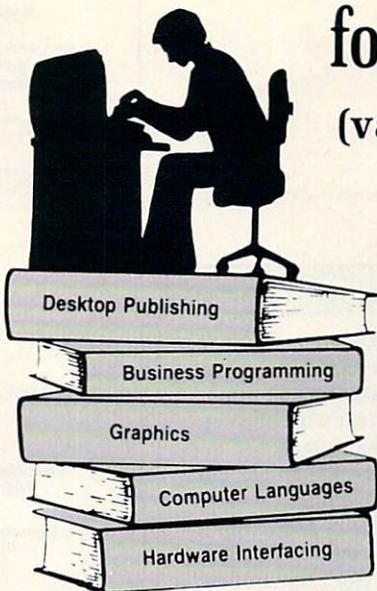
2859P \$21.95
Counts as 2



9250P \$19.95
Counts as 2



3057P \$15.95



15008P \$24.95



3422P \$17.95



3617P \$26.95
Counts as 2



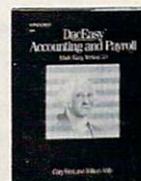
3331P \$14.95



3031P \$17.95



15011P \$24.95
Counts as 2



3204P \$21.95



15013P \$26.95
Counts as 2



3176P \$16.95



3006P \$29.95
Counts as 2



3578P \$16.95



15037P \$19.95



3564P \$19.95



3283 \$28.95



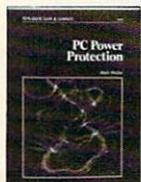
3403 \$29.95
Counts as 2



3384P \$19.95



30049P \$15.95



3211P \$24.95
Counts as 2



3049 \$37.95
Counts as 2

3318P \$19.95
Counts as 2



The Computer Book ClubSM

Membership Benefits • Big Savings. In addition to this introductory offer, you keep saving substantially with members' prices of up to 50% off the publishers' prices. • **Bonus Books.** Starting immediately, you will be eligible for our Bonus Book Plan, with savings of up to 80% off publishers' prices. • **Club News Bulletins.** 15 times per year you will receive the Book Club News, describing all the current selections—mains, alternates, extras—plus bonus offers and special sales, with scores of titles to choose from. • **Automatic Order.** If you want the Main Selection, do nothing and it will be sent to you automatically. If you prefer another selection, or no book at all, simply indicate your choice on the reply form provided. You will have at least 10 days to decide. As a member, you agree to purchase at least 3 books within the next 2 years and may resign at any time thereafter. • **Ironclad No-Risk Guarantee.** If not satisfied with your books, return them within 10 days without obligation! • **Exceptional Quality.** All books are quality publishers' editions especially selected by our Editorial Board. CMPT391

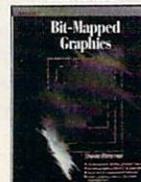
All books are hardcover unless number is followed by a "P" for paperback. A shipping/handling charge and sales tax will be added to all orders. (Publishers' Prices Shown) If card is missing, use this address to join:

©1991 THE COMPUTER BOOK CLUB, Blue Ridge Summit, PA 17294-0820

Circle Reader Service Number 136



3318P \$19.95
Counts as 2



3128P \$22.95
Counts as 2



3382P \$29.95

3558 \$38.95
Counts as 2

2998P \$21.95



LETTERS

The Right Stuff

I am a computer professional dealing mostly with IBM PCs, UNIX systems, and mainframes. Over the years I've read your magazine, but at one point I moved and was unable to find your magazine in my new hometown.

I recently bumped into your magazine in a grocery store, and I was very impressed with the quality. Yes, sure there are plenty of magazines out there that dissect computers in every issue, but what makes your magazine stand out is that it is aimed at the general user, who only needs a desire for learning and applying the concepts in your magazine to enjoy it, and not a Bachelor of Science degree.

ALBERTO PEREZ
COLUMBIA, MD

Monitor Risks

I am concerned about the risks which might exist to human health with the use of personal computers with VGA color monitors. Are there any radiation emissions that may cause harm to eyesight? Are there any concerns regarding magnetism?

Please refer me to any information on this subject that has appeared or will appear in your publication.

ROGER RYBARCZYK
KALAMAZOO, MI

Look for a feature article on this important subject in the July COMPUTE.

South African Fan

Thanks for a fantastic magazine, and keep up the good work. I have been reading your magazine since its inception. Even with modern communication, it takes a long time for your magazine, *Scientific American*, *Popular Mechanics*, *Popular Science*, and *National Geographic* to reach my door. However, according to a British Airways ad, I can be anywhere in North America by this time tomorrow—just 14,000 miles to your place from mine.

DAVID W. RUMBELOW
FISH HOOK, SOUTH AFRICA

Fixed Floor Plans

My daughter is interested in interior design. She draws sketches to show how she would correct what she considers to be poor floor plans.

I recall seeing an advertisement for a computer program that was designed to help people in preparing home floor plans. I want to buy it for my daughter, but I can't remember who makes it.

RICHARD G. OVERBY
MISHAWAKA, IN

Virtually any CAD (Computer-Aided Design) software could be used for this purpose. Some software is shipped with the necessary clip art to create architectural drawings, and some allows you to create and store your own clip art.

One route would be to purchase a Microsoft Windows CAD program like Arts & Letters Graphic Editor, Micrografix Designer, or Corel Draw. You would also need to purchase Windows for your daughter, if she doesn't have it already. The combination of CAD software and Windows could range to nearly \$900, so this may not be the best route to take until your daughter becomes a professional designer.

In the interim, you might consider the general-purpose technical sketching tool Autosketch 3.0 (published by Autodesk and distributed by Generic Software, 11911 North Creek Parkway South, Bothell, Washington 98011; 800-223-2521; \$249).

Your daughter will probably want two of the architectural clip-art libraries related to home design: Home Space Planner contains furniture and recreation equipment, and House Designer contains floor plans, steps, appliances, cabinets, fixtures, windows, and doors. These libraries cost \$49.95 each (other libraries are also available).

Your daughter's Autosketch drawings can be printed out from within the program or exported to other CAD products like AutoCAD

COMPUTE

EDITORIAL

Editor in Chief Peter Scisco
Art Director Robin C. Case
Managing Editor David Hensley Jr.
Editor, PC Clifton Karnes
Editor, Amiga Resource Denny Atkin
Editor, Gazette Tom Netsel
Associate Editors Robert Bixby
 David English
 Mike Hudnall
Assistant Editor Karen Huffman
Copy Editors Karen Siepak
 Kandi Sykes
Editorial Assistant Shay Addams, Rhett
Contributing Editors Anderson, Alan R.
 Bechtold, Jim Butterfield,
 George Campbell, Tom
 Campbell, Larry Cotton,
 Fred D'ignazio, Keith
 Ferrell, John Foust, Daniel
 Janal, Sheldon Leemon,
 Arlan Levitan, Tony
 Roberts, Randy Thompson

ART

Assistant Art Director Kenneth A. Hardy
Designer Jo Boykin
Typesetter Terry Cash

PRODUCTION

Production Manager De Potter
Traffic Manager Barbara A. Williams

PROGRAMMING

Programming Manager Richard C. Leinecker
Programmers Bruce Bowden
 Joyce Sides
 Troy Tucker

ADMINISTRATION

President Kathy Keeton
Executive Vice President,
Operations William Tynan
Office Manager Sybil Agee
Sr. Administrative Assistant,
Customer Service Julia Fleming
Administrative Assistant Elneda Chavis
Receptionist Cynthia Giles

ADVERTISING

Vice President,
Associate Publisher Bernard J. Theobald Jr.
 (212) 496-6100
Marketing Manager Caroline Hanlon
 (919) 275-9809

ADVERTISING SALES OFFICES

East Coast: Full-Page and Standard Display Ads—Bernard J. Theobald Jr., Chris Coelho; COMPUTE Publications International Ltd., 1965 Broadway, New York, NY 10023; (212) 496-6100. **East Coast: Fractional and Product Mart Ads**—Caroline Hanlon, Marketing Manager; COMPUTE Publications International Ltd., 324 W. Wendover Ave., Suite 200, Greensboro, NC 27409; (919) 275-9809. **Southeastern Accs. Mgr.: Full-Page, Standard Display, and Mail-Order Ads**—Harriet Rogers, 1725 K St. NW, Suite 903, Washington, D.C. 20006; (202) 728-0320. **Florida:** Jay M. Remer Associates, 3300 NE 192nd St., Suite 912, Aventura, FL 33180; (305) 933-1467. **Midwest: Full-Page and Standard Display Ads**—Starr Lane, National Accounts Manager; 1025 Crescent Blvd., Glen Ellyn, IL 60137; (708) 790-0171. **Midwest: Fractional, Product Mart, and Classified Ads**—Barbara Vagedes, 29 W. 382 Candlewood Ln., Warrenville, IL 60555; (708) 393-1399. **Mid-Southwest:** Joy Burleson, Brenda Cochran, Tamara Cramer, Carol Orr; Carol Orr & Co., 3500 Maple, Suite 500, Dallas, TX 75219; (214) 521-5116. **West Coast: Education/Entertainment**—Jerry Thompson, Jules E. Thompson Co., 1290 Howard Ave., Suite 303, Burlingame, CA 94010; (415) 348-8222. **Western Accs. Mgr.: Productivity/Home Office**—Jan Lingwood, 6728 Eton Ave., Canoga Park, CA 91303; (818) 992-4777. **West Coast: Fractional Mail-Order, Shareware, and Product Mart Ads**—Lucille Dennis, Jules E. Thompson Co., 1290 Howard Ave., Suite 303, Burlingame, CA 94010; (707) 451-8209. **U.K. & Europe**—Beverly Wardale, 14 Lisgar Terr., London W14, England; 011-441-602-3298. **Japan**—Intergroup Communications, Ltd.; Jiro Semba, President; 3F Tiger Bldg. 5-22 Shiba-koen, 3-Chome, Minato-ku, Tokyo 105, Japan; 03-434-2607.

THE CORPORATION

Bob Guccione (chairman)
 Kathy Keeton (vice-chairman)
 David J. Myerson (chief operating officer)
 Anthony J. Guccione (secretary-treasurer)
 William F. Marlieb (president, marketing & advertising sales)
 John Evans (president, foreign editions)
 Pat Gavin (vice president, chief financial officer)

ADVERTISING AND MARKETING

Sr. VP/Corp. Dir., New Business Development: Beverly Wardale;
VP/Dir., Group Advertising Sales: Nancy Kestenbaum; **Sr. VP/Southern and Midwest Advertising Dir.:** Peter Goldsmith. **Offices:** New York: 1965 Broadway, New York, NY 10023-5965, Tel. (212) 496-6100, Telex 2371128. **Midwest:** 333 N. Michigan Ave., Suite 1810, Chicago, IL 60601, Tel. (312) 345-9393. **South:** 1725 K St. NW, Suite 903, Washington, DC 20006, Tel. (202) 728-0320. **West Coast:** 6728 Eton Ave., Canoga Park, CA 91303, Tel. (818) 992-4777. **UK and Europe:** 14 Lisgar Terrace, London W14, England, Tel. 01-828-3336. **Japan:** Intergroup Jiro Semba, Telex J25469IGLTYO, Fax 434-5970. **Korea:** Kaya Advtsng, Inc., Rm. 402 Kunshin Annex B/D 251-1, Dohwa Dong, Mapo-Ku, Seoul, Korea (121), Tel. 719-6906, Telex K32144Kayaad.

ADMINISTRATION

Sr. VP/Administrative Services: Jeni Winston; **Sr. VP/Art & Graphics:** Frank Devino; **VP/Newsstand Circulation:** Marcia Orovitz; **VP/Director of New Magazine Development:** Rona Cherry; **VP/Director Sales Promotions:** Beverly Gripper; **VP/Production:** Hal Halpern; **Dir. Newsstand Circulation:** Paul Rolnick; **Dir. Newsstand Circulation Distribution:** Charles Anderson, Jr.; **Dir. Newsstand Circulation Marketing:** Bruce Eldridge; **Dir. Subscription Circulation:** Marcia Schultz; **Director of Research:** Robert Rattner; **Advertising Production Director:** Charlene Smith; **Advertising Production Traffic Mgr.:** Mark Williams; **Traffic Dir.:** William Harbutt; **Production Mgr.:** Tom Stinson; **Ass't Production Mgr.:** Nancy Rice; **Foreign Editions Mgr.:** Michael Stevens; **Exec. Ass't.:** to Bob Guccione: Diane O'Connell; **Exec. Ass't. to David J. Myerson:** Teri Pisani; **Special Ass't. to Bob Guccione:** Jane Homish.

EYE OF THE BEHOLDER

Advanced
Dungeons & Dragons
COMPUTER PRODUCT

Explore AD&D® Computer Fantasy Role-Playing Like Never Before!

YOU ARE THERE...

Introducing *EYE OF THE BEHOLDER*, volume 1 of the first graphically based AD&D computer fantasy role-playing saga – The **LEGEND SERIES!**

Stunning 3-D graphics and explosive sound deliver mesmerizing face-to-face combat and encounters!

Easy "point-and-click" commands and 3-D point of view create a "you are there" feeling throughout your entire adventure. Everything you experience, including movement, spell-casting and combat, is from your point of view!

AD&D computer fantasy role-playing has never been like this!

"Legend has it there's a criminal conspiracy hiding in the Waterdeep sewers. Is this true? Well, if someone is hiding down here, we're going to find them... and destroy them!"



STRATEGIC SIMULATIONS, INC.®



IBM 3-D VIEW



IBM VGA DISPLAY

❖ IBM & AMIGA!
❖ CLUE BOOK!



To order: visit your retailer or call: 1-800-245-4525, in the U.S.A. & Canada, to charge on VISA or MasterCard.

To receive SSI's complete product catalog, send \$1.00 to: SSI, 675 Almanor Avenue, Suite 201, Sunnyvale, CA 94086



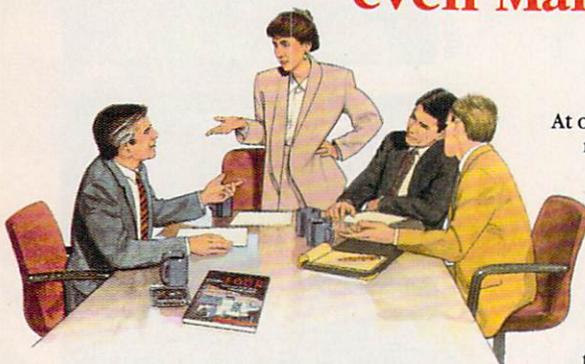
ADVANCED DUNGEONS & DRAGONS, AD&D, FORGOTTEN REALMS, and the TSR logo are trademarks owned by and used under license from TSR, Inc. ©1990 TSR, Inc. ©1990 Strategic Simulations, Inc. All rights reserved.

AD&D®
2nd Edition
game rules



After I struck out with dBASE, Paradox, and nobody, but nobody believe our customer tracking and

...but when I came back that afternoon with a complete, customized Alpha FOUR® application, even Marge was impressed.



At our Monday morning staff meeting, I announced I was going to automate our sales tracking and invoicing system later that day.

Skepticism ran high. "Paul, you promised me an application like that two years ago," said Marge. "You couldn't do it, and neither could that dBASE programmer you hired. It'll never happen!"

On the other side of the room, Tim, a new hire whispered to Richard, "I didn't know the boss was a programmer, too."

"He's not," said Richard. "Couldn't write code to save his life. But he keeps trying because he thinks it's critical to the business."

I'd already tried three times before to program a database: first with dBASE (much too complicated). Then I tried Q&A (not powerful enough). Then I bought Paradox (just like dBASE). All were either too complicated, or not capable enough for our needs.

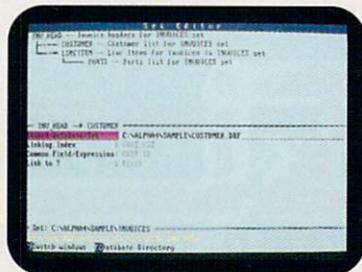
This time, I was confident. Why? Because I just bought Alpha Four, the relational database for non-programmers like me. I spent 45 minutes over the weekend with Alpha Four's audiocassette tour. So I knew how easy application design with Alpha Four would be, even the first time.

I knew within hours, I'd be able to build a fully relational customer tracking and billing system, complete with custom menus, beautiful screens and extensive help messages for error-free data entry.

And that's exactly what I did. You should have seen Marge's face when the first, perfectly formatted invoice came off the printer.

I DEVELOPED MY APPLICATION IN MINUTES!

I designed my application with Alpha Four's unique "application outliner." It automatically set



up a system of menus, sub-menus, and procedures based on the outline I laid out.

MY REPORTS LOOK GREAT

Alpha Four's report writer was even more impressive. I "painted" reports and invoices on-screen. They look exactly like I wanted them to—much better than our old paper forms.

I'LL NEVER KEY IN DATA TWICE AGAIN

I always ran out of power with other simple-to-use databases; they weren't relational. With Alpha Four, I created different databases for customers, invoices and inventory and then related them into a "set," just by drawing on-screen, a diagram of the links between the databases.

Now, we never have to enter the same information more than once.

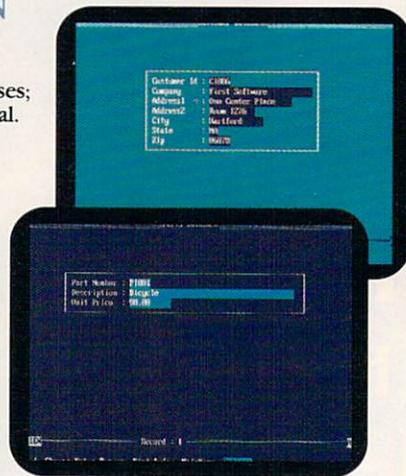
New invoices can be generated for existing customers without having to re-enter their information—we just "look it up" in our customer database.

TOTAL COMPATIBILITY WITH dBASE FILES

And I was delighted that Alpha Four is totally compatible with dBASE.dbf files. Our mailing list went right into the new application without even having to convert the files!

FASTER, MORE ACCURATE DATA ENTRY

Alpha Four has all the features of an advanced database, but they're all simple enough for me to use. When you enter data, you can automatically change the case of letters from lower to upper. You can display data entry templates for formatted fields like phone numbers, or skip over fields when

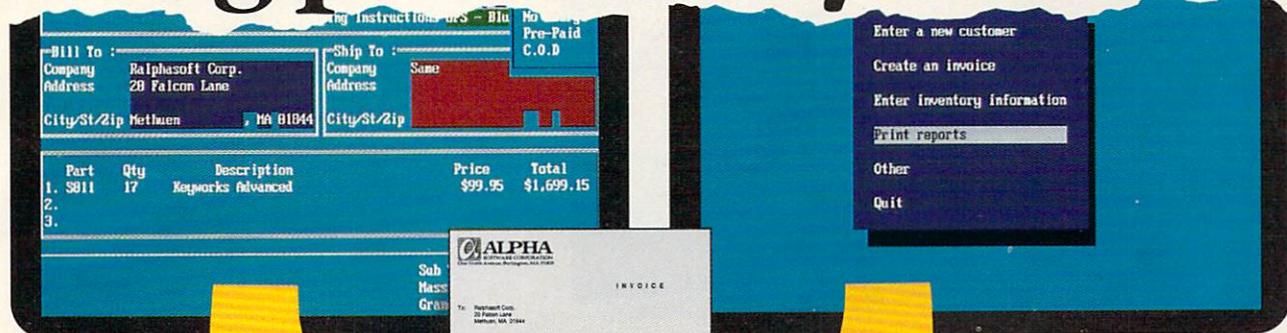




"EXCELLENT VALUE"
INFO WORLD

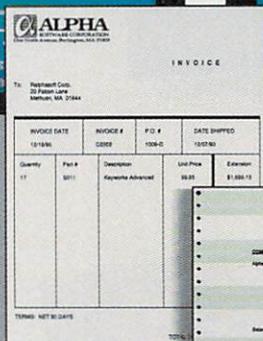
"RATED #1"
WEEK

Q&A, ed I could automate billing process myself...



certain conditions are met. Of course, all calculations are performed automatically.

Look-ups are super flexible. Display information from a look-up database in a multi-column window anywhere on the screen. Select from the window and Alpha Four automatically fills in the related information. For example, enter a part number, and have Alpha Four automatically enter the correct description and price.



Quantity	Part #	Description	Unit Price	Extension
17	S811	Keyworks Advanced	\$99.95	\$1,699.15

SAVE \$450 WITH THIS AD!
SPECIAL OFFER: \$99 UPGRADE
FROM YOUR EXISTING
DATA MANAGER*

If you already have any database software, integrated package or mail list manager, or if you are currently using your spreadsheet to manage data, you can upgrade to Alpha Four for just \$99.

NO RISK OFFER!

And it's fully guaranteed. If you're dissatisfied, return Alpha Four within 60 days for a full refund. This is a limited-time, one-copy-per-organization offer, available from Alpha Software, or through your local dealer.



*Qualifying packages include: programming databases (dBASE® II, III, and IV, Paradox, Clipper®, Foxbase®, Fox Pro®, Revelation, etc.), flat-file databases (Q&A®, PFS:Professional File®, Rapid File®, etc.), integrated packages (Microsoft Works®, PFS:First Choice®, Lotus Works®, etc.), and mailing list managers (Fastpack Mail, etc.) or spreadsheets with databases (Lotus 1-2-3®, Quattro Pro®).

All trademarks are registered with the appropriate companies.



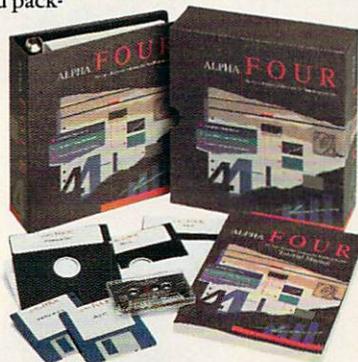
Circle Reader Service Number 172

HOW TO ORDER

Mail the coupon below to Alpha Software or take it to your local dealer to pick up your Alpha Four Upgrade Kit. Remember to bring proof you have an existing qualifying product*.

For Fastest Service
Call: 1-800-852-5750, Ext. 117
117 Orders Only Hotline:
1-800-336-6644 Or Fax
the order form to:
1-617-272-4876

In Canada Call: 1-800-451-1018, Ext. 117 Or fax your order to: 1-416-365-1024 Or mail coupon to: Alpha Software Corp., 626 King Street, Suite 301, Toronto, Ontario M5V 1M7



Alpha FOUR
\$99 Upgrade
Offer (SUGGESTED
RETAIL \$549)

ALPHA
SOFTWARE CORPORATION
One North Avenue, Burlington, MA 01803
1-800-852-5750, Ext. 117

YES! Please send me Alpha Four relational database for non-programmers for just \$99 (SRP: \$549), plus \$8.50 shipping and handling. I understand it is fully guaranteed and I may return it within 60 days for a full refund. I have enclosed the cover page of my existing qualifying product* manual (or original diskette).

Method of Payment: Check Enclosed Diskette Size: 3 1/2" 5 1/4"
 Charge my credit card: VISA MasterCard Amer. Express

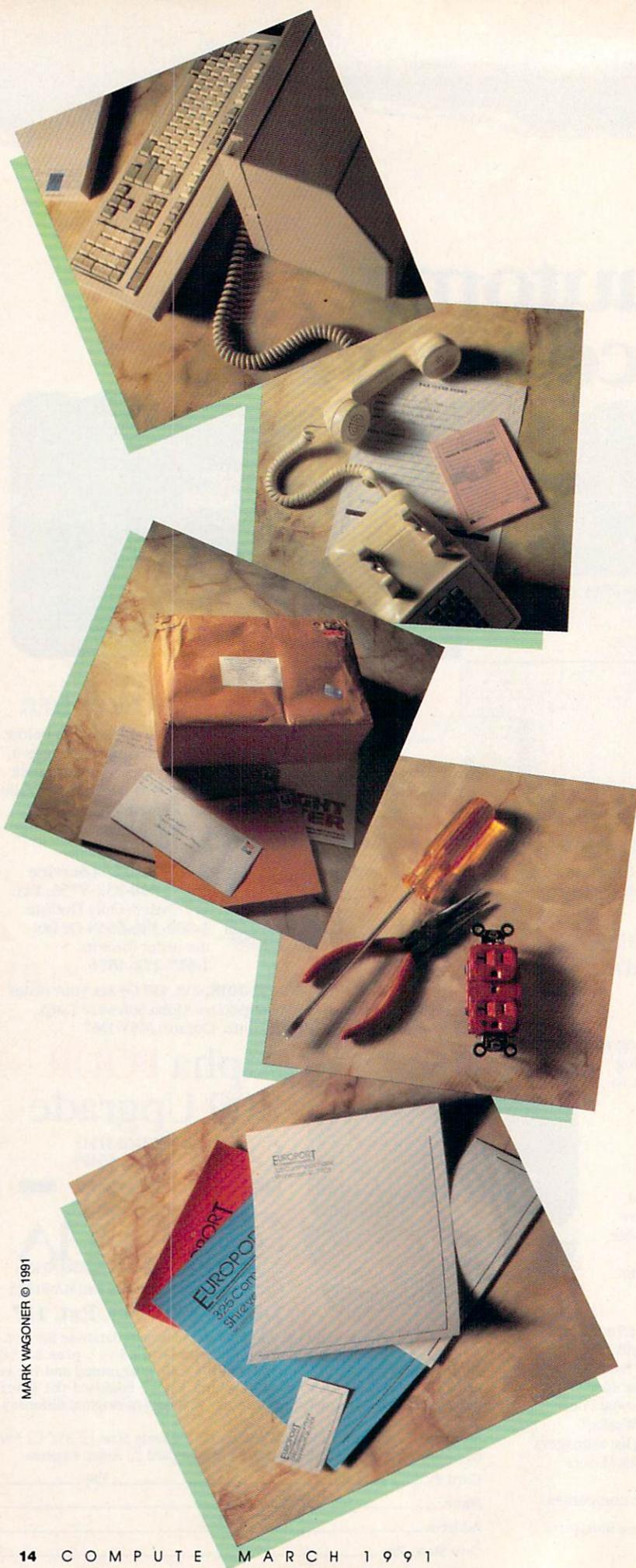
Card # _____ Exp. _____

Name _____

Address _____

City, State, Zip _____

Daytime Phone () _____ (in case we have questions about your order) CP



1
HOME
2
OFFICE
3
IN
4
SIX
5
DAYS
6

MARK WAGONER © 1991



INTEGRATING TECHNOLOGY INTO YOUR WORKSPACE

Dreams don't come cheap. But they can come true. You can give up that tiresome commute and telecompute instead, you can go into business for yourself, and you can work where most people relax. It just takes a lot of planning, a wealth of patience, and an enormous amount of courage to strike out on your own from home.

The ideal home office is a warm, secure space near the hearth that has everything corporate America depends on to communicate and compute. In the mind's eye, it's a high-tech island just a few feet from the kitchen and the kids, where you interact with customers and clients, make management decisions, and work hard at bringing in business.

Unfortunately, when it comes to setting up your own office, realities intrude. Your home office may be where you hang your hat, but it's probably not comparable to the efficient, productive workplace you've come to expect when working for others. Does it make sense that your home office won't live up to the standards of the corporate floor? After all, you don't have the resources—money, time, and people—that companies command.

Nonsense. Your home office can easily integrate the complete suite of modern business tools in a space tucked away behind the garage, up in the attic, or in a corner of your family room. Not just your computer, not just your phone, but everything else you need to match your downtown competition.

How long will it take to put together an efficient, integrated home office? Six days or six years. You can spend now (keep the bottom line fiercely in mind, but you'll have to face the fact that technology costs money), or you can spread it out and let your office grow as your income grows. Whatever direction and timetable you choose, assembling the integrated home office can be as simple as turning the pages of the calendar.>

G R E G G K E I Z E R

MON 1



MARK WAGONER © 1991

There Was the Computer

You have a computer in the house, so you're ahead of many home working beginners. In fact, it's probably working hard in your home office already. No need to add anything here, right?

Maybe. If you've got an IBM PC-compatible 286 or 386, your home office is perfectly able to handle most of today's chores. Working with a slower, older PC computer or any non-MS-DOS machine (Macintosh excepted—see "Macs Out?") means you're wasting time and probably missing out on software that would be perfect for your business.

For future home office expansion and integration, move to a 386 as soon as it's economically feasible. Sooner or later, you'll need a piece of software that won't take anything less than a 386. To save space in the typically confining home office, buy a small-footprint PC in a slimline case or a tower-style system that squats on the floor. Northgate makes both and backs them up with 24-hour technical support and overnight parts replacement—crucial criteria when you're working from home. An almost unknown company called EPS builds outstanding PCs, too. Its tower 386 25-MHz machine is a speed demon with name-brand components and should keep you computer-current for the next three years.

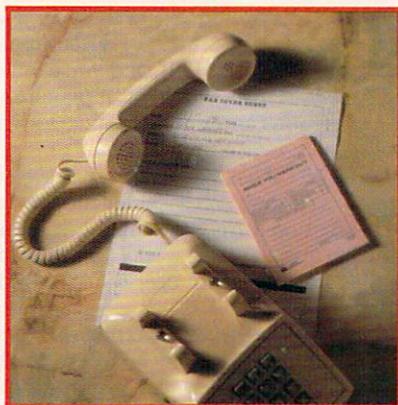
But don't toss out that old PC or even hand it down to the kids. Use it in your office to free your main machine from time-consuming chores like printing form letters and invoices or sorting mailing lists. Connect your two computers with DeskLink, a simple two-computer network that lets you access files on either machine from either system. DeskLink's perfect for the home office, since it uses inexpensive telephone cable to connect the PCs; it also gets you ready for the day when you'll have help in your

home office—a part-time clerk or assistant—since you can send short messages between the computers.

A laptop computer is indispensable if you work outside your office or want to make money when you're on vacation. Integrating on-the-road work with office-bound duties requires a portable computer nearly as powerful as the one at home. You can't do much better than the ZEOS Notebook 286, a seven-pound laptop that doesn't force you to compromise your work habits while on the road. Connecting the laptop to your desktop is another job for DeskLink, though the less-expensive LapLink III works fine for simply sending files from the laptop to the desktop and back.

Home office computer integration should start *inside* the machine, so invest in a graphical interface: *Windows* 3.0 works best on a 386 with a lot of RAM and has the backing of almost every name in the PC software community. *GeoWorks Ensemble* runs on even the oldest, slowest PC and does a lot of things *Windows* hasn't yet figured out, but for the moment it lacks support from other developers.

TUE 2



MARK WAGONER © 1991

And the Lines Were Open

Strip your home office of communications, and it's just another spare bedroom with a computer. To reach your customers, to take orders and buy products, to sell your clients on the quality of your services and then see the projects through, you must have the same lines of communications at home as you did in your pinstripe days.

Start with your phone. One line is enough for most home offices and many home-based businesses, what with the high-tech options now available from the phone company and others. Unless your business requires a listing in the Yellow Pages, stick with a residential line—its monthly fee costs roughly half as much as a

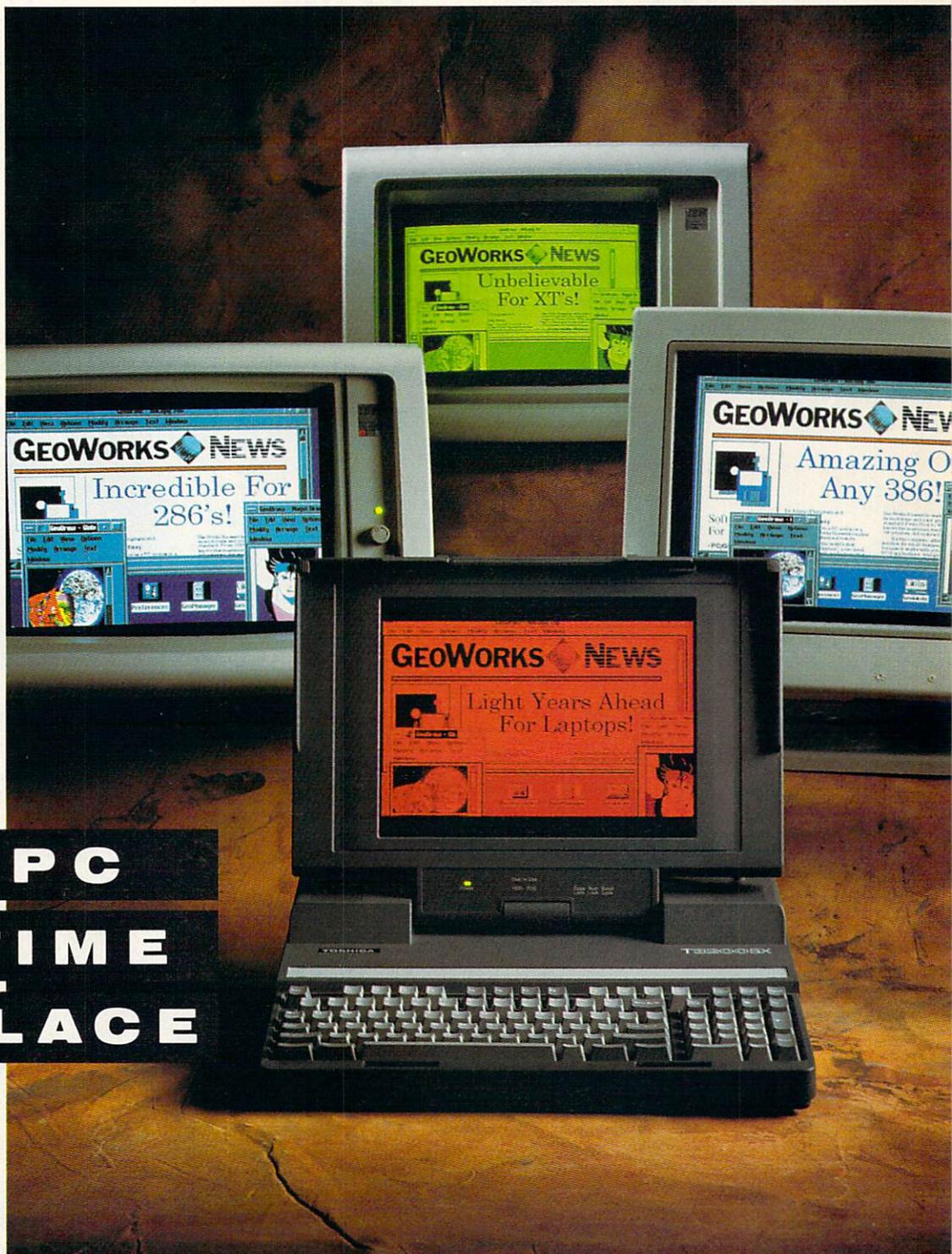
business line. The telephone company service called *call waiting* effectively doubles your single line, telling you when you've got another incoming call; most call-waiting services can be temporarily turned off so that your telecommunications calls aren't disrupted. Another service, one that goes by the names *ring alert*, *distinctive ring*, and similar names, actually adds another phone number to your line and then rings different sequences for each number. Use it to separate your business and personal calls with only a moderate increase in your monthly bill. To separate incoming calls to phone, fax, and modem try the Switch Model A5.

If your business depends on the phone, buy a reliable, single-line phone like Radio Shack's DuoPhone-183. Its speaker phone comes in handy when you're on hold—just listen in while you keep working. And though memory-dialing phone features are important, don't bother with them if your computer dials numbers for you from a contact-manager program like *Act!* 2.0. Partner your phone line and phone with a quality answering machine to make sure business doesn't slip through your fingers. A machine like the AT & T 1323 Answering System has it all, from message time-and-date stamping to remote message retrieval from any touch-tone phone.

You may be able to get along without a fax machine temporarily and make do by sending and receiving faxes from your local copy shop (for \$2-\$5 per page), but that time-consuming and expensive process will soon convince you to buy your own fax. For the ultimate in-home office fax integration, install Intel's new SatisFAXtion fax board in your PC. It turns your computer into a fast fax machine that sends and receives fax messages in the background, without slowing down your other PC work (the board also includes a 2400-bps modem for telecomputing).

The new line on communication—electronic mail—beats using an express service or even the fax machine if you're sending long documents created on your PC. For just \$10 a month, you can send 40 electronic messages (or even faxes) on MCI Mail, the leading electronic mail service. Don't worry if the people you want to contact don't have an MCI Mail mailbox; you can reach any of the over half-million CompuServe subscribers through MCI Mail, too. All you need is a modem and your PC. The ZOOM 2400 modem is one of the least expensive and most widely available from mail-order companies.

continued on page 21 ▶



ANY PC
ANY TIME
ANY PLACE

Introducing Geo

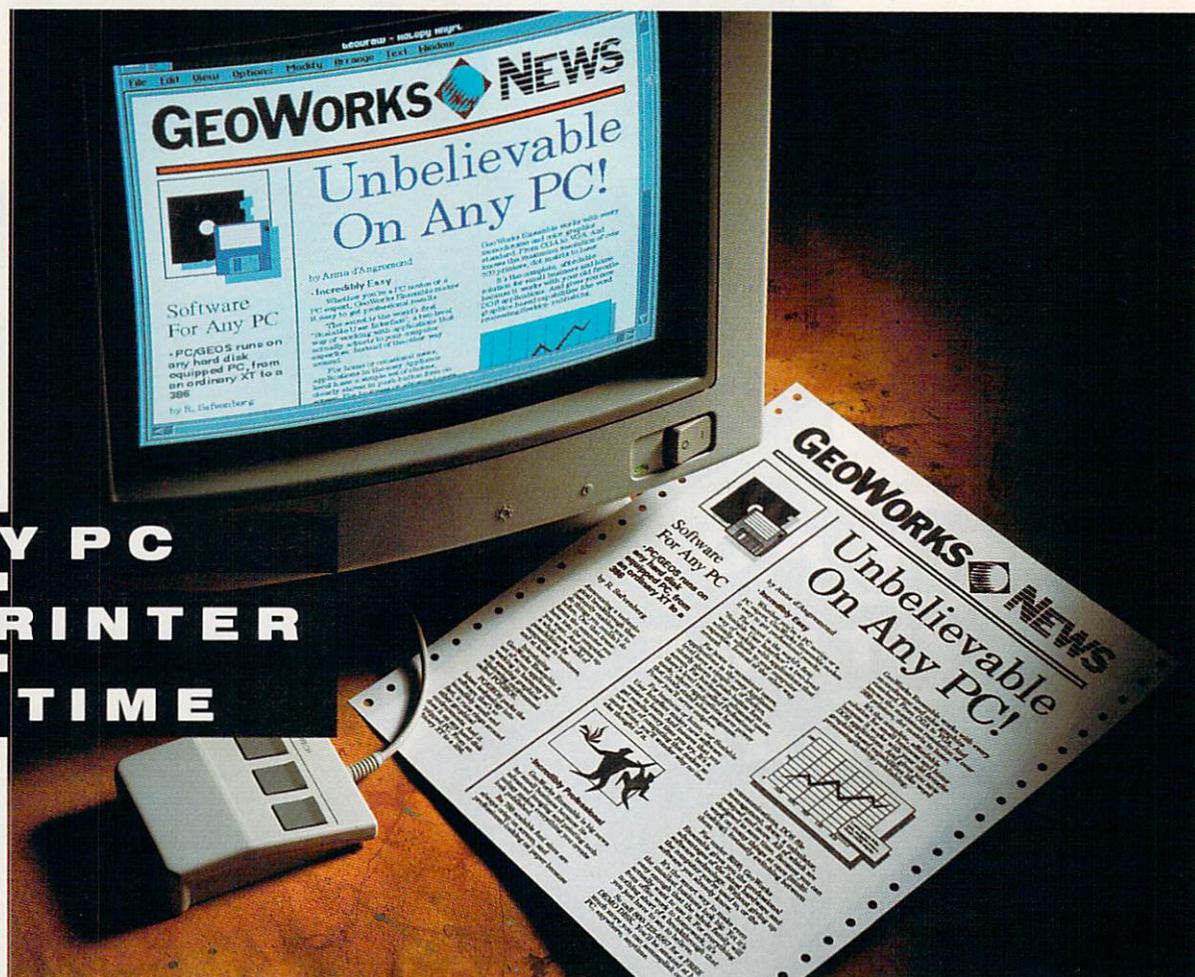
The Incredibly Easy Way To Do More With *Any* PC In The Office Or At Home.

Announcing a technological breakthrough that instantly enables you to do things you couldn't do before. One that transforms the computer you have into the computer you want. And opens up a whole new world of possibilities for computing in business, and at home.

Introducing GeoWorks Ensemble™: a set of seven

applications working in harmony in an amazing graphical windowing environment called PC/GEOS.

PC/GEOS packs the latest technology into software that's so incredibly small and fast, it runs rings around other graphical environments. And it does it on any hard disk equipped PC. From an ordinary XT to a 386.



ANY PC

ANY PRINTER

ANY TIME

WHAT YOU SEE IS WHAT YOU GET (WYSIWYG) ON-SCREEN AND ON PAPER WITH ANY PC FROM AN XT TO A 386, AND ANY PRINTER, DOT-MATRIX TO LASER.

Works Ensemble:™

INCREDIBLY EASY. Whether you're a PC novice or a PC expert, GeoWorks Ensemble makes it easy to get professional results.

The secret is the world's first Scalable User Interface,™ a two-level way of working with applications that actually adjusts to your computer expertise. Instead of the other way around.

For home or occasional users, applications in the easy Appliance level have a simple set of choices, clearly shown in push-button form on-screen. For business or advanced users there's the Professional level, where applications have power that rivals stand alone programs.

For business or home, our Scalable User Interface makes new software easier to learn. And insures that everyone can get results in minutes. It's a new way of computing that makes so much sense, you'll wonder why no one else thought of it.

INCREDIBLY PROFESSIONAL. For looking your best, there's nothing better than GeoWorks Ensemble. Because its advanced imaging and printing technology makes everything you create look professionally published.

Its built-in outline fonts give text the same smoothly drawn, professional look (true WYSIWYG) on-screen and on your printer. In an amazing 788 sizes. 4 pt. to 792 pt. And whether you have a dot-matrix, ink jet, or laser printer, you'll always get text and graphics that look typeset. Because our technology is precisely tuned to the maximum resolution of over 300 printers. Use GeoWorks Ensemble and you'll never play with printer codes, or fiddle with font cartridges again. Quite simply, GeoWorks

Ensemble makes it easy for anyone to look their professional best. With dazzling documents. From presen-

tations, to proposals, to term papers.

INCREDIBLY COMPLETE. Word processing/desktop publishing, file management, communications, drawing, a calendar/scheduler, electronic address book, notepad and more. GeoWorks Ensemble puts a complete, graphical multi-tasking world of software at your fingertips. A world where data is shared instantly between seven applications. All of which can be running at the same time.

It even automates MS/DOS. To delete a file or directory, for example, simply pick up its picture and place it in the wastebasket. Or to launch Lotus® 1-2-3® (or any DOS application), simply point to it and click.

For under \$200, GeoWorks Ensemble helps you get more done faster by giving you the capabilities of the most expensive graphical workstations. Without giving up the DOS software you already know. And without adding expensive hardware to the PC you already own.

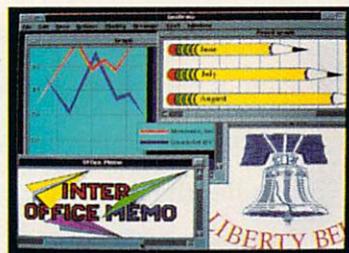
For everything from office-work to homework, GeoWorks Ensemble is nothing short of a breakthrough that you just have to see to believe. So visit your favorite software dealer and get a whole new world of productivity with GeoWorks Ensemble. You'll be amazed at how much more you can accomplish on any PC, any time, any place.



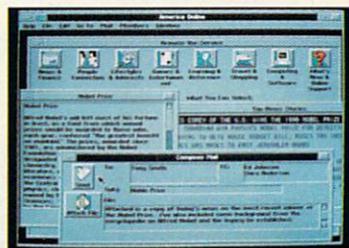
FILE MANAGER



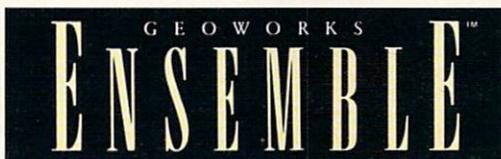
WORD PROCESSOR



GRAPHICS



COMMUNICATIONS



THE NEW EASY-TO-USE
**SUCCESS
 GUARANTEED**
 TANDY 1000 RL

Finally...
 a personal
 computer for
 the family that's
 so easy to use,
 it guarantees
 success.



Manage your portfolio, leave messages, organize collectibles

We've taken a total-systems approach to develop what may be the first true home computer: the Tandy 1000 RL. Designed with your life-style in mind, the 1000 RL offers a unique set of applications that can streamline your vital everyday activities. Organize important financial information. Create a trip itinerary. Plan



Balance your checkbook, plan trips, schedule activities

your dinner, and generate a convenient shopping list. Manage your investments and develop a personal savings plan. Leave messages for your family—even leave important numbers for the sitter. The possibilities are endless—but whatever the task, the RL's DeskMate® Home Organizer software handles the details for you. There are other great features too, including enhanced CGA graphics and DAC technology for incredible speech and sound recording and playback. And it's affordable—ready-to-run systems start under \$750*. So bring home the easiest-to-use personal computer ever . . . from America's leader in PC compatibles.



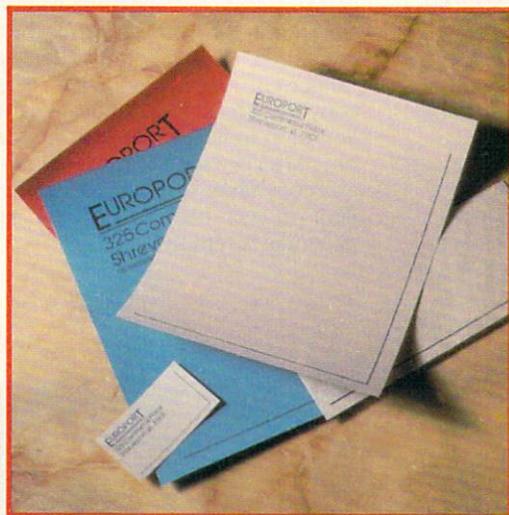
CREATING NEW STANDARDS: SUCCESS GUARANTEED!

The Tandy® 1000 RL personal computer has 24 DeskMate and Home Organizer applications built in. All are specially designed to insure that you can readily use them. If you need help, our personnel have been specially trained, our stores have a new phone help system and we've organized area tutoring sessions. You can even equip your RL with a modem for help on the PC-Link online service. Come in today! We guarantee success. NOBODY COMPARES!

Radio Shack
AMERICA'S
TECHNOLOGY
STORE™

*Tandy 1000 RL (25-1450) with monochrome monitor. Complete color systems start at less than \$900. Price applies at participating Radio Shack stores and dealers.

MARK WAGONER © 1991



Let It Go Out Good

You can easily fool people into thinking that your home office is as professional as anything in a corporate tower simply by paying attention to what leaves your desk and how it arrives on your customers' desks.

Start with your business cards and stationery. For around \$500 you can have professionally designed two-color cards, letterhead, and envelopes. The cost may seem steep, but the long-term benefit—higher rates for your services because you attract higher quality clients—makes it an excellent investment. First impressions are always important.

Back up that good-looking letterhead with laser-printed correspondence. It's a buyer's market right now, so shop around for a perfect laser printer. Though the HP LaserJet IIP is the most affordable and available personal printer, often going for as little as \$800, if you're doing any desktop

Macs Out?

Macs do home offices, too. Though most home businesses survive on PC compatibles, a Macintosh makes an excellent, albeit expensive, partner in the home office. Last year's introduction of three lower-priced models—the Classic, LC, and IIsi—means that more home offices than ever can afford a Macintosh.

Macintosh software rivals that of the PC in almost every home office area, from inexpensive utilities to powerful applications. Macintosh peripherals, on the other hand, are often more expensive than their PC counterparts, while some home office computer hardware—a light and inexpensive laptop computer, for instance—has no Macintosh equivalent.

Yet the Mac makes sense as a home office computer. If computer time is but a fraction of your home office hours, you'll find Mac software easier to learn and simpler to use, especially if you turn to the computer infrequently and thus never become completely familiar with your software's intricacies. The Macintosh is still the champ if your home business relies on visual results, such as desktop publishing, presentations, or graphic design. And with more ways to connect Macs and PCs to share files and peripherals, you can make a case for mixed-computer home offices, with each machine working at what it does best.

Home offices on a budget should turn to the Classic, a black-and-white system that runs about \$1,300 for a hard drive-equipped model. For speedier performance and color, the Mac LC is the most economical Apple. That's relative, though, since you'll have to look hard to find a complete LC for less than \$2,500—roughly the price you'd pay for a well-equipped 386 with VGA.

Advertorial

Face to Face With Graphical User Interfaces

Power users are turning to graphical user interfaces (GUIs) for the ease of use they provide. But what about those of us *without* 386 VGA systems? Fortunately, there are GUIs designed to make computing easier on 8088, 8086 and 80286-based systems, and one of the most important decisions you'll make is choosing which GUI to work with.

Can We Talk?

First, you'll want to choose a GUI that "speaks" your language—English, plain and simple. That way you won't have to learn how to communicate with your computer before you start to use it—you'll already be on speaking terms.

Easy Operation

Second, your GUI should have neat, organized displays that present your options clearly and concisely. Easy-to-follow graphics make it simple for you to see exactly where you are in a program. Handy pull-down menus keep your options tucked away and out of sight until you call for them. And pop-up dialog boxes guide you through tasks, making sure that your computer does what you want it to.

Something in Common

GUIs provide a uniform operating environment, which alleviates the frustration and confusion of switching from one task to the next. Programs based on the same GUI have the same look and feel to them, making each new application easier to learn. Of course, you'll also want to choose a GUI supported by many of the leading software publishers. That way you'll be sure to find readily available software for home, school or business.

Those Little Extras

Another feature to look for in a GUI is a help function that's *context sensitive*—one that's able to "sense" which task you're currently running and provide help for that specific task.

For true convenience, your GUI should operate with just the point and click of a mouse cursor controller. The mouse makes it quick and easy for you to select your choices from menus and dialog boxes, taking the maze out of getting around the many computing options your GUI offers.

Fortunately, there is just such a user-friendly GUI: Tandy's DeskMate® Graphical User Interface. It's affordable, too—the proven format of DeskMate gives you instant convenience without having to upgrade your system memory beyond 384K. And it's available from over 7000 Radio Shack stores across the country. So take a scroll through DeskMate and discover for yourself just how easy computing can be.

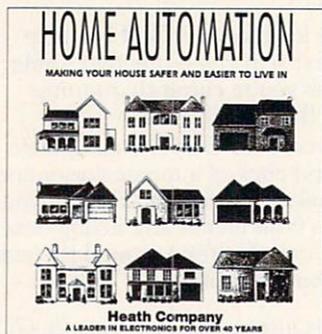
Safety, Security, Convenience, Entertainment and Energy Management

Home Automation from Heath, the catalog that has it all...

Enter the world of Home Automation. Remote lighting and appliance controls. Security alarms and lighting.

Automated thermostats. Video monitoring systems. Whole-house security systems. They're all yours in the Heath Home Automation Catalog. To receive your FREE copy, call today toll-free.

1-800-44-HEATH
(1-800-444-3284)



Heath Company

Marketing Dept. 124-034
Benton Harbor, MI 49022

CL-807

Circle Reader Service Number 160

publishing (or think you may be in the future), pick up a Texas Instruments microLaser PS35 or a QMS-PS 410 PostScript printer instead. Both not only emulate the HP LaserJet series, but they also pump out PostScript output from such top-ranking software as *Aldus PageMaker* and *Ventura Publisher*.

A budget-minded alternative, the Citizen GSX-140 24-pin dot-matrix printer, handles home office documents and correspondence nearly as well as a laser printer. Its color option is interesting, but you'll be hard-pressed to find many applications for color printing unless your business offers design or presentation services. Still, it makes an acceptable stopgap while you're saving up for a laser.

If you have more than one PC in your office, hook up your printer to each computer. That's easy—and inexpensive—with something like *SimpLAN SNAP*, a printer network that uses snap-in modules and telephone-like cable to connect everything. You print normally from any PC (up to 16 computers can be linked to a single printer). You don't get any extras like print spooling with Snap, but for most home offices, it's a great way to save money by using one printer with several PCs.

It would be nice if that expensive laser printer, which shares many components with a copier, could serve double duty. Though you can jury-rig a system that uses a scanner to scan in art or text and then print it on the laser printer using a special double-ended cable, you're much better off with a

stand-alone copier. Small-sized, limited-function personal copiers—the heavily discounted Canon PC-1 is a great example—keep you in your office, not in the car heading for the copy shop. Remember, too, that the modern office often pairs the fax and copy machines. You duplicate pages you want to fax (rather than rip them out of the newspaper or magazine) and copy faxes you receive for permanent filing on plain paper (because fax paper fades rapidly).

THU 4



MARK WAGONER © 1991

Perfect Incoming, Too

Your home office can communicate all it wants, but if it's just one-way conversation, you'll get nowhere. You must have competitive, inexpensive ways for people to send messages and parcels to you and your business.

My Way

I love my home office. I'd better, since I spend more time in it than I ever did in any corporate office I inhabited.

Like many home office workers, I started out with what I had. In my case that meant a 286 PC, a five-year-old Macintosh, a 9-pin dot-matrix printer, and a desk squeezed into the corner of an upstairs family room. I didn't have enough space to spread out papers. A phone line rippled across the floor from the nearest jack to my modem, and I constantly had to apologize for the annoying buzz that clients heard from my decrepit portable telephone.

I considered leasing office space—it goes for a song in the Southern city where I live—but I didn't want to pay the overhead month in, month out. So I made room.

With the help of an extremely handy father-in-law, I transformed a 13 × 8 foot toolroom into an efficient

home office. I designed on the fly, with just the sketchiest of details in mind: plenty of power for the electronics, air conditioning to fight the Southern climate, a 3-foot-deep desktop along two walls to hold computers and printers, and floor-to-ceiling shelves for software. I didn't skimp on the things I thought vital—a comfortable chair, adjustable task lighting, and a topnotch phone.

My office isn't perfect. I still make trips to the copy shop, and I send most faxes via MCI Mail. Macs and PCs communicate and share printers—but not always effortlessly. Storage space is a problem. But I know where I'm going. I've pinpointed my office needs, and I have a reasonable purchase plan that will upgrade my equipment and make my business more competitive and more productive this year than last.

That's the great thing about my home office—I decide what it is and what it will be.

Work Wanted

MONEY MANAGER

Top-notch, experienced Money Manager seeks position managing all aspects of your personal financial picture—even business accounting. Over 300,000 satisfied clients. Results guaranteed. \$35 one-time fee. Call anytime.

1-800-223-6925

COMPUTER OPERATIONS

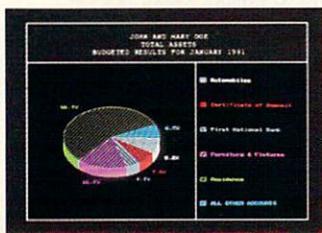
pro
exp
vo!
bid.

PF
Gr

You can hire one of America's most experienced money managers—for just \$35.

MONEYCOUNTS®

Money management software: It's like having your own accountant carefully guarding your finances and handling the details while you concentrate on the big picture.



You'll love the way MoneyCounts provides concise printed reports, revealing 3-D graphs, automatic check writing—in short, a complete and easy system to document your financial activities.

MoneyCounts installs on your system in just minutes! Don't know any accounting? That's okay. MoneyCounts has all the expertise built right in. You need absolutely no accounting experience.

It's almost impossible to make a mistake when you balance your checkbook. MoneyCounts automatically finds and alerts you to the five most common types of errors (including transpositions). Just in case you need a little help, however, MoneyCounts comes with a clear, well-organized manual and FREE, unlimited technical support.

PCComputing

"Don't be fooled by its low price—at \$35 MoneyCounts is one of today's top buys... enough reporting options to track small business accounts as handily as family budgets... menus are so easy to follow, you'll rarely need to refer to the manual."

With MoneyCounts you're in complete control of all aspects of your financial picture (cash, checking, savings, credit cards and taxes). You'll have a detailed accounting of where your money goes at your fingertips.

You'll have a pleasant surprise at tax time, too. MoneyCounts organizes your records at the touch of a key—even estimates your income tax

and forwards information to popular tax preparation programs.

With MoneyCounts, you're not just buying software, you're buying time. Its smart data entry cuts input time by up to 95%. Next, MoneyCounts automatically balances your checkbook, prints financial statements and checks, computes interest rates, loan payments and amortizations—all in record time.

Parsons Technology • 375 Collins Road NE • PO Box 3120
Cedar Rapids, Iowa 52406-3120 • Call toll-free at 1-800-223-6925

Circle Reader Service Number 180

MoneyCounts combines ease of use with the capacity to handle even complex business needs. Whether you need 999 accounts, 100,000 transactions or just want to better manage the family budget, award-winning MoneyCounts is the ideal financial partner.



MoneyCounts has been voted three consecutive Best Buy awards by Computer Shopper's readers!

PUT MONEYCOUNTS ON THE JOB, TODAY.

Order MoneyCounts for just \$35 + \$5 shipping and handling. If you're not 100% satisfied, return MoneyCounts within 30 days for a full refund (shipping excluded).

SYSTEM REQUIREMENTS:

MoneyCounts requires an IBM or compatible PC, 384K RAM and DOS 2.11 or higher, 2 floppy drives or hard disk. Works with all printers and monitors.

TO ORDER CALL TOLL FREE:

1-800-223-6925

or FAX us 1-319-393-1002
Call 24 hours a day, 7 days a week.
VISA, MasterCard, American Express,
Discover and C.O.D. orders welcome.



375 Collins Road NE
PO Box 3120
Cedar Rapids, IA 52406-3120

MONEYCOUNTS®

\$35 + \$5 shipping

*Not copy protected.
Includes printed manual and
FREE technical support.*

Name _____

Address _____

City _____ State _____

Zip _____ Phone(____) _____

Disk Size: 3-1/2" 5-1/4" Number of Copies:

Method of Payment: Check or Money Order

MasterCard American Express Visa Discover

Card # _____ Expiration Date _____

Add \$5 shipping/handling - \$10 outside North America.
Iowa residents, please add 4% sales tax.

CODE = COM

Many home-based businesses operate by receiving packages, buying products through mail order, and then reselling them locally. A simple way to ensure that you receive everything promptly is to have a post office box. Rent the smallest size to start—packages are retrieved for you, not jammed into the box.

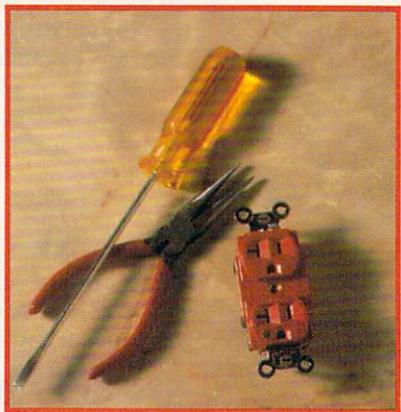
You'll probably send rush letters or packages from time to time, so it makes sense to settle on one express service, if only to simplify your accounting and keep tabs on your costs. All express services let you set up an account and provide you with pre-printed shipping forms, then bill you directly or through a credit card (the former is smarter, since you can track individual shipments on the express service's invoice). Once you have an account, tell your most important customers and clients to charge it to that account when they express material to you. Just remember to figure such costs into your overhead when you set your rates or itemize them on your own invoices.

Make sure you establish a drop-off procedure with every express or shipping service that comes to your home so that packages will be left for you when you're out. Though an at-home neighbor works well, it's best if the driver can leave packages in a protected, covered area, such as a garage or back porch. You'll have to sign an agreement with each service, taking responsibility for any packages left.

Toll-free telephone service is another mark of a major player, but your home office can compete here, too. If you're selling products by mail order from your home office, you may want an 800 service that takes calls, verifies credit cards, and then sends you the

orders (and even mailing labels) daily. Such services don't come cheap—they can cost anywhere from \$1.00–\$2.00 per order—but they're convenient, even necessary, if you don't have the phone and personnel infrastructure. For more limited toll-free service, check out MCI's new Personal 800 plan, which adds \$2.00 a month to your long-distance bill, then tacks on \$0.25/minute for incoming toll-free calls. Callers simply dial the 800 area code, then your number, then the four-digit access code you've provided. This way you restrict who calls in on the 800 number while still making it easy for clients and customers to call you anytime, from anywhere.

FRI 1



MARK WAGONER © 1991

Then There Was Light

Finishing off your office can take years. That's the beauty of working at home—you expand your space only when you need it. Integrating that expansion with the rest of your plans, though, takes some preplanning. Here

are some important points to keep in mind as your home becomes your home office.

Room to grow. Wherever you decide to locate your home office, it won't be big enough six months down the road. If possible, start by occupying a small portion of a larger space; then expand as necessary. Attic, basement, sun porch, or garage space is ideal for this. If your room is limited and you can't physically expand your home office, get more into that limited space by moving things up, down, or out of the way. Accessories such as monitor arms, floor CPU stands, compact workstations, and printer carousels can pack your office with equipment without making it seem crowded. Curtis and MicroComputer Accessories are two accessory makers that have almost everything you'll need. (Curtis offers free of charge a publication full of design ideas. The title is *Design Ideas for Your Home Office*. The address can be found in "Product Information.")

Power up. You never have enough outlets in your office, either. As you create your office space or remodel an existing space, plan for future power consumption—four to six double-outlet boxes on one 20-amp circuit should suffice for the average home office (excluding air conditioning and/or heating), even when it's burdened by a computer, fax, and laser printer. Line protectors for power and fax, such as those in the Brooks Power Systems Surge Stopper series, dissipate surges. This becomes necessary when your office shares power with the rest of the house. Uninterrupted power may mean the difference between business life and death, so think hard about some power insurance—Dakota Microsystems' PowerSave 500 plugs into an empty slot inside your PC and automatically kicks in when the power goes off, saving all your work and shutting down your computer (there's a special model for 386-based machines).

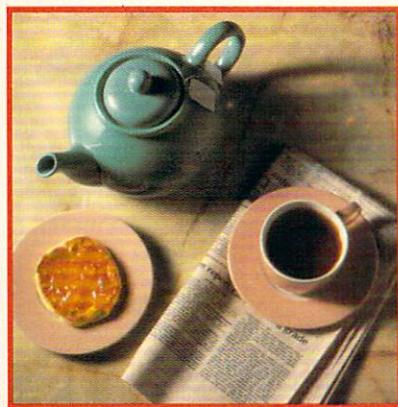
Support yourself. When you work from a home office, you're on your own in more ways than one. Technical support is your responsibility now, so stock up on diagnostic and file/hard disk drive repair software. *PC Tools Deluxe* bundles an excellent backup program with several programs for file recovery and disk drive enhancement. Make technical support a criterion when you shop for computers, printers, telephone, fax, and copier; then use it, even if it's not toll-free. For more general advice, connect with other home office workers, preferably people who have worked at home longer than you. An ideal place to find other work-at-home professionals is

Ten Steps to the Total Home Office

1. Get along with what you've got until profits make it possible to upgrade equipment. Set up wherever you can, use the PC you own, get by with that old printer, and make calls on the family phone.
2. Design and create your home office, stage 1, in what spare space you have. Equip it with desk, file cabinet(s), shelves, and chair.
3. Spring for a 386 PC, buy the best phone and answering machine you can afford, and sign up with an electronic service such as MCI Mail or CompuServe.
4. Migrate to a graphical user interface like *Windows* or *GeoWorks Ensemble*, but only when your critical software demands it.
5. Move up to a personal laser printer; then connect all PCs (and Macs if you have a mix) with each other and with the printer.
6. Install a fax board in your PC, or if your fax load is heavy, purchase a stand-alone fax machine.
7. Install an additional phone line if necessary, and switch to a two-line phone. Alternately, subscribe to such phone company services as call waiting or distinctive ring.
8. Move up to home office, stage 2, by expanding into vacant space or by enhancing existing room with compact workstations, space-saving accessories, and under-the-counter filing and storage areas.
9. Add a personal copier to your office suite.
10. Take your home office with you on the road. Buy a laptop PC and a portable modem and, if you spend more than a third of your workday on the phone, a portable cellular telephone.

on almost any of the online services, from CompuServe to low-cost services like GEnie and Prodigy.

SAT 6



MARK WAGONER © 1991

Little Rest at Home

The advantages of your home office may seem overwhelming to an outsider who sees only the freedom and flexibility of self-employment. You know different, or should. Home workers toil longer weeks—about 25 percent longer on the average.

The reason for the long hours isn't only that home workers are better motivated (though they generally are, since financial survival is at stake), but that they have to do nearly everything from the technical to the menial for themselves.

That's one reason why today's home office has to be as well equipped, if not better equipped, than the typical corporate office. You're spending so much of your time managing the business that any timesaver, any productivity booster, any image enhancer is not so much a luxury as a necessity. You'll find yourself searching for new ideas.

Each new technology, integrated into the base system of computer and phone, must meet only one requirement: It must improve your bottom line. All the tips and technologies in this six-day home office construction kit are designed to meet this requirement.

You *can* create an office in your home that matches anything you had in your 9-to-5 life. The technology is here, and the services are at your disposal to turn any room in your house into an office.

Why not use the technology to get a jump on the rest of the business world and beat a path straight back to your home? You *can* make that dream come true. □

Product Information

ACT! 2.0

Contact Software International
1625 W. Crosby Rd., #132
Carrollton, TX 75006
(214) 418-1866

Aldus PageMaker

Aldus
411 First Ave. S
Seattle, WA 98104
(206) 622-5500

AT & T 1323 Answering System

AT & T
14250 Clayton Rd.
Ballwin, MO 63011
(800) 222-3111

Canon PC-1

Canon U.S.A.
One Canon Plaza
Lake Success, NY 11042
(516) 488-6700

Citizen GSX-140

Citizen America
2450 Broadway, Ste. 600
Santa Monica, CA 90404-3060
(213) 453-0614

Computers

Northgate Computer Systems
13895 Industrial Park Blvd., Ste. 110
Plymouth, MN 55441
(800) 548-1993

Design Ideas for Your Home Office

Curtis Manufacturing
30 Fitzgerald Dr.
Jaffrey, NH 03452
(603) 532-4123

DeskLink

Traveling Software
18702 N. Creek Pkwy.
Bothell, WA 98011
(800) 662-2652

DuoPhone-183

Tandy
700 One Tandy Center
Fort Worth, TX 76102
(817) 390-3300

Computers

EPS
10069 Dakota St.
Jefferson, SD 57038
(800) 447-0921

GeoWorks Ensemble

GeoWorks
5334 Sterling Center Dr.
Westlake Village, CA 91361
(800) 772-0001

HP LaserJet IIP

Hewlett-Packard
19310 Pruneridge Ave.
Cupertino, CA 95014
(800) 752-0900

LapLink III

Traveling Software
18702 N. Creek Pkwy.
Bothell, WA 98011
(800) 662-2652

Message/Fax Service

MCI Mail
1111 19th St. NW
Washington, DC 20036
(800) 444-6245

Office Accessories

MicroComputer Accessories
5405 Jandy Pl.
Los Angeles, CA 90066
(213) 301-9400

microLaser PS35

Texas Instruments
12501 Research Blvd.
P.O. Box 149149
Mail Stop 2234
Austin, TX 78717-9149
(800) 527-3500

PC Tools Deluxe

Central Point Software
15220 NW Greenbrier Pkwy., #200
Beaverton, OR 97006
(503) 690-8090

Personal 800

MCI Telecommunications
500 Second Ave. SE
Cedar Rapids, IA 52401
(800) 373-7184

PowerSave 500

Dakota Microsystems
301 E. Evelyn Ave., Bldg. A
Mountain View, CA 94041
(415) 967-2302

QMS-PS 410

QMS
1 Magnum Pass
Mobile, AL 36618
(800) 631-2692

SatisFAXtion

Intel PCEO
C03-08, 5200 NE Elam Young Pkwy.
Hillsboro, OR 97124
(800) 538-3373

SimPLAN SNAP

AST
1026 W. Maude Ave., Ste. 305
Sunnyvale, CA 94086
(800) 445-6190
(408) 746-2965

Surge Stopper

Brooks Power Systems
1400 Adams Rd., Unit E
Bensalem, PA 19020
(800) 523-1551

The Switch Model A5

High-Tech Resources
P.O. Box 1400
Ellsworth, ME 04605
(800) 422-2832

Ventura Publisher

Ventura Software
15175 Innovation Dr.
San Diego, CA 92128
(619) 673-0172

Windows 3.0

Microsoft
16011 NE 36th Way, Box 97017
Redmond, WA 98073
(800) 227-4679

ZEOS Notebook 286

ZEOS International
530 5th Ave. NW
St. Paul, MN 55112
(800) 423-5891

ZOOM 2400

ZOOM Telephonics
207 South St.
Boston, MA 02111
(800) 666-6191
(617) 423-1072



SHAREPAK

R I C H A R D C. L E I N E C K E R

Times are tough, but smart people use their computers to gain an advantage even in recessions.

This month we're bringing you two packages that use your computer's power to give you the advantage you need.

Just what are we bringing you? A commercial-quality personal finance manager and a terrific home inventory program. Managing your finances effectively gives you greater returns on your investments, lets you pay less interest on loans, and helps you make better decisions when it comes to expenses like insurance.

We've spent a great deal of time choosing these two fine applications. First, we sorted through thousands of online programs. Then, we downloaded hundreds of them and spent countless hours evaluating them. Finally, we selected the very best programs and worked with the authors to get you the very latest versions.

Cash Control

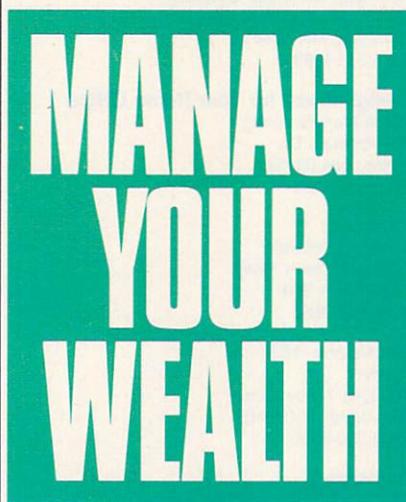
Cash Control simplifies your home financial recordkeeping. Enter transactions for checking, savings, or charge accounts; transfer funds between accounts; print checks on your printer; balance your account with your bank statement; remind yourself when payments are due; and prepare reports and graphics of your recorded transactions.

Cash Control runs on virtually any IBM compatible because all it requires is 256K of RAM. It can use any monitor, so don't worry if you have Hercules or monochrome.

The first thing you'll notice when you run *Cash Control* is the clean, effective, well-planned screens. They display information clearly and logically. Options appear at the top of the screen so that even computer novices can easily understand and use the program.

Entering transactions and information is just as easy as it can be, too. Pop-up windows tell you exactly what to input and make it easy to interact with *Cash Control*.

You'll get a lot of extras, too. A pop-up calculator and calendar serve as useful tools for getting the calculations correct and planning things in advance. Being able to search forward and backward helps you when you can't seem to remember when a transaction took place. You can print checks on your printer for just the right professional look.



And when you've made certain that your accounts are all in order, you can generate a number of reports. Present your financial information in a variety of ways, and use bar graphs and pie charts for maximum effectiveness.

When tax time rolls around, you can satisfy Uncle Sam with special reports. For those of you who suffer from IRS anxiety, these will go a long way toward alleviating some of the fear. And you're less likely to make careless mistakes that will cost you money at tax time or invite an audit.

If you want to ensure that your accounts are balanced or that you've remembered to pay your bills on time, or if you just want to maximize the effectiveness of your dollar, *Cash Control* is definitely for you. It handles many of the jobs that accountants do—at a small fraction of the cost.

Personal Inventory 2.11

This program maintains a record of household items and provides a means of tracking depreciation using four different methods. You can categorize and track items by room or location.

Since *Personal Inventory* supports 43-line EGA/VGA mode, you'll get a lot more information on the screen. That means that you can see and keep track of things more efficiently. Mouse support makes the program's easy-to-use interface even easier and more professional.

Adding, viewing, deleting, and editing items are a snap. Menus with labels that you can understand combined with clear and attractive screens make interacting with *Personal Inventory* intuitive and straightforward.

It's easy to set up your printer just about any way you might want. You can change printer ports, margins, carriage and linefeed specifications, and special escape codes with another menu.

Add categories if the one you need isn't included. So your collection of ancient spider models can be cataloged and tracked, too. And tracking warranties alone justifies the use of this program. No more "Hey, honey, when is our toaster's warranty up? It just went up in smoke."

You don't have to wade through a lot of documentation to use *Personal Inventory*. In addition to its exceptional user interface, it has online help anytime you press F1.

Backups can be created when you exit the program. It's great because you just answer *Yes* or *No* to the prompt, and the program takes care of the rest. And the backups are compressed so they don't take up as much space on your disk.

If you want help keeping track of your household items, maintaining records for the IRS, or keeping up with similar applications, *Personal Inventory 2.11* will be an indispensable addition to your inflation armor. You can protect your belongings by keeping track of them better. And that spells long-term rewards. □



SHAREPAK

With COMPUTE's SharePak, You'll

Share in the Savings!

SAVE TIME—we carefully select and test all programs for you

SAVE MONEY—each disk includes two to five programs for one low price

SAVE KEYSTROKES—our free DOS shell lets you bypass the DOS command line



Personal Inventory 2.11

COMPUTE's SharePak disk contains the best of shareware—handpicked and tested by our staff—to complement this month's In Focus topic. You'll sample entertainment, learning, or home office software at a great savings. Each SharePak disk includes two to five programs plus complete documentation for one low price:

- \$5.95 for 5¼-inch disk
- \$6.95 for 3½-inch disk

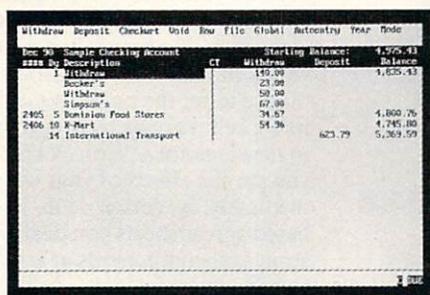
For even more savings, subscribe to SharePak and receive COMPUTE's SuperShell FREE!

For a limited time, you can subscribe to COMPUTE's SharePak and save more than 37% off the regular cost of the disks—plus get COMPUTE's SuperShell FREE. With a one-year paid subscription, you'll get

- A new 3½- or 5¼-inch disk delivered to your home every month
- Savings of over 37% off the regular disk prices
- Advance notices of COMPUTE special offers
- COMPUTE's SuperShell at no additional cost!

Subscribe for a year at the special rates of \$59.95 for 5¼-inch disks and \$64.95 for 3½-inch disks—and get COMPUTE's SuperShell FREE!

COMPUTE's SuperShell requires DOS 3.0 or higher. Disks available only for IBM PC and compatibles. Offer good while supplies last.



Cash Control

For Single Disks

YES! I want to share in the savings. Send me the March 1991 issue of COMPUTE's SharePak disk. I pay \$5.95 for each 5¼-inch disk and \$6.95 for each 3½-inch disk plus \$2.00 shipping and handling per disk.

Please indicate how many disks of each format you'd like:

_____ 5¼-inch at \$5.95 each _____ 3½-inch at \$6.95 each

_____ Subtotal
 _____ Sales Tax (Residents of NC and NY, please add appropriate sales tax for your area.)
 _____ Shipping and Handling (\$2.00 U.S. and Canada, \$3.00 surface mail, \$5.00 air-mail per disk)
 _____ Total Enclosed

Subscriptions

I want to save even more! Start my one-year subscription to COMPUTE's SharePak right away. With my paid subscription, I'll get a FREE copy of COMPUTE's SuperShell plus all the savings listed above.

Please indicate the disk size desired:

_____ 5¼-inch at \$59.95 per year _____ 3½-inch at \$64.95 per year

For delivery outside the U.S. or Canada, add \$10.00 for postage and handling.

Name _____
 Address _____
 City _____
 State/Province _____ ZIP/Postal Code _____
 Total Enclosed _____
 Check or Money Order MasterCard VISA
 Credit Card No. _____ Exp. Date _____
 Signature _____ (Required)
 Daytime Telephone No. _____

Send your order to COMPUTE's SharePak, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

All orders must be paid in U.S. funds by check drawn on a U.S. bank or by money order. MasterCard or VISA accepted for orders over \$20. This offer will be filled only at the above address and is not made in conjunction with any other magazine or disk subscription offer. Please allow 4-6 weeks for delivery of single issues or for subscription to begin. Sorry, but telephone orders cannot be accepted.

Important Notice: COMPUTE's SharePak is not associated with COMPUTE's PC Magazine or disk. Please order SharePak separately.



HOME

Lotus 1-2-3 RELEASE 3.1



The NEW graphical 1-2-3 for DOS or DOS with Windows 3.0

The product for distribution in USA only. Product and Technical Support available from Lotus Development USA, only.

Operating System: DOS • Demonstration and Evaluation Copy • Dual Media • Hardware: 286 or higher PCs

Now there's a Lotus spreadsheet you can enjoy working with at home. Lotus 1-2-3 release 3.1 puts on a new face so effectively that you will hardly recognize what's underneath the facelift. But the appeal of 1-2-3's WYSIWYG screen goes far beyond the surface.

Building a spreadsheet within a graphical environment is much easier because you directly manipulate the work sheet's segments. For instance, you can define ranges by pointing with a mouse. You can also use the mouse to set the point size of text and move cell margins by dragging them to new locations. With WYSIWYG, you see the effects of your changes immediately. By comparison, in text-based spreadsheets you deal with the structural components at arm's length.

Simplified spreadsheet styling along with eye-catching graphics may be reason enough to migrate to a graphical-environment spreadsheet. But WYSIWYG's true raison d'être is to streamline the ordinarily time-consuming and error-fraught transition from computer screen to professional-quality output.

In a previous life, what Lotus now calls WYSIWYG was named *Impress* and marketed by PC Publishing as a popular 1-2-3 add-in. Lotus liked *Impress*'s ability to transform 1-2-3's bland character-based displays into striking spreadsheet art. The company acquired *Impress*, reworked its menus, and now bundles it with 3.1. In practice, WYSIWYG unquestionably imbues Lotus's flagship application with pizzazz. Lotus hopes that will help revive 1-2-3's flagging sales.

COMPUTE CHOICE

HOWARD MILLMAN

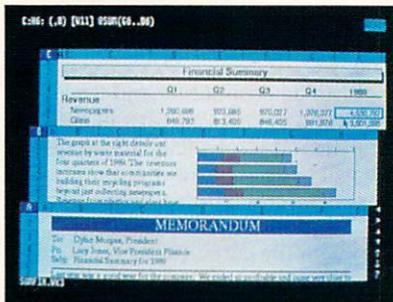
GRAPHICS DISPLAYS, WYSIWYG, AND IMPROVED MEMORY MANAGEMENT MAKE LOTUS 1-2-3 RELEASE 3.1 A SUBSTANTIAL IMPROVEMENT

FFACE

As an add-in, WYSIWYG loads after you start *1-2-3*. You can load it manually or set it up to load automatically every time *1-2-3* executes. After WYSIWYG loads, both the familiar slash (/) command menu and an additional graphical menu set prefixed by a colon (:) control all spreadsheet operations. The combination of these two menus gives you access to the full arsenal of *1-2-3*'s functions, commands, and features.

The slash commands provide the functions necessary to create a work sheet, such as entering formulas, composing macros, and accessing file-handling functions. The graphical menu mainly provides access to commands that control the appearance of the work sheet such as colors, type sizes, fonts, and text attributes.

The advantages of working within the WYSIWYG environment are so numerous that over time users may forever abandon *1-2-3*'s traditional text-based display. Row width and column height are infinitely adjustable, graphics and text can be mixed in any combination of colors and sizes, and onscreen text can be any of the 224 colors in the palette. WYSIWYG accurately portrays fonts onscreen in a wide range of sizes up to an inch high.



You can display several work sheets at once with 3-D capability.



Displayable font attributes include bold, italic, underline, and color. In addition to Courier (the default), Swiss, and Dutch fonts, 200 additional fonts are available at extra cost from Bitstream.

Release 3.1 moves one step closer to integrating word processing and spreadsheet functions. Using 3.1's elementary yet functional text editor, you can include short memos or other documentation right in your spreadsheet. The text editor includes automatic word wrap, justified text, and the ability to manage multiple fonts within a selected range of text.

The timesaving global formatting codes in Release 3.1 enable you to name as many as eight format styles that include specifications of font, size, shading, colors, and such attributes as bold, italic, underline, and superscript. These named styles can be applied to an entire work sheet, a range of cells, or a single cell. Cell ranges can be highlighted with boxes, various borders, and drop shadows.

You'll find yourself using the mouse to open vertical or horizontal windows, select cell ranges, make menu selections, and scroll within a work sheet or between as many as 256 stacked work sheets. Although you can enter commands with the keyboard, a mouse (or trackball) is easier and certainly more natural.

In addition to dynamic onscreen updates of the work sheet's text and data, WYSIWYG enormously simplifies creating graphs. There's no limit to the graphs you can incorporate in a work sheet, and the graphs are dynamic, immediately reflecting changes made to the data in the spreadsheet.

As in *Lotus 1-2-3* release 3.0, the work sheet's data still controls the relative proportions between a graph's components (bar length, line height, and so forth). You cannot alter this relationship directly with the graphic editor. As an alternative to using the work sheet's data to create a graph, you can import .CGM metafile and .PIC graphic files. Imported graphics

MARK WAGONER © 1991

can be readily enhanced with text, geometric shapes, and symbols.

Use the mouse to drag structural elements into the correct orientation and position. You can directly edit individual components or the entire graph until it's perfect.

Release 3.1 queries and imports data from external databases via DataLens drivers. The default driver shipped with 3.1 can query *dBase III* and *dBase III PLUS*. Additional DataLens drivers will soon be available for *Paradox*, *Oracle*, and Novell's Network Structured Query Language.

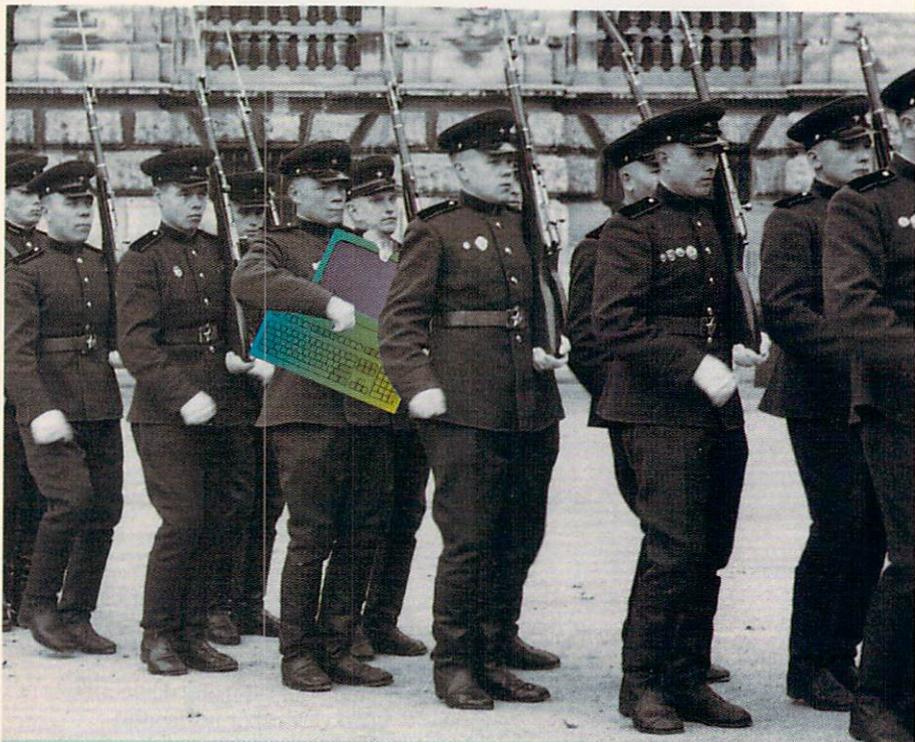
Other behind-the-scenes im-

provements to *1-2-3* include the promised release of an enhanced Add-In Toolkit. Lotus designs these toolkits to help small third-party software publishers create slick add-ins. To date, more than 200 updated add-ins have been rereleased for 3.1. With the new Toolkit now available, you can expect many more in the near future.

Ironically, despite the ease with which 3.1 creates professional-looking copy onscreen, it provides comparatively few printer drivers to translate those work sheets into high-quality output. Supported printers include Hewlett-Packard, Epson, and IBM

printers. Users of other printers may need to use emulation modes which often limit access to some of their printers' advanced features.

Just how important is it that 3.1 is not fully compatible with *Windows*? *Windows*' drop-down menus would prove somewhat easier to use than *1-2-3*'s horizontal menus, if menu orientation were a crucial issue (it isn't). *Lotus 1-2-3* release 3.1 runs full-screen



Onscreen formatting may make you doubt your eyes, but what you see is *1-2-3*.

under *Windows* as a DOS application, but you have to run it in text mode, and you can't resize 3.1's windows unless you load an alternate CGA video driver within *Lotus 1-2-3*.

Release 3.1 makes limited use of *Windows* features. In 386/Enhanced mode, 3.1 exchanges data with other *Windows* applications via the Clipboard, and it will task-switch and multitask.

One benefit of 3.1's tenuous affiliation with *Windows* was that it induced Lotus to answer a longtime criticism of *1-2-3* with an improved memory-management system. Now, when creating large spreadsheets, *1-2-3* will store data in extended or expanded memory and swap data to the hard disk to free up system memory.

It's a truism in the computer industry that software sells hardware. *Lotus 1-2-3* release 3.1 requires a 286 or better system with a minimum of 1MB of RAM (640K base plus 384K extended). If you have a number of large work sheets open, 1MB of RAM may prove inadequate. Also, since graphic screens require longer to refresh than text-based displays, a fast CPU (20-MHz or better) will eliminate frustrating delays in graphics mode.

With determination and time, anyone can eventually learn to use this latest release. Exactly how much time will depend on your prior familiarity with *1-2-3*. Users trading up from 3.0 need to familiarize themselves with the graphical menu's commands. Those upgrading from 2.2 need to learn about 3-D spreadsheets as well as the graphical commands—sort of like double jeopardy. >

Being online never felt so fine.

The most interesting online conferences. 10,000 programs you can download for your own use. All the most popular services. Two membership plans: \$6 an hour or \$1 an hour with the 20/20 Advantage. Get online. And check out our lineup.

Free membership.

Via modem, 1-800-365-4636.

Press return. At password,
type PC22.

DELPHI

The more interesting
online service.

Voice, 1-800-544-4005 or 617-491-3393.
Circle Reader Service Number 145

HOME OFFICE

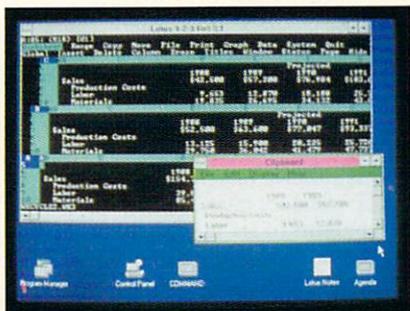
First-time 1-2-3 users face some rough riding. They may feel that release 3.1 requires them to assimilate too much too soon. They should consider making release 2.2 their first stop and trade up to 3.1 when ready.

Release 3.0 introduced the concept of 3-D spreadsheets, and 3.1's graphical interface makes them easier to use. However, unless you need 3-D capability, consider release 2.2 with its milder requirements for processor ability and reduced appetite for RAM.

Release 3.1's comprehensive instructions include multiple manuals, easy-to-use context-sensitive help, and linked on-disk and printed tutorials. Additionally, Lotus's seven-day-a-week, 24-hour technical-support group remains ready to answer any question on its toll-free support line. The support personnel proved courteous and knowledgeable when answering routine questions. Release 3.1 includes six months of free technical support. After six months, continued support costs \$79 per year.

Lotus's unique in-store upgrade policy makes it easy to trade up. To upgrade to either release 2.2 or 3.1,

bring the original title page of the manual of an older release of 1-2-3 to any Egghead, Computerland, or Soft Warehouse store, and the store will immediately furnish the new version. Upgrade costs range from \$35 (for re-



Release 3.1 is compatible with Windows.

cent 3.0 purchasers) to \$150 for versions prior to release 2.2.

Release 3.1's list price of \$595 and street prices ranging from \$410 to \$450 average about 25-percent higher than the price of competing *Excel* and *Quattro Pro*. Currently, that 25-percent premium buys features not of-

fered by the competition. But stay tuned because shortly Microsoft and Borland are certain to rise to the challenge and roll out their own reworked models.

Until then, however, *Lotus 1-2-3* release 3.1's WYSIWYG graphics and 3-D capability entitle Lotus to wear the winner's crown.

Ease of Use	★★★★
Documentation	★★★★
Features	★★★★
Innovation	★★★

Lotus 1-2-3 Release 3.1

IBM AT and compatibles, 1MB RAM, DOS 3.0 or higher, hard disk with 5MB free, Hercules, CGA (640 X 200 monochrome), EGA, or VGA for WYSIWYG display—\$595

Package includes five 5¼-inch and eight 3½-inch disks, keyboard templates, a 569-page reference manual, a 142-page tutorial, and a 135-page guide to WYSIWYG.

LOTUS DEVELOPMENT
55 Cambridge Pkwy.
Cambridge, MA 02142
(617) 577-8500

PC Productivity PowerPak

Work at your peak potential! Break free of cumbersome MS-DOS restrictions and limitations! Single keypresses or mouse clicks do it all for you with COMPUTE's super new PC Productivity *PowerPak* disk.

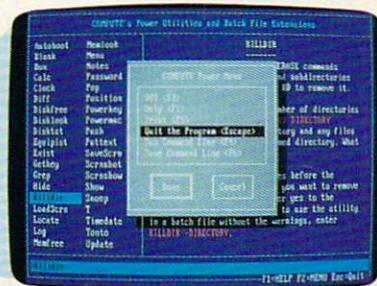
Packed with 38 PC batch-file extensions and power utilities, this easy-to-use disk includes individual help menus for every program. You don't have to be a computer maven—just press F1 for Help anytime!

The power utilities alone are worth many times the cost of this disk. Imagine! Programs to speed up your keyboard, edit disk files, edit and search memory, find a specific text string in disk files—plus memory-resident programs such as a pop-up calculator, a programmer's reference tool, an editable macro key program, and a graphic screen-capture utility, and more all included on this jam-packed disk.

Our batch-file extensions add new commands to standard batch-file language. Now you can easily create menus, draw boxes, and write strings in your choice of colors anywhere on the screen—all with simple, easy-to-use commands. Then,

add some zest to your batch files with a command that lets you play a series of notes!

Plus handy system tools let you delete an entire subdirectory with one command, find out if the system has enough memory for an application before it runs, cause the computer to remember the current directory so that you can come back to it later, and much, much more.



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

YES! Please send me ___ 5¼ inch disk(s) (\$14.95 each) ___ 3½ inch disk(s) (\$15.95 each).

Subtotal
 Sales Tax (Residents of NC and NY please add appropriate sales tax for your area.)
 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 _____
 Daytime Telephone No. _____
 Name _____
 Address _____
 City _____
 State/Province _____ ZIP/Postal Code _____

Send your order to COMPUTE's PC PowerPak, 324 W. Wendover Ave., Suite 200, Greensboro, NC 27408.

ORDER YOUR PC PRODUCTIVITY POWERPAK TODAY!



WORKPLACE

D A N I E L J A N A L

Where is it?! The county registration certificate that proves I'm a business! I need to find it so I can apply for merchant status for a Visa or Mastercard. That way I'll be able to accept charge orders for my new book.

I know it's somewhere in this filing cabinet under my desk. Or maybe it's in the carton of business papers in the closet—under six other cartons of client files.

I know I can find it in 30 seconds—faster than a speeding hard disk—if only I can dig out from 30 pounds of computer magazines that piled up since I went to a computer convention for a week.

That's when I decided to accept the guru's prophecy and use my computer to create the paperless office.

You remember that computers promised us an office without paper. That's the worst lie since *this program is so easy to use you don't need a manual*. Computers made it so easy to create paper that we created more paper rather than less.

That's why I spent the better part of Thanksgiving weekend deciding what to keep.

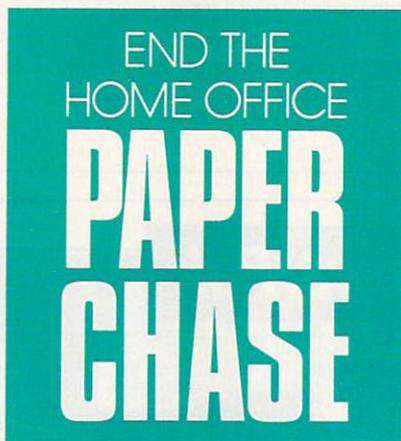
The first thing I realized is that I need paper. I need originals of tax-related information, copies of client invoices and checks, my checks and bank statements, creative material, and important client correspondence, such as agreements and orders.

I don't need voluminous printed versions of CYB (Cover Your Behind) memos, interim reports, and minor correspondence, which were all created on the computer years ago with my word processor, spreadsheet, and database programs and since safely stored on wafer-thin floppy disks.

Then I got down to the nitty-gritty. I asked myself these questions: Do I need 500 press releases for a company that no longer exists? Will I use 100 copies of my company newsletter, circa 1986? I devised Janal's Two-Year Test for Throwing Out Junk. Ask yourself, Have I looked at this document in the past two years?

If the answer is no, then ask yourself, If I get sued, will I need this? If the answer is still no, then toss it.

Two hours later, I had reduced the contents of six huge cartons of files to half of a filing cabinet of material. Besides the financial and tax material stored elsewhere, I saved copies of initial letters of agreements, letters of praise, and two copies of each creative piece on the assumption that my biographer and the Smithsonian Institution will want to store those documents in *their* files.



I also became one of the largest single donors to the Dominican College of Blauvelt when I shipped it six milk crates full of complimentary computer software that I was never going to use. Then I went through my desk and read the labels on files.

Let's see. . . Résumés from People I'm Not Going to Hire. I can get rid of that one.

Then there's News Articles I Should Read but Don't Have the Time and Never Will. And, of course, Weak-Willed Warranties and Incomprehensible Instructions for Every Electronic Gadget I Own. Well, that one might be useful.

My favorite file was from a computer company that printed this message in inch-high type: "How to be prepared for that inevitable day when your boss asks you for everything you know about DCA." I thought it was a

cute promotion. But since I'm my own boss and I don't have any clients interested in this company, I don't need to know everything about it. Toss it.

Why is it I can't find files for Hot Business Prospects I Should Call in Six Months, Mentors Who Will Tell Me Their Secrets If I Buy Them Lunch at Denny's, and Clients Who Owe Me Scads of Money? Those files are *impossible* to find—even with color-coded tabs.

I finally found the business license. It was in a file with no label.

Here's what I do now.

Make a commitment to rely on the computer for the documentation. No paper backups, except revenue-producing invoices, orders, and reports. Everything else is stored on disk. I back up disks monthly, and I store them in my safety deposit box at the bank. This helps me save even more space.

Every month after I've sent out invoices, I copy files from hard disk to floppies—one for each client. Each disk has these same subdirectories: letters, reports, publications (creative), invoices. This consistency makes the job easy and manageable. A year's worth of work for one client fits onto one disk. Work for a client with a larger account might spill onto a second disk around July or August.

With color-coded disks for each client, I can find the right disk easily.

Color-coded disk boxes help me categorize the disks: my clients, my company (reports, spreadsheets, marketing materials), and my book.

I went through thousands of business cards, throwing out those for companies that were bankrupt, useless to my business, or unknown.

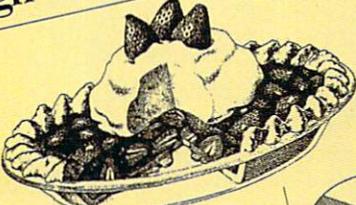
Then I typed the remaining ones into *Hotline*, an autodialer that sits on my hard disk. *Hotline* has a notepad, so I can record the reminder message I scribbled on the back of the card.

I still don't have a paperless office. I have a less-paper office. You can, too, if you adapt these steps to meet your business needs. □

How To Save Your PROPOSAL FROM DISPOSAL.

RESTAURANT FRANCHISE OPPORTUNITY

Mrs. Hooper's High Performance Pies



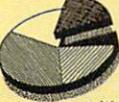
Mrs. Hooper's High Performance Pies was founded in 1987, in Eminence, Kentucky. M. Hooper serves as chief executive officer and president for life.

The History of High Performance Pie

The concept of high-performance pie was created by Mrs. Hooper in the early 1970's. She was inspired by her family's love of pie and her strong belief in sound nutrition. Secretly, she modified her prize-winning recipes to include nutritious ingredients, such as protein powder and beta carotene.

Fortified by these healthy pies, Mrs. Hooper's children prospered in all their endeavors. Her two sons, Max and Brutus, are now professional athletes. Her daughter Christine is a United States Senator.

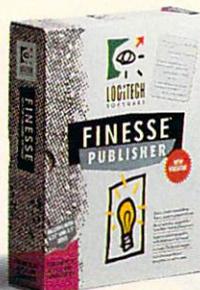
The first Mrs. Hooper's restaurant opened in 1987. Unit sales and revenues have grown 100% annually. In 1990, sales totaled \$7.5 million, including \$3 million in express mail orders to 43 different states. This tremendous national popularity demonstrates that cutting your- self a slice of Mrs. Hooper's represents an outstanding new national franchise opportunity.



Total Annual Sales 1990
\$7.5 Million

Get A Piece of the Pie

Mrs. Hooper's High Performance Pies is now offering 10 franchises in 37 Western, Southwestern, and Eastern states. All franchisees will be sold as turnkey operations with full kitchen, facilities, furnished dining room and 23 secret recipes for Mrs. Hooper's Pies. Investment required: \$100,000, includes first year of five year lease at \$20,000.



Sometimes it's not who you are, it's how you look on paper. That's why a growing number of small businesses use Finesse® Publisher software from Logitech.

In 30 minutes, Finesse can transform a beginner into a seasoned publisher. You can turn out proposals worthy of the Fortune 500, design your own newsletter, or create powerhouse presentations from scratch. All for a fraction of what you'd pay for more complicated publishing software.

Finesse lets you effortlessly import text and graphics. Cut, paste, scale and crop images or wrap text around graphics. Even scan images directly into your document with Logitech's ScanMan® Plus.



Bitstream® typefaces (\$545 value). Now

Finesse gives you pre-designed page layouts plus a variety of the highest quality



only with this special offer, we've included a free copy of Logitech's Spell Checker for Finesse®

Only \$99 when you order now! Save over 50% off suggested retail price. To order, call (800) 231-7717, ext. 431; in CA call: (800) 552-8885, ext. 431. Or return special offer coupon to:

Customer Sales Center, 6505 Kaiser Drive, Fremont, CA 94555.

System requirements: IBM PC XT, AT, PS/1 or PS/2; 640K RAM; hard disk and virtually any printer. Compatible with all graphics standards and major word processing and graphics programs.

_____ Yes, I want to order Finesse Publisher with free Spell Checker software, for only \$99. 30-day money back guarantee, plus free shipping. Offer valid in U.S. and Canada only. CA and MA residents add sales tax. For coupon orders, allow 2-3 weeks for delivery.

Name _____
 Address _____
 City _____ State _____ Zip _____
 Daytime phone _____
 Preferred payment method (check one):
 Check enclosed Visa MasterCard
 Card # _____
 Exp. Date _____
 Signature _____



Tools That Power The Desktop

Circle Reader Service Number 211

PC PROM

If you're not a marketing maven, you'll have to learn fast, or you'll have trouble putting black ink on the balance books. Home business success depends on your ability to learn new skills, and marketing may be the most valuable skill you could learn. No doubt about it—selling is tough. Marketing your services and products isn't much easier. Fortunately, help is handy, even if you *are* the only breathing employee in your business. While many people look to their PCs for promotional help, all they envision is print—newsletters, mass mailings, and fliers. Why not unleash the potential of your PC in a more imaginative way? Your computer becomes a powerful marketer when you let loose its graphical talents.

G R E G G K E I Z E R

DAVID R. STREET



Software Self-Promotion

The business world spends millions of dollars and thousands of hours preparing presentations and pitches with PCs. You can take a tip from the downtown pinstripes and use your personal computer to produce spiffy presentations for new work and promotions for new customers. With a few software tools, your PC can become a miniature movie theater, an electronic slide projector, or even a computerized banner.

There are two broad categories of presentation programs:

- Slide-show makers take electronic snapshots of the computer screen and then enhance, organize, and display those pictures.
- Presentation makers are art-oriented packages that let you create static images or animated productions from scratch.

If you're an at-home architect, for example, and you're already using a PC program to draft remodeling jobs, you can use old work to get new work. Simply run a slide-show maker, grab some sample screens of your best computer designs, and show them to prospective clients who want a sample of your abilities.

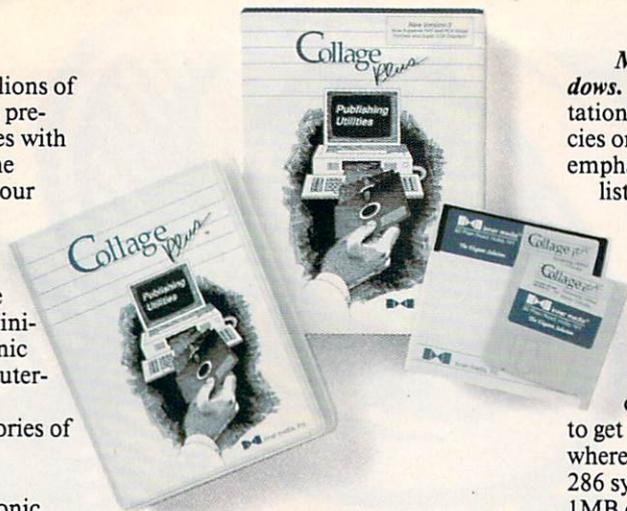
If your business takes you to trade fairs, craft shows, or any other place where there's a lot of walk-by traffic, producing a short animated or graphics presentation from scratch can turn some heads and get people thinking about your company.

Though a tremendous amount of PC promotion and presentation software is available, here's a small sampling across the price and performance spectrum.

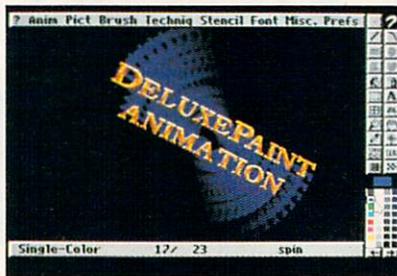
PC Screen Presenter. One of the most inexpensive slide-show makers around, *PC Screen Presenter* takes snapshots of your computer screen and lets you assemble them in any order, add captions and arrows to highlight parts of the snapshot, and call on special effects called *wipes* and *fades* that shift from one slide to the next in an eye-catching way.

PC Screen Presenter is easy enough for beginners to use, though its three separate modules and the lack of preprinted documentation make the program less than perfect. It also works best as a text-screen picture taker, since it won't snap EGA or VGA graphics screens. Showing slides is just as easy—all you do is put the Project program and the desired slides on a disk.

Pick *PC Screen Presenter* if you're in the market for an affordable, simple slide-show maker.



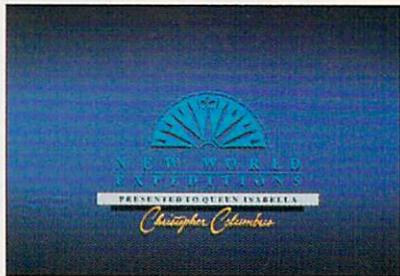
Collage Plus. Another slide-show maker, *Collage Plus* picks up where *PC Screen Presenter* leaves off. You can capture any screen, including VGA and EGA graphics screens (a Windows-specific version is in the works), with *Collage Plus* by calling up its pop-up window and pressing a few keys. Once you've taken your snapshots, you can organize and display them. *Collage Plus* is fast, and it gives you plenty of options, from showing reduced images in full color to zooming in on any section of a screen. The package's Show module puts your slides back on the screen, though it's not for the beginner—you must write a batch file to produce an on-disk presentation. *Collage Plus* gives you a lot of advanced features.



DeluxePaint Animation's full motion

DeluxePaint Animation. If you're artistic or simply adventurous, you can jump into *DeluxePaint Animation*, a topnotch PC animation package. This is no simple snapshot taker (though it includes a screen-capture utility) but a full-blown paint program with loads of features to set those images in motion once you've drawn and colored them. Simple animations—titles that move, for instance—are within the capabilities of almost anyone, but to really take advantage of *Animation*, you'd better have a healthy dose of artistic talent. A playback feature lets you rerun (with surprisingly tight control) animations for moving (literally) presentations and promotions.

Microsoft PowerPoint for Windows. For traditional business presentations based on overhead transparencies or 35mm slides and with a heavy emphasis on charts, graphs, and bullet lists, try *PowerPoint*. This package's point-and-shoot Windows graphical interface lets you grasp powerful features quickly. *PowerPoint* offers nearly 50 chart styles, automatically recommends color combinations so your charts don't clash, and includes a way to get your slides made fast, no matter where you live. You'll need at least a 286 system (preferably a 386) with 1MB of RAM (2MB recommended) to use *PowerPoint*, but the results—very slick, very businesslike, very corporate—may be just the thing when you want clients to think your business is big, not in the back bedroom.



PowerPoint is Microsoft's offering

Tools and How to Use Them

These programs are just four of the tools you can call on to make that perfect presentation or expand your business with a timely promotion. Just having the tool doesn't guarantee success. You've got to know how to apply the tool for the right result.

PC promotional strategies. You want to boost your business. You want to stand out from the competition. That's why you're thinking about PC promotions and presentations. If done right, they can make your small business seem bigger, smarter, and more creative. Rather than a flier or business card pinned to a bulletin board at the laundromat, why not have an animated advertisement at a kiosk in the mall?

Onscreen presentations. Certainly the most common way to turn the PC into a promotions specialist, onscreen presentations are also the easiest to produce.

When you head to your banker for a startup loan or for money to expand your existing business, show an onscreen presentation rather than simply tossing a business plan on the desk. As a foundation for your presentation, you can use spreadsheet screens illustrating your financial pro-

LARGEST INVENTORY REDUCTION SALE IN HISTORY!

PRICES WILL NEVER BE LOWER! SAVE UP TO 80%!

12MHz 286 COMPUTER- ONLY \$299.95 WITH 512K MEMORY - COMPLETE!



NO EXTRAS! COMPLETELY EQUIPPED!
FULL IBM® AT COMPATIBILITY:

- 12MHz 80286 Microprocessor • 512K RAM - Expandable
- Parallel and Serial Ports • 5.25" Floppy Drive & Controller
- 101 Key AT® Style Keyboard • 200 Watt Power Supply • Stylish Mini-Tower Case

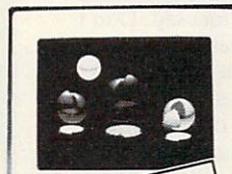
FACTORY NEW!

SAVE \$500!

\$299⁹⁵

Mfr. Sugg. Retail \$799.95 Monitor Optional

MAGNAVOX 13" VGA COLOR MONITOR



- 0.42mm dot pitch
- Analog input - virtually unlimited colors
- 3 externally selectable modes
- Compatible with all VGA text and graphics modes
- Tilt & swivel stand included

WAS \$279.95

BRAND NAME SAVINGS

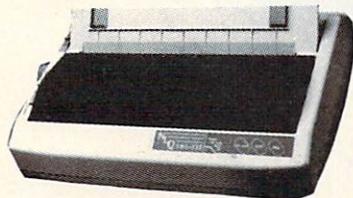
\$249⁹⁵

Model # CM9032

Mfr. Sugg. Retail \$499.00

NEW! 10" 180 CPS PRINTER

We've Added New Options - BUT, LOWERED THE PRICE!



- LIFETIME WARRANTY ON PRINTHEAD
- 2 YEAR IMMEDIATE REPLACEMENT
- AUTO LOAD PAPER PARKING
- Dot Addressable Graphics
- Italics, Elite, Pica, Condensed
- 8K Buffer
- NLQ Selectable from Front Panel
- Pressure Sensitive Controls

REAR FEED - REDUCES PAPER DRAG!

WAS \$149.95

\$119⁹⁵

Mfr. Sugg. Retail \$299.95

2400 BAUD INTERNAL MODEM

Superior Hayes Compatibility



- Made in the USA!
- Full or Half Duplex
- Rockwell Modem Chip Set for Fast, Reliable Communications
- Non-volatile Memory
- Built to Work with the Fastest Computers!

WAS \$74.95

FREE Prodigy Trial Offer*

COMMUNICATE WITH OTHER COMPUTERS

\$69⁹⁵

Mfr. Sugg. Retail \$129.95

*Offer good through manufacturer

40 MEGABYTE STORAGE HARD DRIVE



Features: 40 Megabyte storage, supports MS-DOS, auto boots when powered up, half-height - takes half the room of full size drives. Fits IBM® PC, XT, AT and Compatibles.

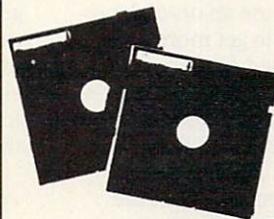
Mfr. Sugg. Retail \$499.95

THE BEST!

\$239⁹⁵

WAS \$299.95

LOWEST PRICE IN THE COUNTRY!



5.25" DS/HD Floppy Disks

34¢ each

100% Certified - Error Free

Lifetime Guarantee!

If Your Diskette Fails

We Will Replace it FREE!

WERE 39¢ each

ALL ITEMS REDUCED FOR THIS SALE!

COMPUTERS, MONITORS, PRINTERS, HARD DRIVES, MODEMS, SOFTWARE ... AND MUCH MORE!

NOT JUST THE BEST PRICES! • 30 DAY HOME TRIAL • FREE CATALOGS • MORE!

CALL 1-800-BUY-WISE EXT. 51 TODAY!

Circle Reader Service Number 114

Prices do not include shipping charges. Call to get your lowest delivered cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd day and overnight delivery are available at extra cost. We ship to all points in the US, Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands and APO-FPO. Monitors only shipped in Continental US. Illinois residents add 6.5% sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors or omissions. *Computer Direct will match any current (within 30 days) nationally advertised price on exact same items. Shipping and sales tax not included. Verification required.

FAX ORDERING 708/382-7545 OUTSIDE SERVICE AREA, PLEASE CALL 708/382-5058

COMPUTER DIRECT, INC.

22292 N. Pepper Road
Barrington, IL 60010

jections, then add charts and graphs that show your expected revenues, expenses, and profits. They're easy to generate with a spreadsheet like *Quattro Pro*. Then insert screens from your word processor as transitions or to explain the special problems that your business faces. Compiling this presentation is fast with a program like *PC Screen Presenter*.

Onscreen presentations, like any other pitch, should be focused. Don't include a screen for every item on your outline, but hit the highlights. Keep special effects to a minimum: Too much dazzle only obscures the presentation. This same advice applies to color. If you're using something like *DeluxePaint Animation*, for instance, pick three or at most four compatible colors, then stick with them throughout your presentation.

On-disk presentations. You can be two places at once when you have your PC presenting for you. Since all slide-show and most presentation software lets you put your electronic pitch on disk, why not send the disk instead of yourself? Here's how it works.

You've created a standard presentation that shows how your at-home publishing practice saves your clients money and time. The slide show combines charts that focus on your fast turnaround and low rates with sample *Ventura Publisher* screens that show off your best publication designs. You get a call from a prospective client who wants to see what you can do, but you've got deadlines to meet. Don't turn down the chance to land another customer. Instead, find out if the potential client has a PC; if so, simply drop off a disk or pop one in a mailer. The on-disk presentation acts as your stand-in until you get back to the customer in person.

You can even use an on-disk presentation as a way to get more business from established customers. Construct a multiscreen presentation that lists your services and/or products and their prices, as well as your telephone number. Every new customer with a PC gets a copy of the disk, which acts as your electronic catalog.

Point-of-purchase presentations. Retail possibilities for PC promotions are just as impressive. If you have a small retail business, dedicate some counter space to the PC and use it as an always-changing electronic billboard.

Put your PC and keyboard under the counter, its monitor on top, and run slide-show software that puts mini-ads on the screen for your services or for other retail stores in your

PC PROMO PRICES

Collage Plus

IBM PC and compatibles with 256K RAM, DOS 2.0 or higher, and Hercules, MDA, CGA, EGA, MCGA, or VGA
\$89.00

Inner Media
60 Plain Rd.
Hollis, NH 03049
(800) 962-2949

DeluxePaint Animation

IBM PC and compatibles (286 or 386 recommended) with 640K RAM, DOS 2.1 or higher, and MCGA or VGA
\$129.95

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(800) 245-4525

Microsoft PowerPoint for Windows

IBM PC and compatibles (286 or 386) with 1MB RAM (2MB recommended), Windows 3.0 or higher, Microsoft or compatible mouse, hard disk drive, and

EGA or VGA.

\$495.00
Microsoft
One Microsoft Way
Redmond, WA 98052
(800) 426-9400

PC Screen Presenter

IBM PC and compatibles with 512K RAM, DOS 2.0 or higher, monochrome, CGA, EGA, or VGA
\$49.95

Disk-Count Software
1751 W. County Rd. B, Ste. 107
Roseville, MN 55113
(800) 333-8776

area. *DeluxePaint Animation* can create dazzling ads with graphics and text, or you could use *PowerPoint* to generate simpler text-only advertisements. You could charge customers for the ads or use them to draw new customers by offering free advertising to businesses that use your center for their packaging and shipping needs.

If your home business is in advertising, design, or promotions, you could add point-of-purchase presentations to your service inventory. Using a PC paint program such as *PC Paintbrush* and a slide-show maker like *Collage Plus*, you can generate colorful ads on the computer for clients.

Toot Your Own Horn

You've got to sell yourself, and your business, every day. No one can sing your praises better than you.

The PC you use to keep books, track customer addresses, and generate correspondence can also help you

sing louder than the competition. PC promotions and presentations are nothing new—major corporations have been producing them for years. But they're an underused and underestimated aid for the home-based business.

For best success, start small, change your presentation to match the targeted customers and clients, and vary the delivery from in-person to through-the-mail for a complete and aggressive marketing plan.

Your home operation may not have the wherewithal to air ads on television, but your PC presentations can give you the same result—new business.

New business is what PC promos are all about. And that's fine with you, isn't it? □

Gregg Keizer is a science-fiction writer, computer journalist, computer-book author, and former editor of *COMPUTE*.

Introducing Total Reality

This 256-color, true-to-life golf simulator gives you unprecedented 3D graphics...so realistic—so advanced—you'll think you're on the course.

It's a beautiful Spring morning as you prepare to tee off. You select your #1 driver (ignoring your caddy's wisecrack)...take a practice swing... adjust your stance...and drive one *right down the middle* for 290 yards. As you approach your second shot, you notice *every* detail of your surroundings... the location of each tree...the contour of each hill and slope...the lay of the ball...

A day on your favorite course? Not quite, but it's the next best thing. *LINKS...The Challenge of Golf* is a totally realistic golf simulator that's a quantum leap ahead of any computer golf game you've ever seen.

You'll control your game to the degree you prefer...from defaulting to the standard swings...to adjusting your stance, backswing, acceleration, power and snap. With every drive and putt, your ball will act according to the *true* laws of physics.

And you'll experience all the sounds of a real tournament...from commentary...to caddy's remarks...to the swoosh of the swing...click of the drive...and bloop of the ball in the water.

LINKS also includes a practice area for driving, chipping and putting.

3D Terrain

LINKS is brought to you by Access Software... the same fanatics for accuracy and realism who gave you World Class Leader Board Golf—and the graphics are *unbelievably realistic*. Gone are square-edged screens that look like Lego blocks. With *LINKS*, hills actually look like hills, trees look like trees, water looks like water. (And, yes, golfers even look like golfers.) In fact, *LINKS* uses graphics technology so advanced that a VGA system is absolutely required for play.

Experience the next generation of golf simulators. Reserve a Tee Time with *LINKS*.

We guarantee you'll absolutely love it—or your money back!

To get on the course with *LINKS*, visit your retailer or call



1-800-800-4880

TOLL FREE

(Credit Card orders only) or clip and return the order form

ACCESS
SOFTWARE INCORPORATED

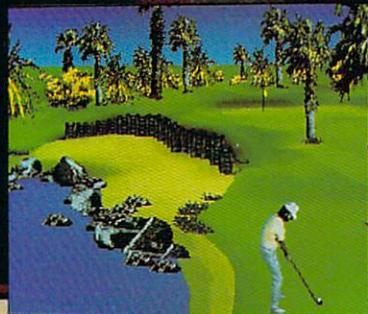
545 West 500 South, Bountiful, Utah 84010
801-298-9077 FAX 801-298-9160

Circle Reader Service Number 224

LINKS

THE CHALLENGE OF GOLF

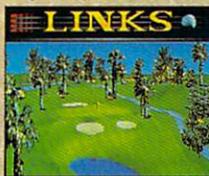
Totally Realistic
VGA
Video



ACCESS
SOFTWARE INCORPORATED

***So Realistic, you'll think you're there**

LINKS features totally realistic 3D terrain...combining stunning 256-color, 3-dimensional terrain graphics with *Real Sound™*, the revolutionary technology that gives you astonishing digitized sound effects *without hardware*.



Actual 256-Color VGA Screens

ORDER FORM

YES! I'm ready to Tee Off with *LINKS*...and experience the astonishing reality of 3D terrain with 256-color graphics and digitized sound effects. Please rush me my copy. *Satisfaction Guaranteed.* (VGA system and hard disk required).

5 1/4-inch Disk 3 1/2-inch Disk

I've enclosed \$59.95 as payment in full.

Charge this order to my:

VISA MasterCard American Express

Card No. _____

Expires _____

Signature _____

(all orders must be signed)

Name _____

Address _____

City _____

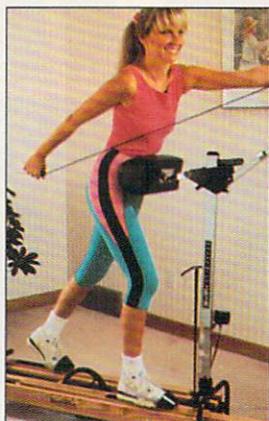
State _____ Zip _____

Mail to: ACCESS SOFTWARE INCORPORATED
545 West 500 South, Suite 130, Bountiful, UT 84010

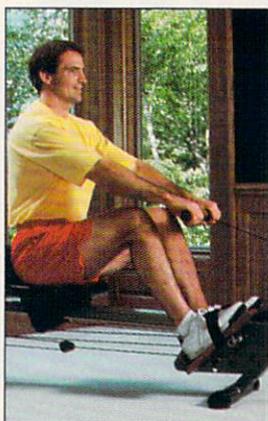
THE GREAT TREASURE HUNT



11



7



7



7

The following descriptions and values of the prizes in the 1991 Great Treasure Hunt correspond to the numbered photos on these pages. 1) Grand prize: 1991 Jeep Wrangler, including option package of floor carpet, power steering, and rear seat. 2) First prize: Northgate Computer Systems hardware package. 3) Second prize: Casio electronics package, including Executive B.O.S.S. with expansion card, dictionary card, and spell checks for financial and medical terms; Casio TV/VCR; mini hand-held color TV; electronic piano, horn, and keyboard; and two sets each of his-and-



2

hers watches. 4) Third prize: Honda Nighthawk 750 motorcycle. 5) Fourth prize: Okidata laser printer. 6) Fifth prize: Mitsubishi 40-inch big-screen television. 7) Sixth prize: NordicTrack workout equipment, including Track Pro, rowing machine, and Fitness Chair. 8) Seventh prize: Electronics package from Uniden, including LCD Fishfinder, mobile cellular telephone with voice dial, radar detector, and Bearcat scanning radio. 9) Eighth prize: Ad Lib package, including an Ad Lib computer sound card, Acoustic Research speakers, and computer games from Lucasfilm Games, Ac-



9



5

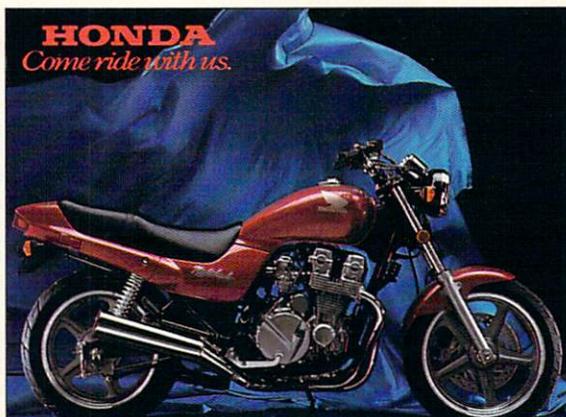


10

One of these prizes could be yours—and you don't even have to rely on the mail carrier. Enter automatically by calling **1-900-288-HUNT**. Turn to the next page for details



6



4



8

cess Software, SSI Software, Maxis Software, and Sierra On-Line. 10) Ninth prize: SNK Neo-Geo advanced entertainment system and game cartridges. 11) Tenth prize: Chinon Genesis III camera outfit with 1.4X converter, WA converter, battery, and carrying case.

PRIZE VALUES: The following are the individual retail values of our prizes in the sixth annual Great Treasure Hunt. 1991 Jeep Wrangler: \$11,267, including the base sticker price of \$9,910, plus option package of floor carpet, power steering, and rear seat worth \$892, and destination charge of



3

\$465. Northgate Computer System with 8MB RAM: \$10,042. Casio electronics package: \$4,346. Honda Nighthawk 750 motorcycle: \$3,998. Okidata laser printer: \$2,999. Mitsubishi 40-inch big-screen television: \$2,399. NordicTrack workout equipment, including Track Pro, rowing machine, and Fitness Chair: \$2,067. Uniden electronics package: \$1,856.85. Ad Lib package: \$1,354.24. SNK Entertainment system: \$1,047. Chinon camera outfit: \$1,029.75.

To find out more about individual prizes, see the Gift Finder's Guide on the next page.



1991 Jeep Wrangler



Now that you know the prizes,
find out what to do next. Determine the solution and
CALL 1-900-288-HUNT or see rules below *

THE GREAT TREASURE HUNT

This month's *Compute* is your map in the 1991 Treasure Hunt; the 12 discs below, your clues. Match the clues with their original sources and you could drive away in a 1991 Jeep Wrangler, including an option package of floor carpet, power steering, and rear seat. Or you could win another treasure—from a Casio electronic products package, an Okidata laser printer, or a Mitsubishi big-screen television, to a Honda Nighthawk motorcycle or Northgate Computer Systems' Dream Productivity System that includes the Northgate 486 with 8MB RAM, 200MB SCSI hard drive, Omniquey Ultra keyboard, NEC 4D monitor, Qume Crystalprint Series II printer, video 7 VRAM card, MS-DOS 4.01, Windows 3.0, and other features.

Each of the dozen picture discs displayed on this page is a portion of a photo or illustration appearing in an advertisement in this issue. Find the advertisements that match the clues; then note the page number for each ad. For clues on the inside or outside of the front or back cover, count that page number as zero. If there is no page number on the clue page, turn to the next numbered page and use that as your answer. Add up the 12 numbers for your solution to the 1991 Great Treasure Hunt in this issue.

***NO PURCHASE OR PHONE CALL NECESSARY.**

To enter automatically from a touch tone phone, call 1-900-288-4868 between February 1, 1991, and May 31, 1991, to give your name, address, and daytime telephone number, and the correct solution to the 1991 Treasure Hunt appearing in this issue of *Compute*. Each call costs \$2.00 the first minute and \$1.00 each additional minute or fraction thereof; average call length is estimated to be two to three minutes. You must be eighteen to call or have a parent's or guardian's permission before calling. Call as often as you wish; each call is a separate entry.

You may also enter by printing your name, address, daytime phone number, and the solution to the Treasure Hunt on a three- by five-inch sheet of paper. Mail your entry to Treasure Hunt, Box 814,

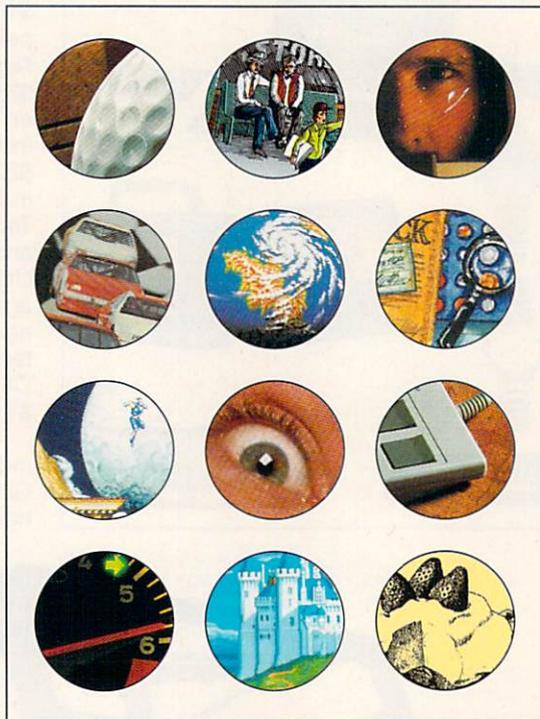
Gibbstown, NJ 08027. Enter as often as you wish; each write-in entry must be mailed separately. All entries must be received by May 31, 1991.

The 1991 Treasure Hunt is sponsored jointly by *Compute* magazine and *Omni* magazine; varying creative presentations may be used. Winners will be selected on or about June 30, 1991, from among all eligible entries in random drawings conducted by Power Group, Inc., an independent judging organization whose decisions are final.

Odds of winning are determined by the number of eligible entries received. For complete rules (including the solution) send a self-addressed, stamped envelope to 1991 Treasure Hunt Rules,

Box 849, Gibbstown, NJ 08027 by May 15, 1991. **GIFT FINDER'S GUIDE:** For more information on products and services in the Great Treasure Hunt contact the companies at the following addresses. Access Software Inc., 545 West 500 South, Suite 130, Bountiful, UT 84010; 1-800-800-4880. Acoustic Research, 330 Turnpike Street, Canton, MA 02021; 1-800-969-AR4U. Ad Lib Inc., 50 Staniford St., Suite 800, Boston, MA 02114; 1-800-463-2686. American Honda, Dept. 91, Box 7055, North Hollywood, CA 91609. Casio, Inc., 570 Mt. Pleasant Ave., Dover, NJ 07801. Chinon America, Inc., 1065 Bristol Rd., Box 1248, Mountainside, NJ 07092. Jeep Wrangler,

1-800-JEEP-EAGLE. Lucasfilms Games Division, 3270 Kerner, San Rafael, CA 94912. Maxis, 415-376-6434. Mitsubishi Electronics America, Inc., 557 Plaza Dr., Box 6007, Cypress, CA 90630. Nordic-Track, 141 Jonathan North, Chaska, MN 55318. Northgate Computer Systems, 7075 Flying Cloud Dr., Eden Prairie, MN 55344. Okidata, 532 Fellowship Rd., Mount Laurel, NJ 08054. Sierra On-Line, Inc., Box 485, Coarsegold, CA 93614. SNK Home Entertainment, Inc., 22301 S. Western Ave., Suite 107, Torrance, CA 93614; 1-800-253-6665. Strategic Simulations, Inc., 675 Almanor, Suite 201, Sunnyvale, CA 94086. Uniden, 4700 Amon Carter Blvd., Fort Worth, TX 76155; 817-858-3300.





PATHWAYS

S T E V E N A N Z O V I N

You may not have heard of it, but it's all around you—on TV, in advertisements, in the movies. It's *blendo*, a.k.a. "genre-bending," "digital postmodernism," or "synergistic art," and it may well be the first important—or foolish—aesthetic idea to come out of computer graphics.

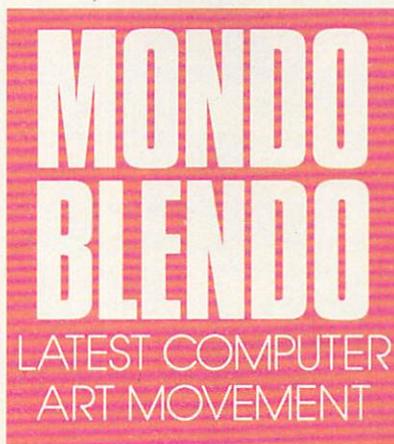
What is blendo? Michael Gosney, publisher/editor of *Verbum, the Journal of Personal Computer Aesthetics*, calls it "the parallel convergence of art forms" combining "anything and everything—type, bitmap paintings, vector graphics, scanned images, animation, 3-D. . . ." School of Visual Arts academic Timothy Binkley describes computer art as the creation of "a prodigious menagerie of things" brought into being "merely by waving a magic wand." It's a fair characterization of the blendo approach. You take whatever elements are relevant (or irrelevant) to your purpose and put them into your picture.

The computer makes it supremely easy to mix and match images, move them around, add and subtract at will—no forethought necessarily required. The typical blendo computer picture has dozens of little images—some scanned, some 3-D, some animated—swirling around the screen, perhaps orbiting one central figure or a big piece of type. (The process of creating blendo art should probably be called *blenderizing* or *Osterizing*, or maybe just *buzzing*. The blendo art scene would be the *blendorama*.)

Because it's both easy and infinitely versatile, blendo is fast becoming the dominant style in computer art. But it does have a history. You can see the precursors of blendo in artworks by the early twentieth-century dadaists Marcel Duchamp and Max Ernst. Duchamp indulged his peculiar sense of humor by offering a toilet as a work of art and combining machine parts, kitchen utensils, painted plate glass, and other materials in his major work *The Large Glass (The Bride Stripped Bare by Her Bachelors, Even)*. In the little-

known classic *La Femme 100 Têtes* (1929), Ernst pasted old commercial engravings and illustrations into a collage novel, making a bizarre narrative out of previously unrelated imagery.

James Joyce's nearly incomprehensible *Finnegans Wake* is still the premier blendo work of literature. It mixes themes from dozens of myths and coins new words from scores of languages to make a goulash so rich it can be sampled only in helpings of a page or two. (*Finnegans Wake* is one of the few novels that would benefit from data decompression.)



Recent blendo artists can blenderize with tools and skills the dadaists and surrealists would envy. Richard W. Maile uses a computer to seamlessly insert a swimsuited Elvis Presley into Botticelli's painting *The Birth of Venus*, creating a "new" work called *The Birth of Elvis*.

Macintosh commercial artists Richie Williamson and Dean Janoff won the most recent SuperMac Pixel-Paint art competition with *Motel Room*, mixing scanned images of retro fabrics, furniture, and interiors from design books with photos of fashion models. The result doesn't look like reality—the models seem to float above the scene—but the fake look is part of the blendo style, too.

Up in dada heaven, Duchamp and Ernst probably wish they'd had

computers, too. Joyce no doubt would be into hypertext. *Finnegans Wake* would make the biggest and most complex HyperCard stack in the world.

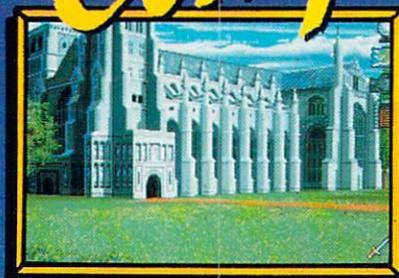
Blendo is creeping into Hollywood films. David Lynch likes to throw in all kinds of basically irrelevant but interesting stuff, like the many visual references in *Wild at Heart* to *The Wizard of Oz*. And into TV commercials, where animated soda-can logos, raisins, and toothpaste tubes cavort with real live actors and moving text, while music, voice, and sound effects blast all at once. Commercial producers seem to think blendo is a style for the underaged and impulsive, since most blendo effects appear in spots for junk food.

But it's on computers that blendo really comes into its own. The sheer ease of digital image manipulation makes it inevitable that every picture and sound is made equal. Assemble a library of scanned pictures and paste them anywhere you like; the computer screen smooths every texture and color into uniformity. Put them all together, and presto—it's blendo!

Make it interactive, and blendo is time-independent, too—you can see any picture any time you like, in any order. The not-so-hidden aesthetic assumption of blendo can be stated as follows: If all things on the screen look the same, maybe they're all of the same informational value, so it doesn't matter what's up there, as long as it looks nice.

Blendo is a democratic style, just right for the age of the triumph of democracy. Unlike heavy-duty multimedia, which requires a fast color PC, video and/or CD-ROM linkages, digital image and sound compression, color scanners, and what-all else, respectable blendo is possible at home with any computer, a cheap hand scanner or video digitizer, a paint/animation program, and a printer. As always, assembling hardware and software is easy; the hard part is opening your mind and letting it all come together in the true blendo style. □

A New Genre in Computer Gaming...



Introducing Spirit of Excalibur, the first-ever Fantasy Epic Game!

A Fantasy Epic Game is a synergistic blend of traditional Fantasy Role-Playing, adventure and combat simulation, for an experience greater than the sum of its parts.

Spirit of Excalibur is set in the richly detailed world of mountains and rivers, townships and cities, castles and ruins of medieval England. More than 2.5 megabytes of dazzling artwork illustrate your journey. With add-on sound boards, powerfully orchestrated music will carry you away on a sea of enjoyment as you search for objects and solve the puzzles.

Roam at will across the 16-screen scrolling map of Arthurian Britain. Use the Icon-based interface to check character status, zoom down to the scene level or up to the map, and give directional commands to parties or forces. You can enter, talk, take, trade, drop, attack, and even use magic at the click of a button – no unwieldy commands to memorize or key words to ferret out.

As in the best FRPs, the knights and lords, wizards and clerics of the court of Camelot are yours to befriend and command. As they undertake their quests, they can interact with the peasants, warriors, maidens, nobles, bandits, and other folk of the time, growing and improving their abilities and skills.

Spirit of Excalibur also provides opportunities for the tactical planning of a combat simulation. Move troops to strategic points to harry or delay invaders while your knights complete their quests, obtaining the allies or weapons needed to successfully defend the realm from attack.

Years of historical research ensure that this, at last, is the definitive game on Arthurian legends. Now playing only on powerful computer systems for discriminating game players.

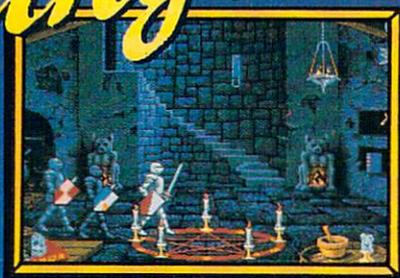
MS-DOS version supports these fine sound boards:
Roland MT-32, Adlib, Covox, CMS.

Screens taken from IBM VGA and Amiga versions.

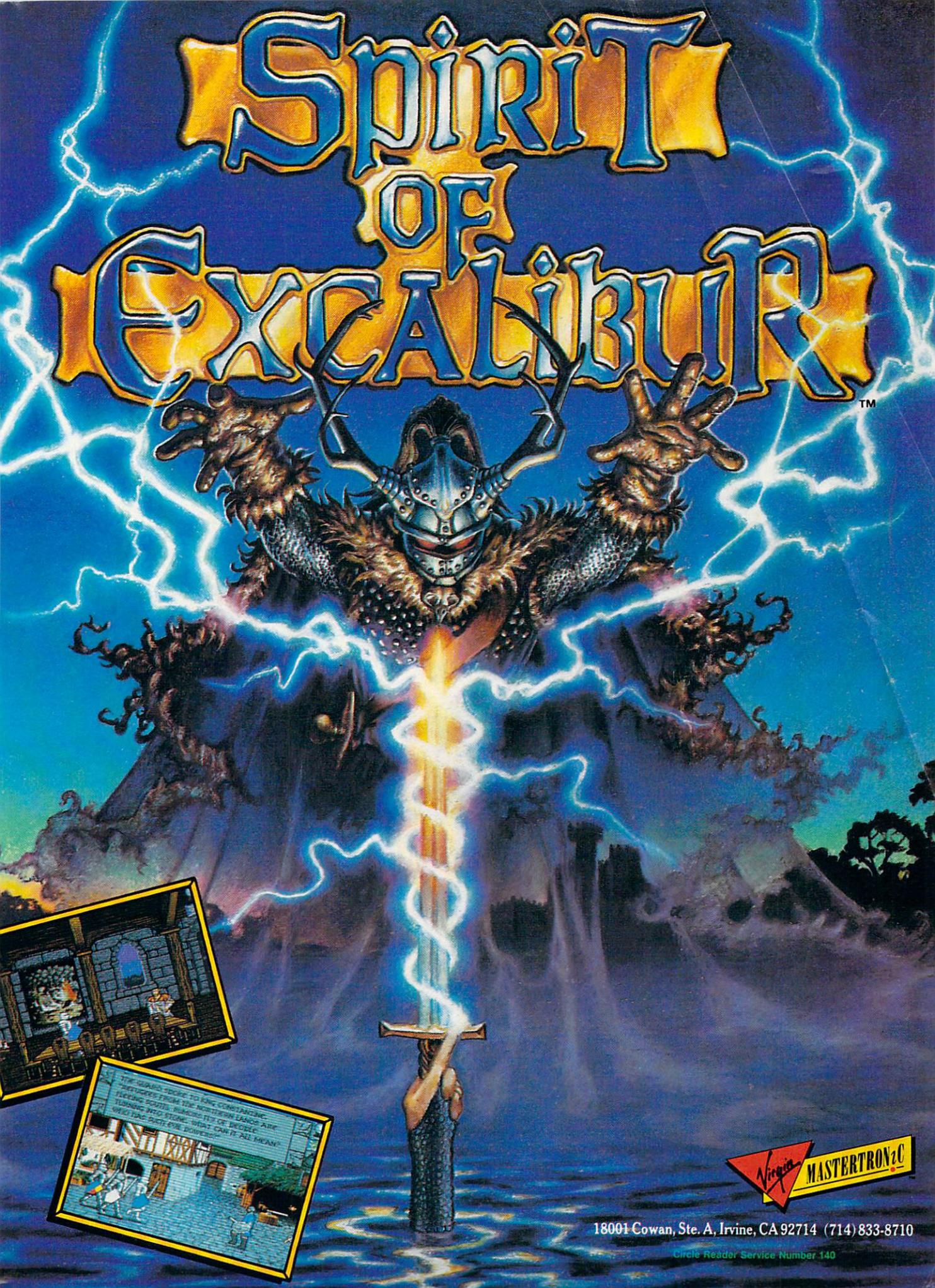
For IBM, Amiga, Atari ST, Apple IIGS and Macintosh computers.

Suggested price \$49.99.

Spirit of Excalibur® is a trademark of Virgin Mastertronic International, Inc.

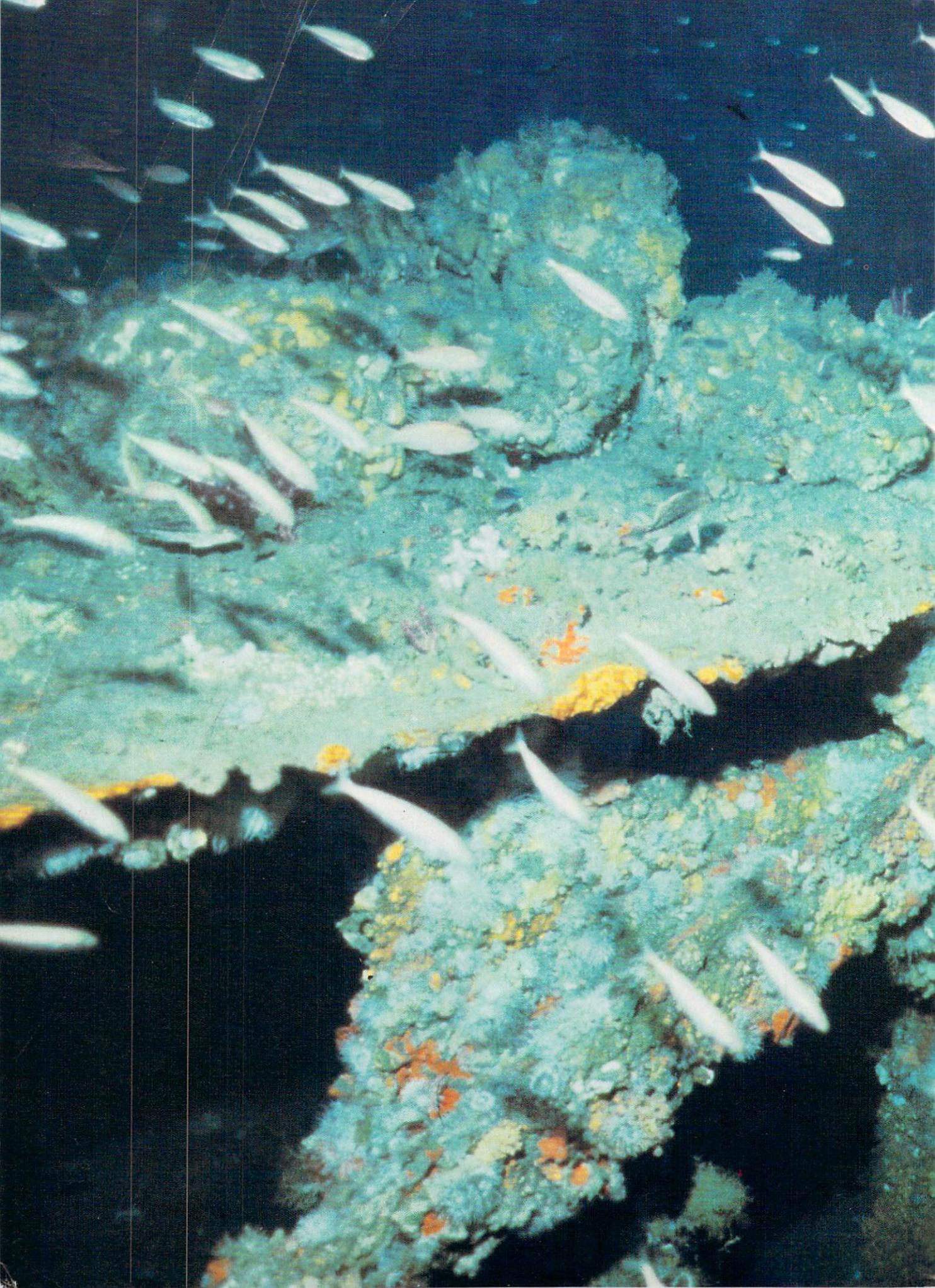


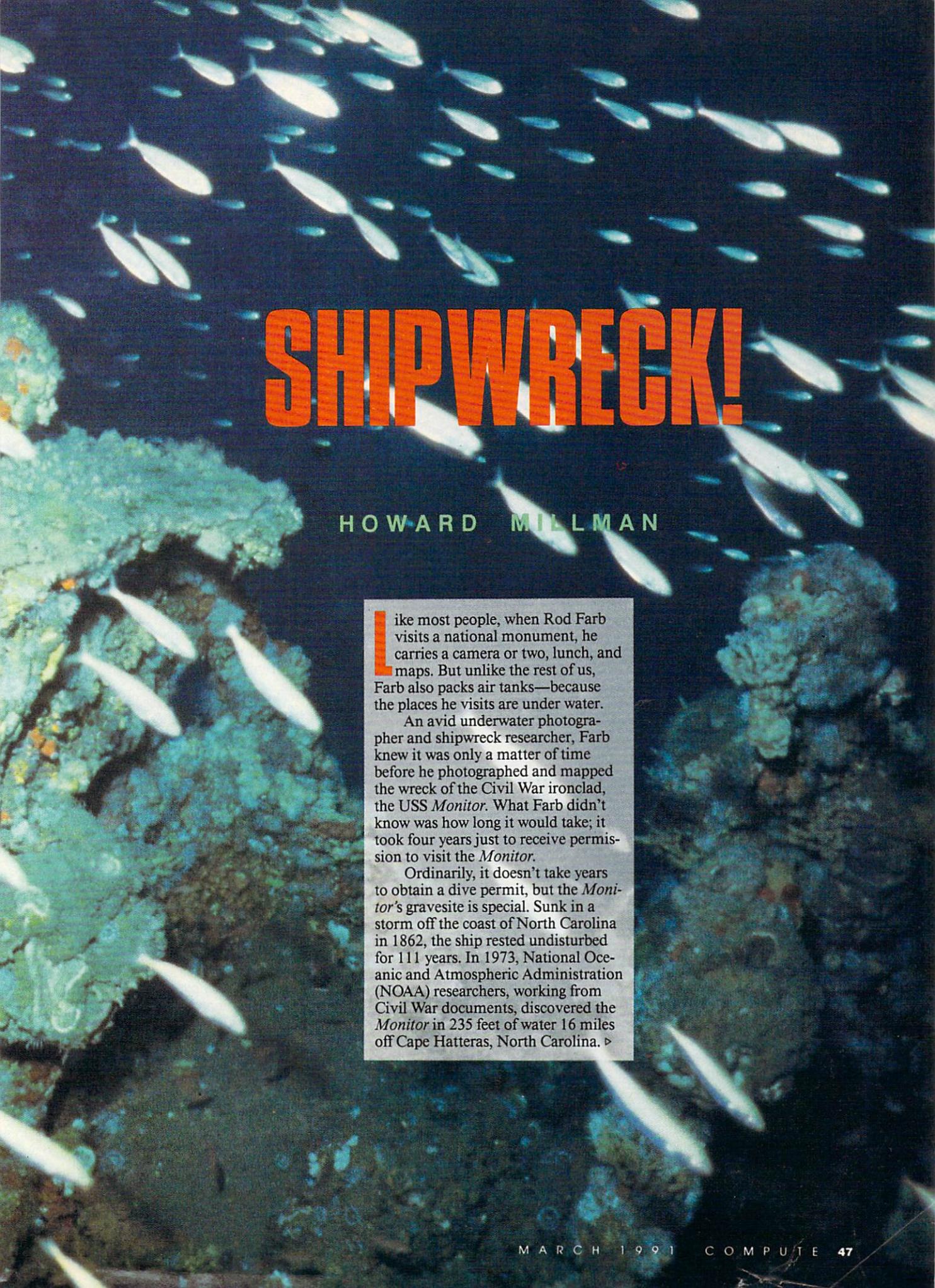
SPIRIT OF EXCALIBUR™



18001 Cowan, Ste. A, Irvine, CA 92714 (714) 833-8710

Circle Reader Service Number 140



A vibrant underwater scene featuring a large school of silver fish swimming in a dark blue ocean. Below them, a coral reef is visible, with various types of coral in shades of green and blue. The overall atmosphere is serene and mysterious.

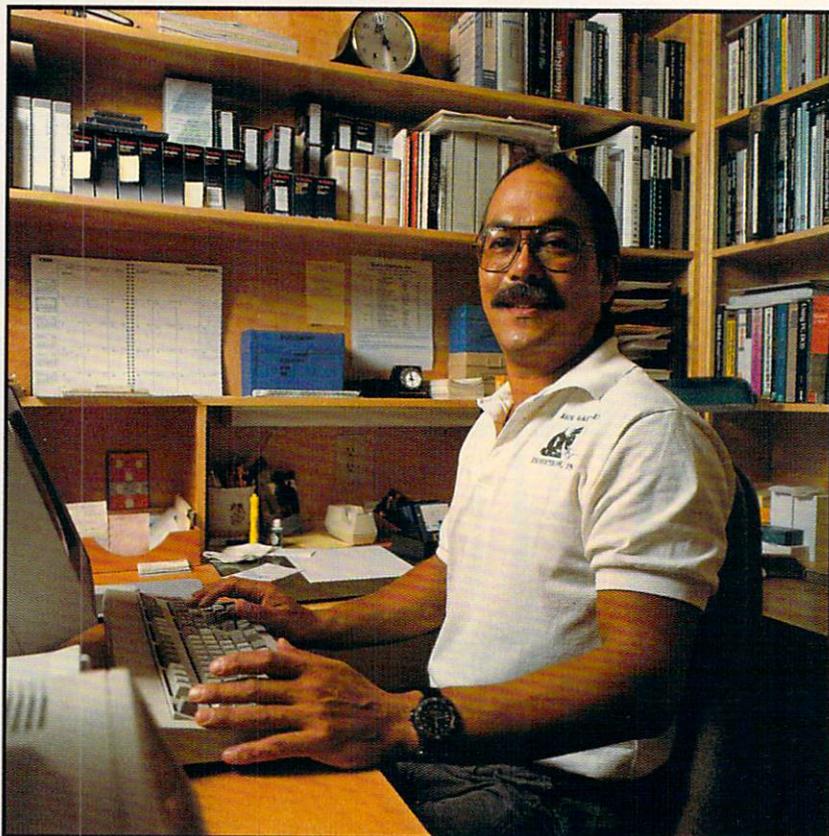
SHIPWRECK!

HOWARD MILLMAN

Like most people, when Rod Farb visits a national monument, he carries a camera or two, lunch, and maps. But unlike the rest of us, Farb also packs air tanks—because the places he visits are under water.

An avid underwater photographer and shipwreck researcher, Farb knew it was only a matter of time before he photographed and mapped the wreck of the Civil War ironclad, the USS *Monitor*. What Farb didn't know was how long it would take; it took four years just to receive permission to visit the *Monitor*.

Ordinarily, it doesn't take years to obtain a dive permit, but the *Monitor's* gravesite is special. Sunk in a storm off the coast of North Carolina in 1862, the ship rested undisturbed for 111 years. In 1973, National Oceanic and Atmospheric Administration (NOAA) researchers, working from Civil War documents, discovered the *Monitor* in 235 feet of water 16 miles off Cape Hatteras, North Carolina. ▸



Rod Farb plots his assault on the *Monitor* from his home office in Chapel Hill, N.C.

Initially, NOAA withheld diving permission, saying an air scuba dive (which doesn't use a mixture of helium and oxygen to prevent nitrogen narcosis) was too dangerous. Farb persevered, and in February 1990 he received approval to photograph the site. The Farb Monitor Expedition 1990 was finally a reality.

Farb knew the *Monitor's* depth would limit the bottom time for an air diver, so he would likely end up with less-than-perfect photographs. He was also concerned by the expedition's escalating costs, so he decided to use video as well as still photos. He could enhance the images later.

"The conditions were almost Caribbean-like," says Farb in describing the 80-degree temperature and 100-foot visibility at the ship's grave-site. But nature cooperates just so much. Even with the unusual water clarity, the *Monitor's* gray-and-black shell against the dark blue color of the water made for poor picture-taking conditions. Photos tended to wash out when taken from more than four feet (the effective range of the floodlights and strobe flashes).

Photographing at greater distances requires powerful, but bulky, floodlights—both a logistical and a financial problem. Farb searched for an affordable solution, and technology supplied one. If he couldn't enhance the site conditions, reasoned Farb, he could enhance the site photographs with a computer.

He eventually selected about 350 images from among the 275,000 frames of motion and still video the crew shot at the dive site. Back in his studio, he began to experiment with computer-aided image enhancement.

A PS/2 Model 80 provided the requisite computing muscle for the task. It was lent to the *Monitor* Expedition by IBM and included a 110MB hard disk and a VGA monitor. Data Translation's DT-2953 black-and-white capture card grabbed the images in realtime at a 640 × 480 resolution.

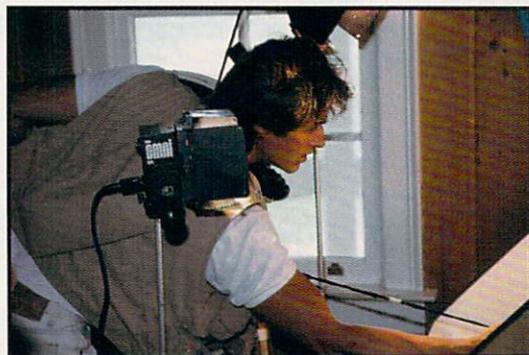
Typical of graphics-capture software, Data Translation's software proved effective for image capture and preliminary contrast adjustments. For more comprehensive enhancing, however, Farb needed dedicated image-editing software. He used two software applications for image enhancement, Bioscan's *Optimas* and Astral Development's *Picture Publisher*. Both *Optimas* and *Picture Publisher* run under *Windows 3.0*, so they were able to use all of the Model 80's 2MB of RAM.

Since he was dealing primarily in gray-scale images, Farb's goal was to generate enough contrast to distinguish the *Monitor's* framework from



Divers discussing the dive on the first trip to the *Monitor* site.

McKenney filming *Monitor* artifacts at the Cape Hatteras Lighthouse Visitors Center.



ROD FARB



McKenney giving directions.

the background of water. With *Picture Publisher*, he was able to accomplish just that. *Optimas* added component measuring and the ability to trace an object. A Hewlett-Packard Series II laser printer provided sharp hardcopies of selected images.

The enhanced images were saved in an 8-bit TIF graphic file format. To avoid running out of hard disk space, Farb compressed the stored TIF images to less than 300K (uncompressed TIF files typically take up about 975K). The compressed images were archived onto high-density 3½-inch disks to leave room on the hard disk to edit new images. *Microsoft Excel* provided the cataloging functions to track the collection.

Eventually, copies of all the maps, photographs, and documents will be given to NOAA for its archives. Farb will also write a book, his third that describes diving and photographing famous American shipwrecks.

When he's not exploring shipwrecks or writing about them, Farb works full time as a research associate in biochemistry at the University of North Carolina at Chapel Hill, "because," he says, "I have a mortgage to pay and occasionally like to eat." In addition to writing

the book, he intends to submit papers to technical journals that detail the cost savings along with other advantages of applying computer-enhanced imaging to underwater and terrestrial site photography. "With high-resolution video technology now available at a comparatively low cost, almost anyone can have access to it," he says.

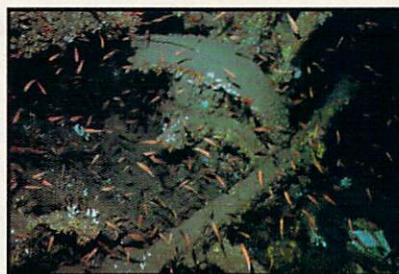
In addition to Farb's photographs, a film crew (Jack McKenney Film Productions) shot its own 16mm color film. The 16mm film was subsequently copied onto 1-inch video and edited for contrast, brightness, and color correction. Present plans call for the McKenney film to be shown by National Geographic on the Turner Network Television (TNT) in June.

Farb plans to return to the *Monitor* site in 1991 for further research. In the summer of 1992, he intends to photograph a World War II German U-Boat sunk off of Cape Hatteras.

I asked him why he bucks the bureaucracy, carries the cost, and deals with the danger. "I've been a scuba diver for 27 years," he says, "so as far as I'm concerned, it's just the natural thing to do. And North Carolina's coast, 'the graveyard of the Atlantic,' is the place to do it."

With hundreds of shipwrecks lying in North Carolina's coastal waters, Farb and his Model 80 have years of work waiting for them as they

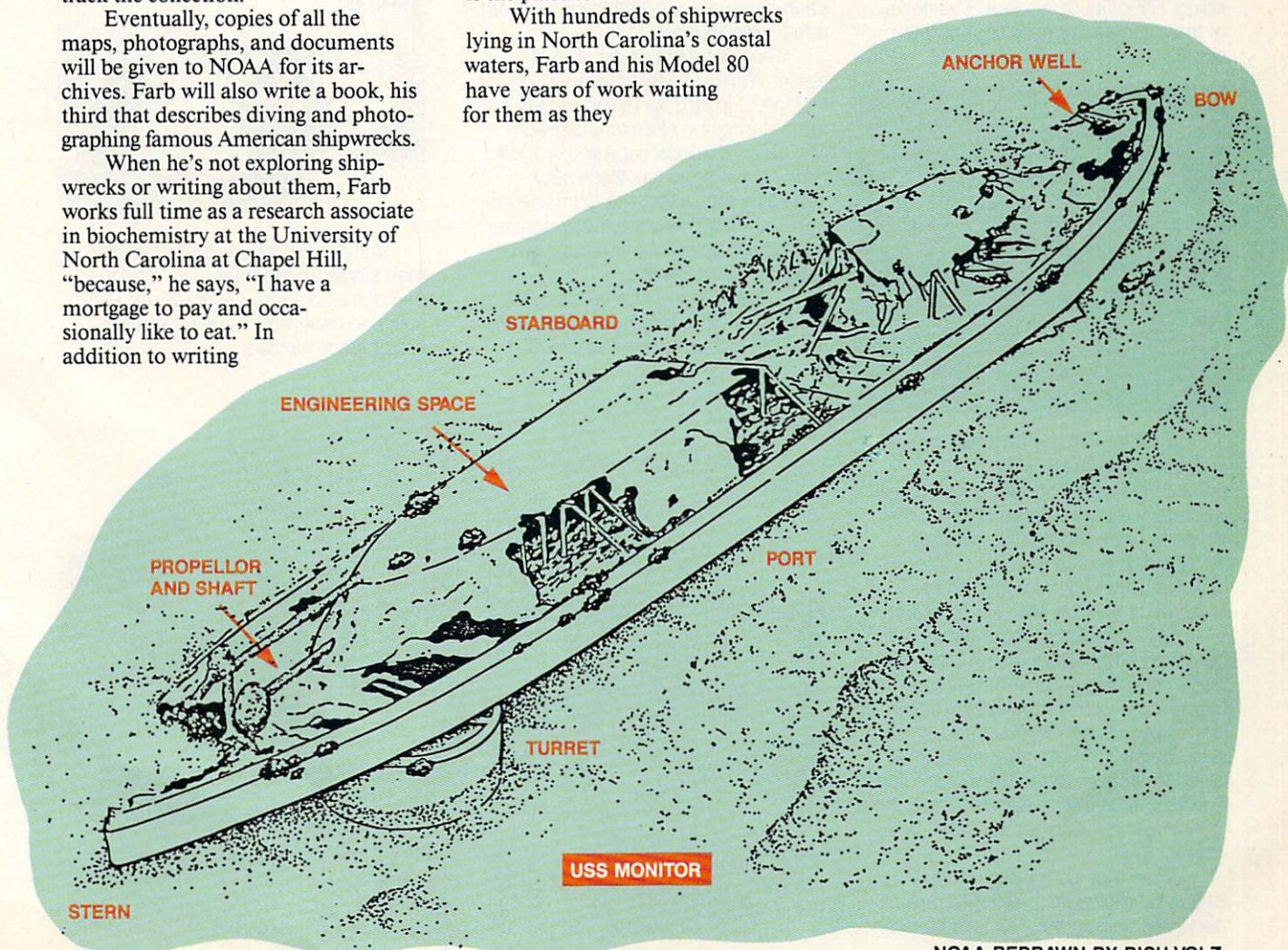
chronicle the final resting places of America's maritime legends. ▸



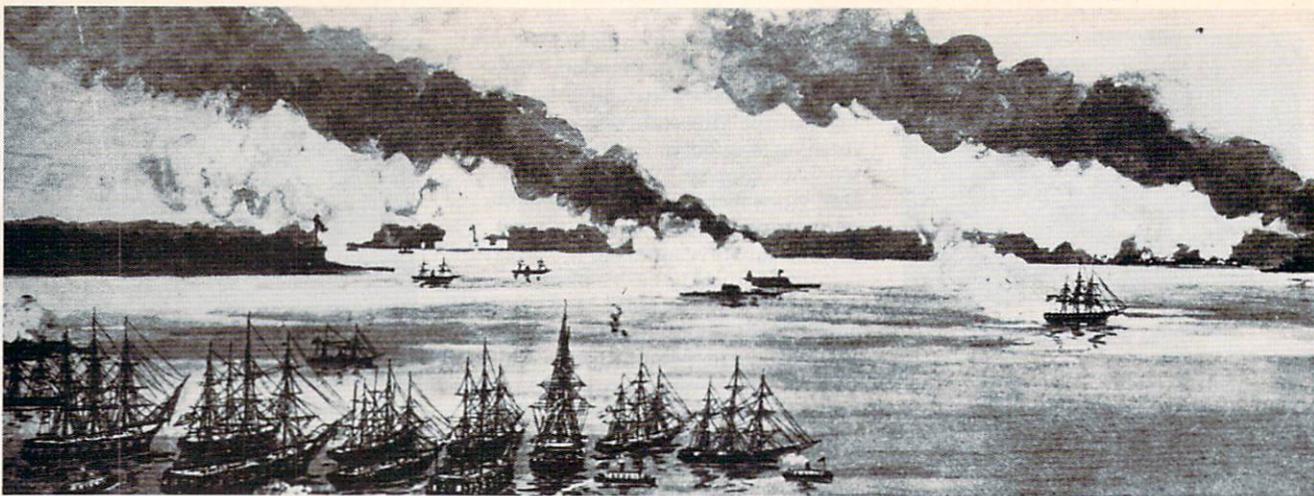
Remains of centrifugal pump on the port side of the engine room of the USS Monitor.



Starboard-side hull ribs and entry into the engine room of the USS Monitor.



NOAA REDRAWN BY RICH VOLZ



DEATH OF A SHIP, BIRTH OF AN ERA

The Union's incentive to construct the *Monitor* began not in the Navy's war room, but thousands of miles away on the Kinburn Spit in the Black Sea. Faced with a heavily defended Russian fort, France's Napoleon constructed three armor-plated floating barges. Towed into an offensive position, the barges' cannons swiftly decimated the once impregnable fortress, killing 175 of its defenders. The news of the *ironclads* quickly spanned the world.



In 1861, with the Civil War raging and rumors of the Confederacy's plans to build an ironclad, Union Naval Secretary Gideon Welles ordered the Union to construct its first ironclad. In a shipbuilding race with the Confederacy, the Union completed both the *Merrimack* and the *Monitor* on March 6, 1862. Unlike the *Monitor*, which was designed and built as an ironclad, the *Merrimack* was a converted steam frigate. Tied up for repairs at the Norfolk shipyard, the *Merrimack* was captured by the Confederacy in April 1861 when Virginia seceded from the Union. The USS *Merrimack* was renamed the CSS *Virginia*, and she became a prize of war.

When they compared it to the 310-foot *Merrimack*, naval warfare experts considered the 173-foot *Monitor*

puny. Still, in the ships' first and only engagement in March 1862, they fought each other to a draw. Sometimes separated by no more than a few yards, they bombarded each other for five hours straight, the cannonballs merely bouncing off the ships' iron plating. So effective was the armor that even when the ships were firing 168-pound solid steel cannonballs at each other, no one was killed, and only a few were injured.

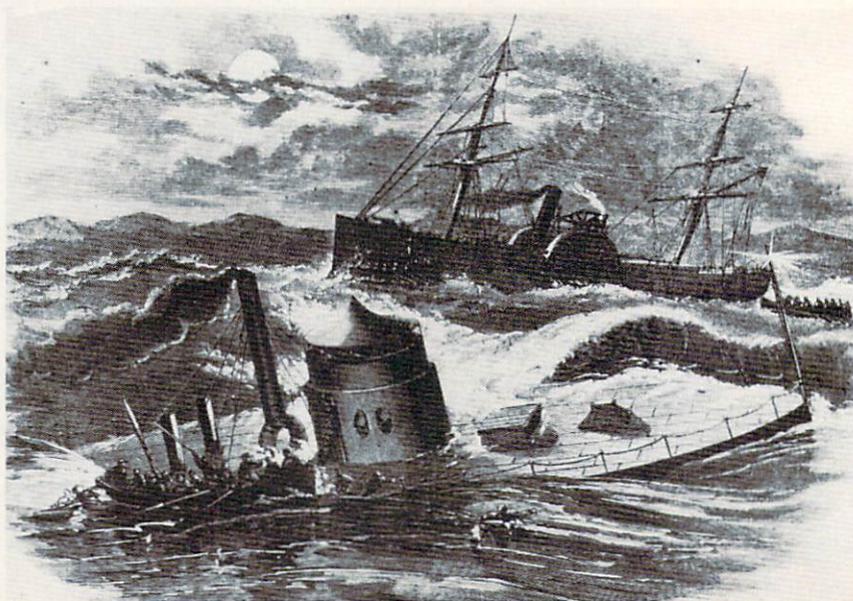
The two ships never dueled again. While the *Merrimack* was at the Norfolk shipyard for minor repairs suffered during the skirmish, General McClellan's troops captured Norfolk. Rather than have the *Merrimack* seized by the Union, the Confederate crew burned it down to the waterline and blew it apart with the gunpowder stored in its magazine.

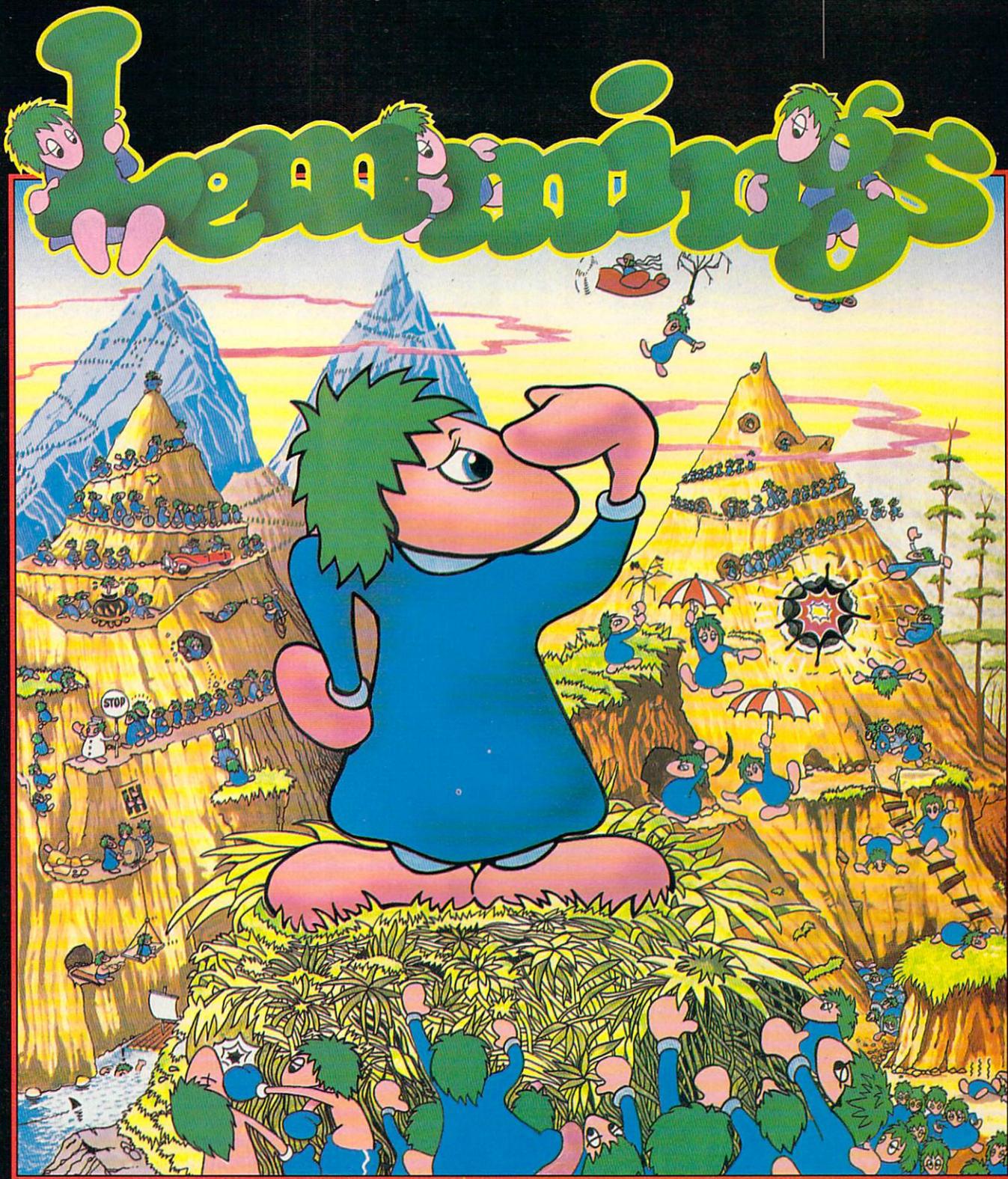
The *Monitor's* fate was equally ignoble. Once the threat from the *Merrimack* was neutralized, the Union

assigned the *Monitor* to picket duty off North Carolina. While being towed to her duty station, she flooded and sank in a fierce storm.



Although both were short-lived, their single engagement signaled the end of oak-timbered wind-driven vessels and ushered in a new, deadlier era of naval warfare. □





Save the Lemmings-
and

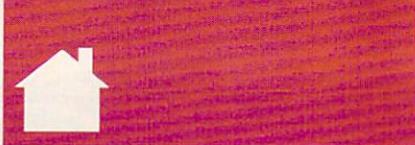


PSYGNOSIS

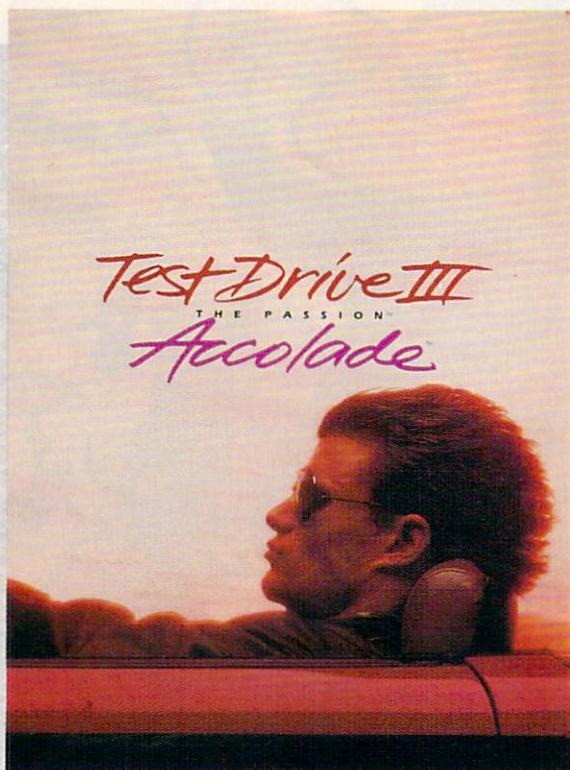
Commodore Amiga,
Commodore CDTV,
Atari ST
PC Compatibles

PSYGNOSIS
29 Saint Mary's Court,
Brookline, MA 02146
Telephone: (617) 731-3553

Circle Reader Service Number 168



ENTERTAINMENT



RACE AT HIGH SPEED THROUGH RAIN, SNOW, AND DARK OF NIGHT, FACING REALISTIC HAZARDS WITH UNSURPASSED GRAPHICS AND SOUND

What's the first thing that comes to mind when you hear the name *Lamborghini*? Exquisite styling? Extraordinary handling? Exhilarating performance? Or maybe excruciating insurance bills? Accolade's incredible new driving simulation, *Test Drive III—The Passion*, gives you all of these (except the insurance bills). It transforms your computer into the ultimate driving machine.

At the wheel of a truly exotic sports car, you race to win on northern California's challenging roads. With graphics like those of a high-end flight simulator, *Test Drive III* is the most realistic driving simulation I've played. The game's outstanding animated perspectives and simulation of high-speed car handling give a feeling of driving motion and speed. I developed a real passion for *Test Drive III*.

But those are just the preliminaries. *Test Drive III* generates unprecedented and innovative driving conditions for a simulation. Since your car is equipped with working headlights and windshield wipers, you can find yourself driving through the

COMPUTE CHOICE

WAYNE N. KAWAMOTO

INNOVATION



night or rain- and snowstorms. Watch out for cows in the road, crossing trains, other cars, and—the most hazardous of all—state troopers.

Test Drive III offers a fleet of true dream cars for your driving pleasure: The Lamborghini Diablo, the Chevrolet CERV III, and the Pinfarina Mythos. If these cars are mere transportation, then the Grand Canyon is a big pothole, and Lake Michigan is a puddle in the road.

The Diablo has a 48-valve V-12 with 485 horsepower and a top speed of 202 mph. The Mythos, a definite



Weather is the least of your worries.

looker with an innovative adjustable rear spoiler, can be yours for a mere \$2,516,250. Finally, the Chevrolet CERV III (Corporate Experimental Research Vehicle III) is an exotic and ultrapowerful cousin to the Corvette. Choose your wheels. The other two cars become your race opponents.

Test Drive III offers outstanding graphics. The opening segment has almost photograph-quality images on the VGA screen. The actual racing portion has excellent scenery (roads, mountains, and trees), and the car interiors are dazzling.

The graphic scenery changes from daytime into nighttime. You can use your headlights, but I found I could see just fine at night without them.

The adverse weather conditions are quite impressive. Suddenly rain starts falling. Drops accumulate on your windshield, obstructing your view until you turn on your wipers. In the mountains, it even snows.

As you drive, you can't anticipate what you'll run into next (literally). Cows stand on the roads at the most inopportune times. Trains casually cross your path. Once, far behind the other cars and with an oncoming train, I went for it. I slipped under the cross bars and raced across the tracks, narrowly missing the train engine. It was like a scene from an action movie, a maneuver no sane person would ever attempt in real life.

Although racing in *Test Drive III* is a reckless thrill ride, don't drive too roughly. Speeding over those hills will

ROUTE 66

FROM
Bandit Software™



ACTUAL EGA SCREENS



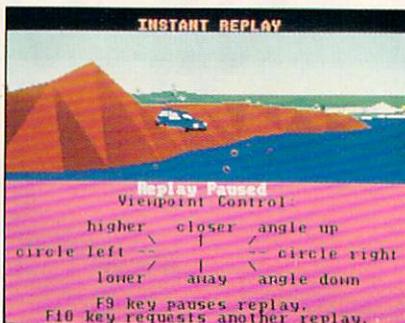
Requires IBM PC/XT/AT or compatible with EGA or VGA.
To order send check or M.O. for \$19.95 to
BANDIT SOFTWARE P.O. Box 301152, Portland, OR 97230.
Route 66, Scrambler 400, Smuggler Run CGA versions for IBM PC/XT/AT are @ \$9.95.
Dealer Inquires Welcome (503) 656-8545

Circle Reader Service Number 124

computer-controlled cars also receive tickets.

Sometimes the state troopers just follow you to keep you down to a legal speed. (Driving an exotic car seems to send the subliminal message *Ticket me.*)

To add to the realism, the game has multiple routes to each destination. In fact, you're free to go in any



Instant replay lets you review the action.

direction that you wish. Make U-turns, go off the road—it's up to you. There are typically two main roads to get to any destination, and there is a hidden shortcut in every leg.

Test Drive III provides adequate maps, but if you turn the wrong way, you can become hopelessly lost. Multiple routes and navigation add another dimension of fun to the game.

The game's instant-replay feature is also striking. Instant replay gives you an outside view of your moving vehicle. You can look from any angle—a full 360 degrees. You can also zoom in and out to get as close as you would like. I found it particularly fun to review crashing my car, flying over hills, and bouncing in the dips. I've never actually driven a car at 150 mph, but I thought the realism and detail were remarkable.

Controlling the car isn't difficult. Of course, no one drives a real car with a joystick or keypad (can you imagine typing in commands on the highway?), but you quickly learn the game's controls. Although the game supports a joystick, I found that I preferred the numeric keypad.

The program supports Ad Lib, MIDI, Roland, and CMS sound boards as well as Tandy for nice audio effects. Testing the Ad Lib, I found the rousing rock music made me feel as if I were driving one of those curvy mountain roads in a sports car commercial. You can also change the radio station to listen to pseudoclassical music or country music.

With the sound board, the engine noises, sirens, and crashes were quite good. After you drive a while, the songs can become tiresome. If you use the PC's internal speaker, the engine >

wreck your suspension system, and you can easily knock your front wheels out of alignment. Fortunately, at each checkpoint *Test Drive III* repairs your car.

Each of nine levels offers its unique challenge. You can race against computer-controlled cars, the clock, or two other human opponents.

You have five cars in the beginning, and you get two more for every checkpoint you reach. Although this may sound generous, I found that when I decided to go all-out to win, I often crashed. Fortunately, as in any simulation, you can walk away from the worst crashes and start all over.

The race consists of five separate legs. You start along California's central coast, move toward Monterey, and eventually end up at Yosemite National Park. The terrain subtly changes from oceanfront at the beginning to mountains at the end. Although you hardly have time to look, the scenery includes tunnels, lakes, traffic signals, the ocean, working lighthouses, houses, barns, power wires, trees, and readable signs.

Contrary to what you might think, you and your fellow road warriors don't own the road. You can get stuck behind other drivers poking along within the speed limit on single-lane roads.

Also, the state troopers—who *do* own the road—are watching for you. You have a radar detector to warn you, but the authorities only have to get close enough to take a picture of your license plate, and—click!—(say *cheese!*), you have a ticket. It's fun to try to outrun the authorities. But watch out; these guys will go as far as to set up roadblocks.



Pick from three dream cars.

The game's fine details are impressive. Once, when I was speeding along, a black-and-white passed by in the other direction. Looking in my rearview mirror, I could see the car making a U-turn, and before I knew it, I had a ticket. ("But officer . . . I was only going 182 miles per hour.") By the way, *Test Drive III* is fair—the

A NASCAR SIMULATION SO REAL YOU'LL FEEL A DRAFT

Throw it into gear and let it scream. Konami® presents the most authentic NASCAR endorsed simulation to race your computer circuits. Co-designed by *Winston Cup Champion Bill Elliott* and Distinctive Software,™ creator of *Test Drive™* and *The Duel™*, this tests your stock car mettle on eight official, perfectly scaled NASCAR tracks like Daytona, Talladega and Watkins Glen. Bit map graphics and a scaling technique are combined to create cars so real that you can even read the car's make when you go bumper to bumper.

Modify your stock car to each track then drop the hammer on Bill Elliott and a field of NASCAR's finest

in single races or compete for the Cup in the Championship Season.

This simulation has one of the most comprehensive instant replays ever. You can play back the action from six camera positions (with zooms) including a never before seen three quarter tower perspective. You'll also view your realistic pit team from a crew chief's perspective as you choose from seven different maintenance options and watch them scramble

to save seconds.

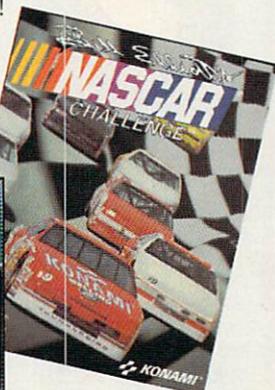
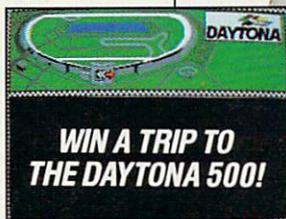
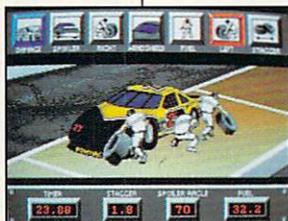
Then test your skills against a field of game players in Bill Elliott's NASCAR Challenge Contest. Send in your

highest score and you could win a trip for two to the 1992 Daytona 500 to meet Bill Elliott and compete with two other contest winners in a simulation race for a 1992

Ford Thunderbird Super Coupe! Even if you don't have the point standings for Daytona, you can win a Bill Elliott remote control stock car or genuine Bill Elliott/Konami racing jacket.

So buckle up for safety and buckle down for Daytona. Bill awaits your challenge!

Available:
MS-DOS
Coming soon:
Amiga & Mac



Contest open in USA and Canada. Void in Vermont, Maryland, Quebec and where prohibited. Contest ends July 21, 1991. See official rules in specially marked packages. Konami® is a registered trademark of Konami Industry Co., Ltd. Bill Elliott's NASCAR™ Challenge™ is a trademark of Konami Inc. Bill Elliott name and likeness and NASCAR trademark usage, by license of Advantage Management, Inc., Nashville, TN. Distinctive Software™ is a trademark of Distinctive Software Incorporated. Test Drive™ and The Duel: Test Drive II™ are trademarks of Accolade™ Inc. © 1991 Konami Inc. All Rights Reserved.

Circle Reader Service Number 213



EZCOSMOS™

PUTS THE UNIVERSE AT YOUR COMMAND



Zoom in on breathtaking views from our solar system and of deep space.



The status screen lets you choose the date, time and location.



The Trifid Nebula (M20) is just one of the fascinating full-color images.

Journey through space and time, exploring the vistas of the universe. EZCosmos reveals the entire celestial sphere for any date, time and location from 4000 B.C. to A.D. 10000. You can choose your location from one of 560 cities around the world, or you can input your own lat/lon to see the sky from anywhere on Earth.

Explore the vastness of the universe. EZCosmos displays more than 10000 celestial objects, including the sun, moon, planets, stars, constellation lines and deep space objects. Use the arrow keys or your mouse to position the box cursor on any object, or find the object and its location simply by typing in its name.

Discover the wonders of the universe. Zoom in on binary stars. Verify historical observations. Watch solar eclipse animations. Restrict the skyplot to display just the navigational stars. EZCosmos is informative, educational, useful and fun.

"With its intuitive interface, speedy performance, and enormous range of information, EZCosmos is an astronomical program that interests the widest range of users."

— PC Magazine

"EZCosmos is in a class by itself. It may be the best astronomy software for the personal computer."

— Computer Currents

EZCosmos 3.0 gives you the universe for only \$69.95. It's now available at leading retailers, including Egghead Discount Software® and Soft Warehouse®. This is the perfect gift for anyone.

If you order direct from FTS you'll receive:

- A 30-day, money-back guarantee (less the S/H charge of \$5).
- 2nd-day air shipping within the U.S.
- Free tech support and upgrade opportunities.
- A free subscription to Astronomy Magazine.

To order or for more information Call 1-800-869-EASY
Future Trends Software
 P.O. Box 3927 • Austin, Texas 78764
 512/443-6564

System Requirements: IBM-compatible; 512K RAM; VGA, EGA, CGA or Hercules® monitor.

©1990 Astrosolt, Inc. "EZCosmos" is a trademark of Astrosolt, Inc.

Circle Reader Service Number 173

pressed I was, years ago, with the first *Test Drive*. It let you race the clock on a twisting mountain road and featured a radar detector and cops who would give you tickets. The second in the series, *Test Drive II—The Duel*, improved the graphics and let you race other vehicles. Now, *Test Drive III—The Passion*, with its graphics, sound, and action, just plain blows your doors off.



Shift down before trying to make sharp turns or risk going offroad.

Accolade offers disks with extra cars and scenery to supplement *Test Drive III*. The add-on features the Acura NSX and the Dodge Stealth R/T Turbo in a race through New England in the fall. Starting at Cape Cod, the race ends at Niagara Falls (I can hardly wait to drive my car over the falls to see what happens).

Just keep in mind that it's only a simulation. I found that it was easy to get caught up in the action, and I'm a 55-mile-per-hour kind of guy. There is indeed something very alluring about fast cars. Just don't get any ideas about lead-footing it down the expressway on your next (real world) car outing. It's a hard habit to break.

With excellent graphics, sound, and realistic action, Accolade gives us our minimum daily requirement of excitement and one of the best driving simulations on the market. I highly recommend *Test Drive III—The Passion*, and I wouldn't steer you wrong.

Playability	★★★★★
Documentation	★★★★
Originality	★★★★
Graphics	★★★★★
Sound	★★★★

Test Drive III—The Passion

IBM PC and compatibles; 640K RAM; 8 MHz or faster processor; joystick optional; supports Ad Lib, CMS, Sound Blaster, Roland MT-32/LAPC-1, and Tandy 3-voice—\$59.95

ACCOLADE
 550 S. Winchester Blvd.
 San Jose, CA 95128
 (408) 985-1700

continued from page 54

sounds are all you'll hear during the race. I think this was a wise decision on the part of the programmers.

You can also adjust the detail of the graphics to the speed of your computer. If you have a slower computer (Accolade recommends that you have at least an 8-MHz computer), you'll want to use less detail to keep the action from becoming ponderous. In high-detail mode, you'll see more trees and mountains, and you'll be able to see objects in the distance sooner.

The game is very easy to learn (you won't spin your wheels). The documentation, written to look like a

trip planner from an automobile club, is clear and explains everything. Also, the program was simple to install.

Copy protection requires that you type in a number from a code wheel. Although software publishers must protect their products, the car keys you have to match on the code wheel aren't always easy to differentiate. Sometimes it took a couple of tries to get it right. Copy protection should not be ambiguous.

Test Drive III is the culmination of an evolution. Unlike movie sequels that get worse with each new number, the *Test Drive* series gets better.

I can vividly recall how im-

PREVIEW THE HOTTEST NEW COMPUTER ENTERTAINMENT SOFTWARE FOR ONLY \$12.95!

INTRODUCING COMPUTE MAGAZINE'S ENTERTAINMENT SOFTWARE SHOWCASE

Compute's unique video demo is the smart way to choose the software you *really* want. It's *Easy!* Just put Compute's Entertainment Software Showcase video into your VCR*, press "play" and you are on the way to sampling the sights and sounds of 24 of the latest products from today's top software publishers. All for only \$12.95 plus postage and handling! Order your video today by calling toll free or using the coupon below.

Some of the exciting previews you'll see are:

Ad Lib

- Music Synthesizer Sound Card

Lucasfilm Ltd.

- Secret Weapons of the Luftwaffe
- The Secret of Monkey Island
- Loom
- Indiana Jones and the Last Crusade
- The Graphic Adventure Night Shift

Origin

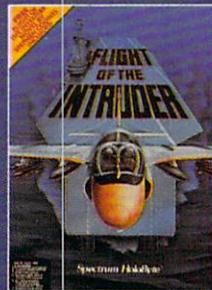
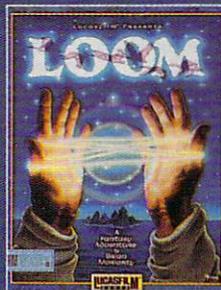
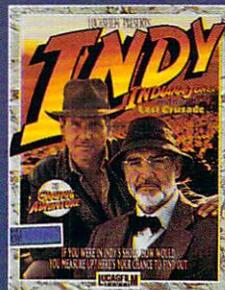
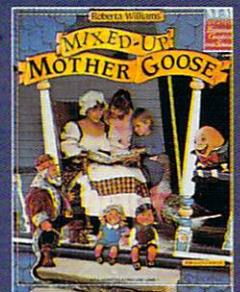
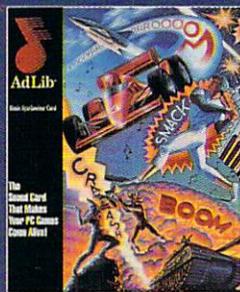
- Wing Commander
- Savage Empire
- Ultima VI
- Bad Blood

Sierra On-Line

- King's Quest V
- Space Quest IV
- Fire Hawk: Theuder - The Second Encounter
- Mixed-Up Mother Goose
- A-10 Tank Killer
- Rise of the Dragon
- Stellar 7
- Red Baron
- Heart of China

Spectrum HoloByte

- Flight of the Intruder
- Faces... TRIS III
- Stunt Driver
- Falcon 3.0
- Avenger A-10



*VCR with VHS format required. Many programs previewed available in MS-DOS format; others available for multiple machines.

CREDIT CARD ORDERS ONLY CALL TOLL FREE: 1-800-535-3200

(Visa or MasterCard Accepted)

Copyright © 1990 Compute Publications Int'l. Ltd.

Yes! I want to preview hundreds of dollars of the latest entertainment software products from the best publishers. I've enclosed \$12.95 plus \$3.00 postage and handling, and will receive over \$70 worth of valuable entertainment software coupons.

Name _____
 Address _____
 City _____ State _____ Zip _____

MasterCard or Visa accepted
 Credit Card # _____
 Expiration date _____ Signature _____

_____ Amount
 _____ Sales Tax*
 _____ Add \$3.00 shipping and handling
 for each cassette ordered
 _____ Total

Check Money Order
 Send your order to:
 Compute Entertainment Software Showcase
 PO. Box 68666
 Indianapolis, IN 46268

C391

*Residents of New York, Connecticut and North Carolina add appropriate sales tax for your state. All orders must be paid in U.S. funds drawn on a U.S. bank MasterCard or Visa. Please allow 4-6 weeks for delivery. Offer expires April 30, 1991.

VALUABLE
**BONUS
 COUPONS**
 ENCLOSED!



GAMEPLAY

O R S O N S C O T T C A R D

The original *SimCity* graphics were just fine—I never thought they needed enhancement. So why has Maxis come out with these cityscape disks for *SimCity*? Because after you've spent enough time in it, any computer world is going to seem small. When the new disks arrived, I hadn't played *SimCity* in months. In game after game, I had reached the edges of the gamescape; I had filled the available space. Except for occasional tinkering, my work—and therefore my play—was done.

It was a bit disappointing to learn that the new cityscapes made no difference at all in gameplay. Seeing Ancient Asia made me want to play a game that would simulate ancient Asian community formation. The new disks brought only visual change.

Yet it was amazing how they freshened this beloved old game. At any point in the game, you can switch from one graphics set to another. You can start building a medieval city, then switch it to an ancient Asian one—or a moon colony. In Future Europe, the rail transit system becomes a monorail; in the Future USA cityscape, it's an elegant-looking tube.

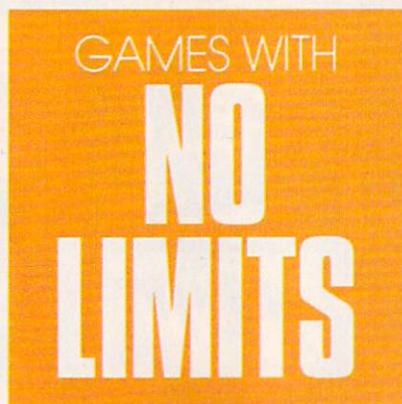
The idea of refreshing an old game by changing the gamescape is not a new one. Flight simulators have been doing it for years; once you've mastered the flying, you have to have somewhere to go. Not long ago, the makers of *Populous* also introduced new landscapes that were every bit as creative and clear and fun to play on as the new *SimCity* graphics. You can get new golf courses for *Mean 18*, and no doubt other game companies have breathed new life into old games by updating the gamescapes.

With flight simulators and golf games, the new landscape means a new game. It isn't just a visual difference—there are new challenges.

With *SimCity* and *Populous*, the new gamescapes make no difference in gameplay—but that's mostly because in both of these games, the player already has enormous power to create (or uncreate) the terrain.

The boundary that really frustrates me is still unchanged: the edge of the map. When you come to the end of the allowable landscape, you can go no farther.

Of course there must be some boundary; neither computer memory nor the gamewrights' time is infinite. Golf games have a natural boundary; you expect no more than 18 holes per course. With *SimCity* and *Populous*, however, the boundary is more arbitrary. In the real world, the landscape goes on and on, but in the game a sim-



plified map of the entire world has to fit inside an information window on a very small screen.

I can't help but wish for more, though. Why couldn't the *SimCity* information windows scroll over a virtually infinite landscape, created on the fly as the city grows? The game could ask you during setup how many megs of hard disk space you're willing to give to the game and let that determine the boundary.

If we game players wanted to have an experience controlled by somebody else, we could rent a videotape. Gamewrights should try to empower us as players, not limit us unnecessarily. Someone at every game design company should have a full-time job of saying, "Why aren't we letting the player decide that?"

Then we wouldn't have useless, annoying, and unnecessary limits. *Railroad Tycoon*, for instance, is a

game that does most things brilliantly, such as the way the geography of North America and Europe is transformed with each new game. Yet the game has frustrating boundaries, too.

The ceiling on the number of stations and trains is a constant and unrealistic annoyance, but the fact that it's set at 32 suggests that they're using a four-byte register for some program manipulations—a reasonable breakpoint in programming. You can work around it somewhat when you take over other railroads and let them handle expansion into some areas.

Another limitation feels like pure meanness on the part of the gamewright, though again, I'm sure someone had a good reason for it. In *Railroad Tycoon*, you're automatically forced to retire from the game after a hundred years—even when your corporation is doing well (or at least as well as can be expected when you can't run more than 32 trains at a time).

Why should the gamewright decide that a game must end after 100 game years? Why can't players choose to go on for another 100 years—or 1000, if we feel like it? The retirement age is simply a device for giving you a final score. So why not have the player be forced to retire every 50 years, save that score on the vanity board, but then let the player be the new president of the same company? That way the vanity board will mean something—and the player can keep developing the same railroad.

When they let such unnecessary limitations creep into a game, gamewrights reveal that they don't yet understand their own art. They've chosen to work with the most liberating of media—and yet they snatch back with their left hand the freedom they offered us with their right.

Remember, gamewrights, the power and beauty of the art of game-making is that you and the player collaborate to create the final story. Every freedom that you can give to the player is an artistic victory. And every needless boundary in your game should feel to you like failure. □

TAKE OVER THE WORLD.



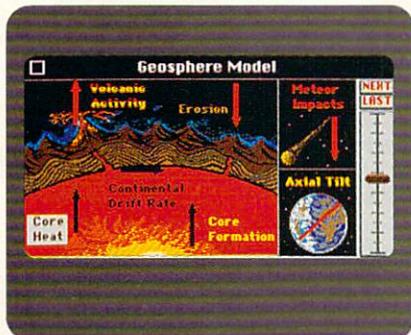
You get seven world scenarios plus unlimited random planets. So you'll never be strictly earthbound.



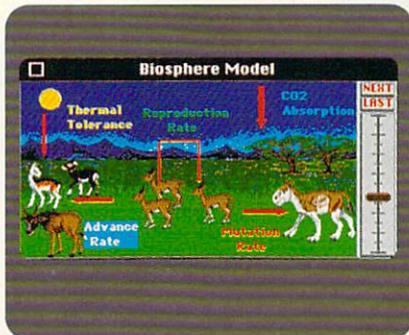
Mess with the world and it becomes an unhappy place to live. When you're smiling, though, the whole world smiles with you.



SimEarth plays all your favorite cataclysmic hits. Including volcanos, meteor strikes, earthquakes, and continental drift.



Find out what precisely makes your world tick. And what'll make it stop ticking.



Use your animal instincts and your planet will thrive, producing a rich abundance of life.



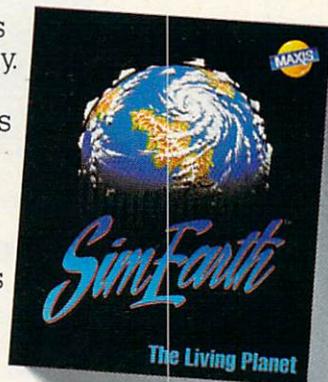
Make the wrong decision and you could wipe out life as you know it. Hey, nobody said the job was going to be easy.



The only way to follow an act like SimCity®-1990's runaway Number One game—is to think globally. The result is SimEarth™

Instead of a city to run, SimEarth gives you the reins to the entire planet. Evolution, continental drift, climate, atmosphere, hurricanes, nuclear fallout, acid rain, civilization, and a bunch of other disasters. All the cool stuff you need to rule the world.

Play SimEarth to the end of time. About 10 billion years or so, give or take a millenium. Getting raves everywhere, SimEarth is indeed destined to take over the world.



continued from page 10

and to popular word processors and desktop publishing packages. The prices shown are list prices. If you can locate a local discount software store or a mail-order house that carries these programs, you will probably be able to get a better price.

Calling All Modems

Because of GENie and Prodigy's low-cost offers, I'm considering going online for the first time. Prodigy's offer of a low-cost modem sounds attractive, but is \$149 for a Hayes modem really a good price? Are reviews of modems forthcoming in *COMPUTE*?

I have another problem: My NEC 5200 Pinwriter is equipped with the color option kit, but it won't print in color from *WordStar Pro 5.0*, even when colors appear in the page preview. Is color text available from *WordStar Pro*?

HSIN TU
NORTH HOLLYWOOD, CA

We recommend that you buy a 2400-bps modem. Internal modems cost significantly less than external modems. An internal modem requires an open slot in your computer.

Though *COMPUTE* hasn't devoted much space to reviewing modems in the past, telecommunications is now such a burgeoning part of personal computing that we expect to cover them more in the future.

The problem you're having with your printer should be easy to fix. Using a color printer is only half of the battle to get colored ink on paper; you must also configure your software to send color information to the printer.

To get your NEC 5200 Pinwriter to print in color, change your printer driver to the Epson LQ 2500 driver. A black-and-white driver doesn't know how to send the appro-

prate codes to generate color, as you have discovered.

Finding Simulations

Along with the writer in the November "Letters," I am also interested in Civil War simulations. The most recent PBS series on the war has piqued my interest. In your response, you recommended simulations by SSI and SSG. I am having trouble finding the software. Could you help me?

FRANK CARNEVALE
CRANSTON, RI

You'll find SSI games at several software chains, such as Babbages, Software Boutique, and Egghead. To order them by phone, you can call distributor Electronic Arts at (800) 245-4525. To order from SSG, call (415) 932-3019. You can also use the SSG fax number to order products; call (415) 933-4327 and supply your address, phone number, and VISA or Mastercard number and expiration date.

Image Polishing

Your article in "Workplace" (January 1991) reminded me of the trend several years ago to spruce up job titles, such as garbage collector (everybody knows what that is) to Sanitation Engineer (???), or auto mechanic (again, you know what an auto mechanic is) to Mobile Engine Service Technician. Maybe we should return to common-sense job titles rather than making an attempt to glorify our work with a fancy-sounding name.

By the way, I am a Law Enforcement Technician with Limited Constraints (police officer with jurisdiction inside city limit boundaries).

HAROLD NEWBROUGH
SINCLAIR, WY

Do you have questions or comments? Send your letter—with your name, address, and daytime phone number—to *COMPUTE Feedback*, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. Due to the volume of mail received, we can't respond individually to questions. We reserve the right to edit letters for clarity and length.

© 1990, AR is a registered trademark of Acoustic Research.



Bytes.



A Mouthful.

Love bytes? Then you'll be absolutely smitten with Powered Partners amplified speakers coupled with your computer. Composers hear each note played in true high fidelity sound. Computer games sound more exciting. Say Partners and you've said a mouthful. Free literature, 1-800-288-AR4U. **Powered Partners. Superior Sound Simplified.**





PC VIEW

C L I F T O N K A R N E S

Many thanks to those of you who mailed in the readership surveys from the November 1990 issue. Although a few surveys are trickling in, we have the lion's share, and the results are surprising.

The first thing we look at on each survey is the kind of equipment you're using. This year, there's a notable trend toward higher-end hardware. The surveys show a marked increase in both 286 and 386 machines, and the number of you using laptops has almost doubled, from 6 percent in 1989 to 10 percent in 1990. Because almost half of you have 286 or faster systems, we're looking for more programs that can take advantage of your PC's speed. And because of the rise in laptop use, we're going to test all the programs on each disk to make sure they give good results on laptop systems.

The most dramatic hardware change, however, is in video displays. Last year, CGA was the leading graphics adapter with 46 percent, but this year it's a distant second to VGA, which clocks in at a strong 41 percent (CGA garnered a 27-percent share). Monochrome and Hercules displays are both down two points from last year with 18 and 5 percent respectively, and EGA use has fallen from 25 percent in 1989 to 14 percent in 1990. We'll continue with our strong support for CGA, EGA, monochrome, and Hercules, but be sure to look for more VGA goodies on upcoming disks and more VGA-related features in the magazine.

When it comes to peripherals, we found just what we expected after seeing the high-end CPUs and displays. For

example, hard disks, which just a year or two ago were luxuries, have moved from a 70-percent share last year to 79 percent. Mice are fast becoming the most-used accessory, with a leap from 52 to 58 percent. And 3½-inch drives, which have always lagged far behind 5¼-inch ones, spun their way to a whopping 57 percent, which means that well over half of you have these smaller, higher-capacity drives.

Modem users, always a large group, have climbed from 48 to 52 percent. And laser printers have inched up in popularity from 8 to 11 percent. With recent reductions in laser printer prices, we expect to see a dramatic rise in laser printer use in 1991.

Memory, which used to cost a small fortune, has really come down in price lately, and that fact is reflected in the survey's results. Just over 72 percent of you have 640K or more, and 40 percent indicated that they

have expanded or extended memory. Look for programs and features on memory management in the coming months to help you take advantage of all that RAM.

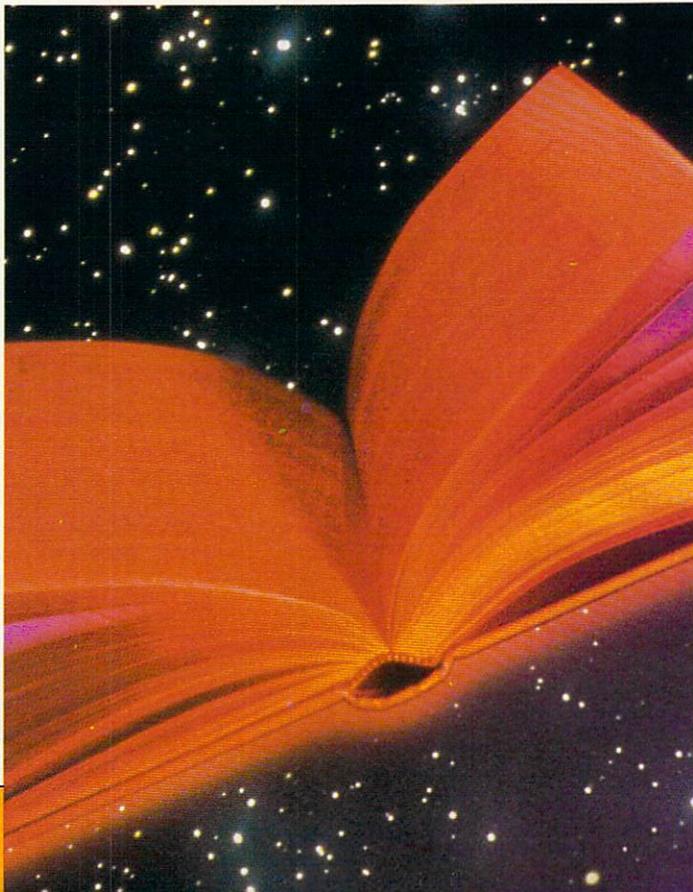
Programmers cast a strong vote for BASIC as their favorite language, the same winner as last year. And just under 15 percent of you stood up as *Windows* users. With *Windows* 3.0 looking like such a sure thing, we expect to see a dramatic rise in the number of readers running that operating environment in 1991.

When it came to the magazine's columns, you showed us a clear consensus: Technical tips and news are at the top of your list with "Hot Tips," "Feedback," and "News & Notes" as the top three picks. Close behind these three are "IntroDOS," "PC View," and "Power Up."

As for your favorite PC topics, the ranking is identical to last year. At the head of the list is disk manage-

ment and MS-DOS with upgrading running a close second. Next come new technologies, word processing, and new hardware. Games, graphics, and programming are all tightly packed behind.

As you might guess, this information is more than just casually interesting to us. We use survey results like these almost every day when we choose the programs for a PC disk or when we select features or columns for the magazine. So when you see the next readership survey, fill it out and send it in. It's the best way of ensuring that the magazine and disk continue to have the kind of information and programs that you want most. Stand up and make your voice heard. □



Do you know the incredible learning a foreign

Whether for travel, business or entertainment, conversing in a foreign language will open up whole new worlds to you. And now there's a method that makes learning a foreign language simpler. Painless. And faster than you ever thought possible. The first 15 tapes of this package are the very same tapes used by the U.S. State Department to train career diplomats.

They're tried and proven effective. But it's the second 15 tapes utilizing the latest *European* learning techniques that make this system so special. This marriage of two teaching concepts literally gives you two courses in one... the best of both worlds in language instruction.

			
SPANISH 30 cassettes plus triple bonus	FRENCH 30 cassettes plus triple bonus	GERMAN 30 cassettes plus triple bonus	ITALIAN 30 cassettes plus triple bonus
\$245.00	\$245.00	\$245.00	\$245.00

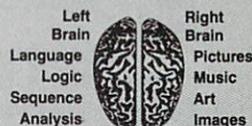
BREAKTHROUGHS in language technology by European learning researcher **Dr. Georgi Lozanov** are the basis of the remarkable

"American managers with language skills open more doors."

Wall Street Journal Editorial
July 25, 1988

Accelerated Learning Language Series. The series is so effective, we guarantee you'll be hearing, reading, understanding and beginning to converse in your new language in 30 days - or your money back.

This unique new system links the left side of the brain (language and logic) with the right side of the brain (music and art) for dramatically increased retention and learning speed. In the same way you remember the words to a song with little or no effort, Accelerated Learning



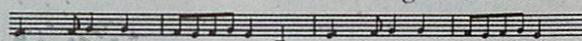
"(the superlearning method is) fascinating... the results are extraordinary."

Prof. Lawrence Hall
Harvard University

uses Baroque music to "un-stress" the learning process.

Boost your memory with music.

Have you ever wondered why you can remember the words to a song with little or no conscious effort? Music stimulates right brain



A - lou-et - te Gen-tile A-lou-et - te. A - lou-et - te je te plu-me-rai.

activity. Speech is a left brain activity. When the two are combined, as in a song, you have left/right brain linkage. You've used your whole brain, so your memory is much stronger. Accelerated learning uses the same technique. You will learn the language as *stresslessly* as a child does, by hearing new vocabulary and phrases in alternately loud whispered, and emphatic intonations, all accompanied by slow, rhythmic music. The effectiveness of Baroque music as a memory aid is well documented and leaves you feeling alert and rested.

"American ignorance of other tongues has been hurting American business executives in their competition for (overseas) markets."

The New York Times
September 5, 1988



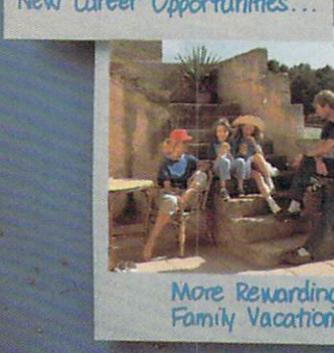
Better Business...



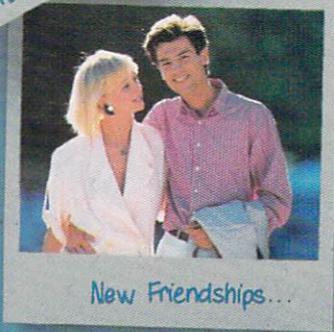
Smarter Vacation Shopping...



More Productive Travel Time...



More Rewarding Family Vacations...



New Friendships...

rewards of language?

			
JAPANESE 30 cassettes plus triple bonus	CHINESE 30 cassettes plus triple bonus	RUSSIAN New! Available Jan '91	BRAZILIAN Portuguese New! Available Jan. '91
\$265.00	\$265.00	\$265.00	\$265.00

Two language courses in one.

Utilizing these untapped mental capacities of your learning ability is the basis of this unique

course. Each language lesson contains a *study* tape and a *memory* tape. The study tape (along with the U.S. State Department text) explains rules and grammar of the new language. These are the tapes used by the **Foreign Service Institute** to train career dip-

lomats. The memory tapes correspond one-on-one with the study tapes — and contain the accelerated learning memory and vocabulary drills that take the boredom and drudgery out of learning.

Our 'comfort' guarantee.

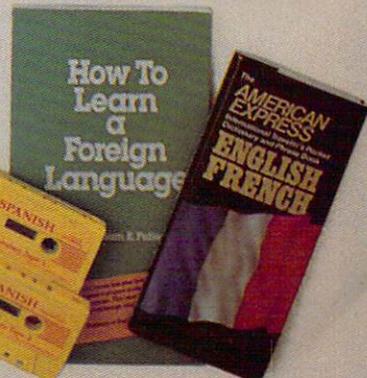
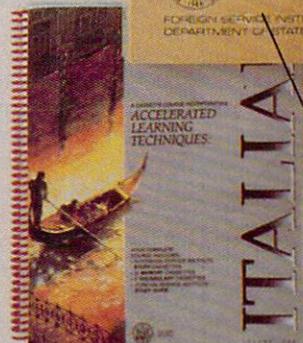
To correctly converse in a foreign language you must understand the meanings and intent of a native speaker. If after 30 days of listening to the study and memory tapes you are not beginning to comfortably understand, read and converse in your new language, then return them for a *full refund*.

"I decided to concentrate on Spanish around 1965, and after I became proficient in 1967, my business with Spanish-speaking countries increased from nothing to over twenty million dollars yearly."

André Crispin
Industrialist

FREE! TRIPLE BONUS OFFER!*

Order your language course now and you'll also receive a triple bonus: An American Express International Traveler's dictionary in the language you choose to study, the 100-page book *How To Learn A Foreign Language* (used by the Peace Corps & CIA), and two extra 90-minute vocabulary tapes. This is in addition to your 15 government study tapes, 15 memory tapes and workbooks — and all for the price you would normally pay for just the 15 basic course tapes. Order now and we'll rush your tapes and bonus to you. Remember, we guarantee you'll be comfortable speaking the language in 30 days!



Ordering Information

CALL TOLL FREE WITH YOUR CREDIT CARD ORDER ORDER TODAY

Or send your check, money order (or institutional purchase order) to:

PROFESSIONAL CASSETTE CENTER
DEPARTMENT CPF
350 W. COLORADO BOULEVARD
PASADENA, CA 91105

1-800-85-AUDIO

Please add \$9.00 shipping & handling.
California residents add 6-3/4% sales tax.
Need it Tomorrow?
Ask Operator for Express Service!



***P.S.** Best Value! With a total of 32 cassettes plus study material, this offer represents the best value available today in language instruction. Compared to other programs, the Accelerated Learning series outperforms them with twice the audio and 20 times the study materials.

Another language is a major social and business asset.

*** Bonus Offer!**



NEWS & NOTES

Okidata Throws Out Complexity

The simpler the better. That's the way things should be. Okidata seems to agree. Its new light-emitting diode (LED) printers use an entirely new technology that literally throws out complex old technology such as laser beams, lenses, and rotating optics. Instead, the new printers use LED print elements that have no moving parts, offer a straight paper path, and allow for a much smaller footprint.

Okidata already offers four LED Page Printers: the OL400 LED Page Printer, a \$999 4-page-per-minute (ppm) printer designed for personal and small-business use; the OL800 LED Page Printer, a \$1,500 8-ppm printer designed for office use; the OL820 LED Page Printer, a \$2,000 8-ppm scalable fonts printer that's reportedly 30 percent faster than the LaserJet III; and the OL840 LED Page Printer, a \$3,000 full Adobe PostScript 8-ppm printer for high-end desktop publishing applications in both Apple and IBM computing environments.

These new Okidata printers are available at authorized Okidata dealers. To find the dealer nearest you, call (800) 800-7333.

How Much Is That Videogame in the Window?

Now you can have fun with *Microsoft Windows*. Microsoft has released the *Microsoft Entertainment Pack for Windows*, offering a great diversion from serious work by providing seven popular games. Each game was developed by *Microsoft Windows* programmers in their spare time. They became so popular at Microsoft that the company decided to market the package commercially.

The *Microsoft Entertainment Pack* includes *Tetris*, the *Microsoft Windows* version of the popular Soviet arcade game; *Taipei*, a complex Oriental game of skill and chance that's similar to three-dimensional dominoes; *MineSweeper*, a test of logic skill; *TicTactics*, which pits you against the computer in three-dimensional four-row tic-tac-toe; *Golf*, a solitaire game where winning is tougher than getting a hole-in-one; *Cruel*, a solitaire challenge that easily lives up to its name; and *Pegged*, a version of the traditional peg-jumping game that looks deceptively simple.

Although the primary benefit of the *Microsoft Entertainment Pack* is fun, it also can help new *Windows* users become familiar with the *Windows* environment. And in addition to the seven fun-filled games, there is *IdleWild*, a screen saver that lets you turn your screen into a fireworks display, outer space, random colors, or complete blackness. With all of this going on, you have to wonder—when did Microsoft's programmers have any time for work? But you won't wonder after you give these games a try—you'll be too busy having fun of your own to care.

The *Microsoft Entertainment Pack for Windows* is available for \$39.95; contact Microsoft at 16011 NE 36th Way, Box 97017, Redmond, Washington 98073 for further details.

An Arc Welder for Your PC

System Enhancement Associates' (925 Clifton Avenue, Clifton, New Jersey 07013) latest archive program, *ARC + PLUS 7.1*, acts like an arc welder. It not only joins multiple files into single files and compresses them in the process—it also endears itself to the user of the program with a new *Windows*-like pull-down menu system. Previous versions of *ARC* were available as shareware. This version is not. It is, however, totally compatible with all the previous shareware versions of *ARC* and offers enough added features and ease of use to be well worth your consideration.

Improvements include a user interface with pull-down menus that makes the new *ARC* program work a lot like a hard disk management package, in addition to mouse compatibility, tighter compression, and increased speed. The program allows you to make regular or self-extracting archives of your files and offers password protection if you need it. You can even use *ARC + PLUS 7.1* to back up complete subdirectories and whole disks onto multiple disks. The program can also be run from the DOS command line, so it can be easily invoked from batch files or a SHELL command from within a program.

Typical savings are 53 percent for word processing files, 71 percent for spreadsheets, and 76 percent for databases. Compressing program files is typically less advantageous. The suggested retail price is \$89.95, but registered users of any previous version of *ARC* can upgrade to the new version for only \$34.95. ▶



A NEW WIZARDRY

Ten years ago, Wizardry set the standards in FRP. Now, after two million copies have been sold and 25 international awards have been won, Bane of the Cosmic Forge raises and redefines those standards. This new Wizardry, the truest simulation ever of Fantasy Role Playing, will push your computer, your mind and your sense of adventure to their very limits.

True FRP Simulation!

Like a true game master, Bane of the Cosmic Forge rolls the dice, consults its charts and applies the rules. From the 400 items of armor and weaponry researched for authenticity – right down to their weights – to the realistic combat structure – incorporating Primary and Secondary attack – everything, absolutely everything, is calculated.

Full-Color, Animated Graphics!

You'll see swords swinging before your eyes; creatures of all shapes and forms will move before you; spells coming from your magician will swirl through the air. You'll walk under gargoyle-laden arches and watch candles flicker in their sconces.

Your PC's internal speaker will play all of these digitized sounds without any add-on hardware . . . swords swinging, monsters venting their anger and spells letting fly.

Uncompromising Variety!

- 11 Races
- 14 Professions with Ranks
- Dozens of Weaponry, Physical and Academia skills
- Multiple Fighting and Parry Modes
- Ranged, Primary and Secondary Weapons
- Six spellbooks, 462 spell combinations
- Multiple Armor Classes

Artificial Intelligence!

Find the ancient and cryptic dwellers who can aid you in your quest. Talk to them as you would your friends – in sentences. Only through the power of the latest in programming technology could the full dimensions of conversation this real be possible.



SIR-TECH

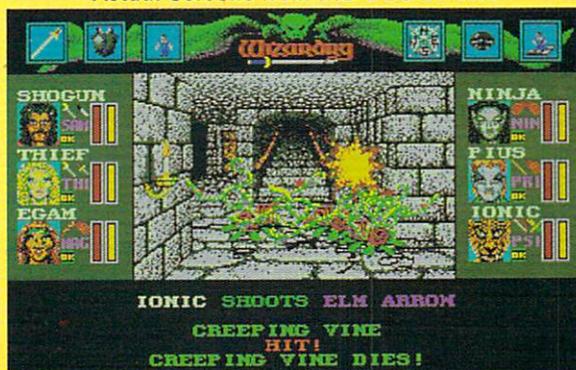
P.O. Box 245, Ogdensburg, New York 13669
(315) 393-6633

To order: Visit a Dealer or call 1 (800) 447-1230

THIEF	F-HOBBIT	RNK	HIMAYMAN
19	THIEF	ELP	28947
1	7	MCS	56
STR 6	HP 32/32	ARMORCLASS 10 (+0)	
INT 10			
PIE 6			
VIT 10	STM 96%		
DEX 13	CND		
SPD 11			
PER 15	GP 1638		
KAR 16	CC 57/94		
		✓CUTLASS	
		✓DIRK	15
		✓LEATHER CUIRASS	
		✓SUEDE PANTS	
		✓BUSKINS	
		STAVE/MISSLES	3
		COPPER KEY	

YOU GAINED 5 HIT POINTS!

Actual Screens from MS-DOS Version



Now Available for: MS-DOS, Amiga & Macintosh



NEWS & NOTES

Opening Doors for OSF

The race for an advanced, truly open architecture for PCs is still going strong. The latest move by the Open Software Foundation (11 Cambridge Center, Cambridge, Massachusetts 02142) comes closer to enabling large networks of different computer systems to join together through a common operating environment. The nonprofit organization has released OSF/1, a completely new open computer operating system. Hailed as the cornerstone for the industry's first comprehensive open computer operating environment, OSF/1 has already received endorsements from OSF sponsor companies, including Digital Equipment, Group Bull, Hewlett-Packard, Hitachi, IBM, and Siemens Nixdorf Information Systems.

OSF/1 adds a powerful user interface and distributed computing capabilities, allowing you to work from any station on a network of computers as if you were sitting at your own workstation, regardless of what city or country you're in or what type of computer you're using. It's believed OSF/1 will deliver to large organizations capabilities long described as Enterprise-Wide Computing but as yet unseen.

OSF/1's true success, however, will be measured by the acceptance it enjoys in the market, and that will most likely be determined by the number of third-party companies that develop hardware and software products to support it.

No More Rentals

Software rentals are no longer a gray area of the law. It's now in black and white: It is against the law to rent, lease, or loan software if the software's publisher prohibits it. The 101st Congress managed to approve the Software Rental Amendments Act of 1989 just hours before it adjourned. The legislation prohibits "the rental, leasing, or lending of commercial software without the express permission of the copyright holder."

The bill, introduced by Congressman Mike Synar (D-OK) and Senator Orrin Hatch (R-UT), was designed to protect the intellectual property of software publishers. Its passage by the House of Representatives and Senate follows five years of intensive lobbying by the software industry, which adopted the position that software rentals often resulted in software piracy.

Moscow on the PC

More than 1800 Soviet managers attended a three-day Moscow computer seminar held recently at the SOVINGENTR in downtown Moscow. It wasn't COMDEX, but the level of excitement was certainly on a par with any of the big computer shows now held in the U.S. The focus of the exhibition was enhanced productivity, information management, and ease of use for public and privatizing industries.

The Ultimate Corporation and its European subsidiaries based in Paris and London were major participants. Michael J. O'Donnell, Ultimate's chairman, president, and chief executive officer, said his company demonstrated its Pick Operating System and exhibited the Sequoia, Hewlett-Packard, IBM RISC 6000, and Bull 8000 line of hardware products. A Russian version of the Ultimate Operating Environment (an enhanced, user-friendly version of Pick) was received enthusiastically by attendees. The Russian version was translated by the Soviet Institute for Technical Innovation (SITI), an agency of the Soviet government.

Can a COMDEX: Moscow be far behind?

Software and Chewing Gum

What do software and gum have in common? Both are now sold from vending machines. Well . . . sort of. Sellenctek's *InfoMaster* is a PC-based electronic software buyer's guide and merchandising service that's now available at selected retail outlets nationwide. *InfoMaster* allows customers to display and print out product information including product reviews and comparisons, technical specifications, and comprehensive descriptions. Vendors who use the system can highlight their products with the use of full VGA demo slide shows.

New software products from Accolade, Spectrum Holobyte, Sierra On-Line, MicroProse, and Gametek have just been added to the system. *InfoMaster* is currently installed in over 300 stores including Software Etc. and Waldensoftware retail chains as well as selected independent dealers.

A Model Citizen

IBM recently received the Community Involvement Award for supporting the Black Pages and demonstrating commitment to minority business development. IBM has advertised in the Black Pages, a telephone directory for minority businesses, for the past four years. The award was presented to IBM at the Black Pages Annual Awards Ceremony during Minority Enterprise Development Week. Phyllis Sullivan, IBM's equal opportunity program manager, said, "IBM's policy is to provide business opportunities for minority-owned businesses." □

"News & Notes" is by Alan R. Bechtold, editor of *Info-Mat Magazine*, an electronic news weekly published by BBS Press Service.

Magnetic Scrolls has spent the last three years preparing to prove you wrong — with a little help from Lewis Carroll. Gary Whitta goes through the looking glass...

Alice was beginning to get very tired of sitting by her sister on the bank, and of looking at the water which was so lily white and blue, and of dreaming of the adventures that she had read of in the book her sister had given her. She was thinking of the adventures that she had read of in the book her sister had given her. She was thinking of the adventures that she had read of in the book her sister had given her.

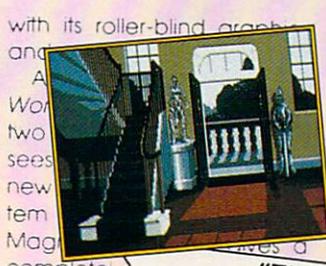
WONDERLAND

John Minson on an adventurous twist to Lewis Carroll

"If Lewis Carroll was alive today, he'd be more interested in adventure games than books. It's a very logical medium." Anita Sinclair has more on her mind than pleasing literary pedants, but she should be safe. Wonderland, Magnetic Scrolls' forthcoming adaptation of Alice in Wonderland, has been crafted with the most respect for the original. But the game also marries the computer under its own terms, and it introduces the Sinclair-style graphics and interactive elements that have made the company's previous titles so successful.

Magnetic Scrolls' new release, Wonderland, promises to reinvest the adventure game. A totally new games system, Magnetic Windows, has been developed and the results look astonishing. Keith Campbell gives CU an exclusive preview.

Wonderland, based on Alice in Wonderland, is a new adventure due soon from Magnetic Scrolls — their first major release since *Fish*, nearly two years ago. But with 30 man-years of development behind it, *Wonderland*, written by David Bishop, and based



The graphics in Wonderland are stunning

Curiouser and cur

"From the technical point of view, people simply aren't going to believe what we've done."

Anita Sinclair, Mag

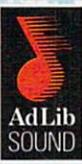


Magnetic Scrolls have come up with the ultimate multi-windowing game system. Could it introduce a new age of intelligent gaming?

"The flexibility of the system means that anybody can use it with the minimum of practice, and that you can use it anyway you like. You can play it either as a straight text adventure with no windows or graphics, or play it mainly using the windows and icons system."



special Screens taken from IBM VGA version. For IBM, Amiga and Atari ST computers. Suggested price \$59.99

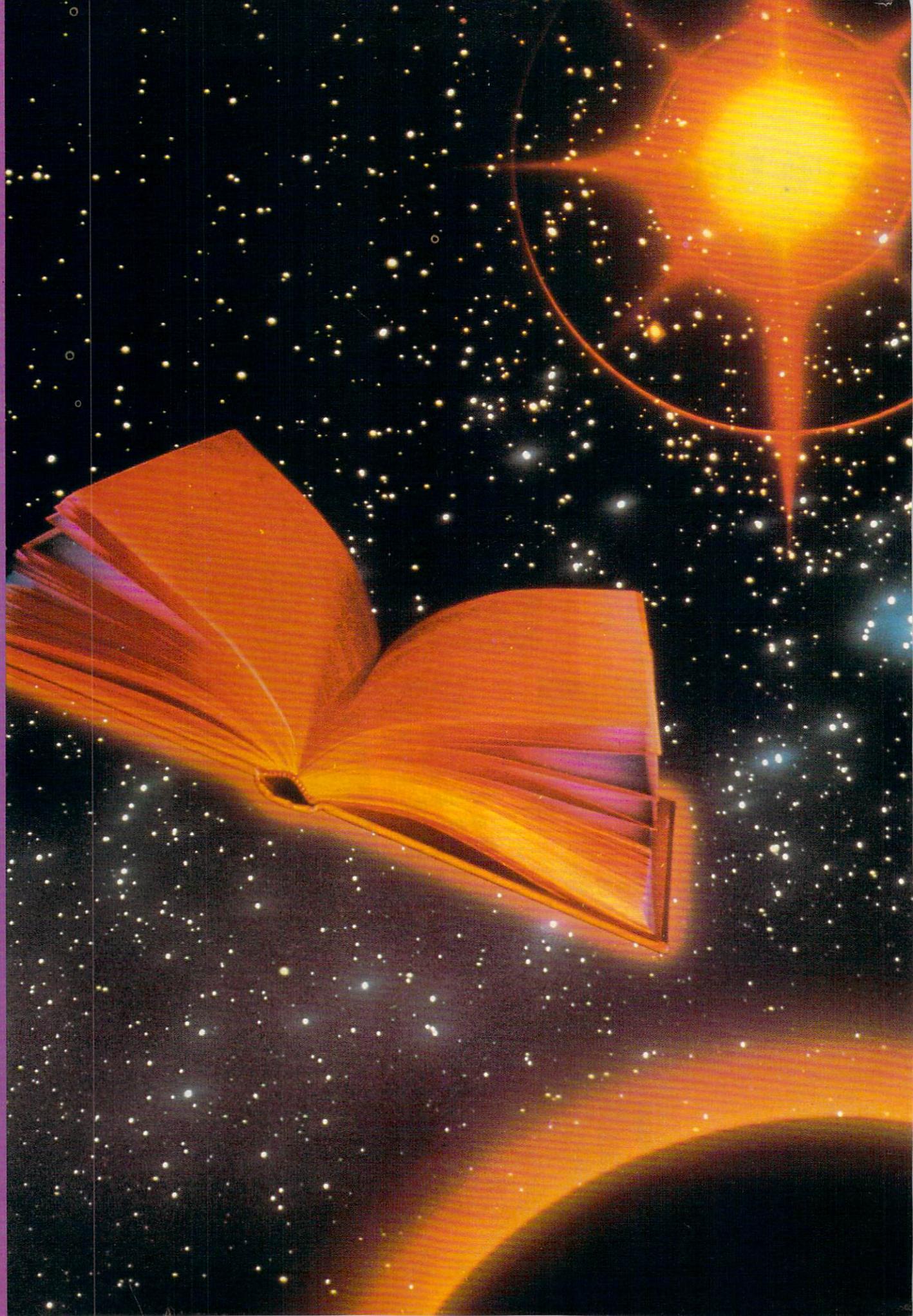
DEVELOPED BY  PUBLISHED BY  SUPPORTS 

Virgin Mastertronic International, Inc. 18001 Cowan, Irvine, CA 92714 714-833-8710

Wonderland™ is a trademark of Virgin Mastertronic International, Inc. Circle Reader Service Number 111

Magnetic Scrolls are very big in the adventure/fantasy role-playing field. Just signed...

P C IBM, TANDY, PC COMPATIBLES



TOP PC BOOKS

THE RIGHT BOOK CAN HELP YOU
MASTER DOS, HARDWARE,
APPLICATIONS, AND
PROGRAMMING

Whether you're a novice, a power user, or a programmer, books can help you get the most out of your PC. But selecting the right reading material isn't always easy. There are hundreds of good PC books. Which do you choose?

One of the best ways to go about choosing a book is to get recommendations from other readers. If a friend has found a book useful, chances are you'll find it useful, too. That's the approach we recently took at COMPUTE. We asked our editors to vote for their favorite PC books in four categories—DOS, hardware, applications, and programming—and in this article, we share the results with you.

For each of the four categories, we decided to limit ourselves to four choices. This wasn't easy: There are scores of excel-

lent PC books, and choosing just four in any category naturally leaves out many other excellent titles.

We had another problem when selecting books. Since COMPUTE publications has its own book-publishing division—COMPUTE Books—we felt there would be a conflict of interest if we voted for our own titles. For this reason, we excluded COMPUTE Books selections from our list.

But at the same time, we realized that any article on the best PC books would be lopsided without some COMPUTE titles, so we asked COMPUTE Books' editor in chief, Stephen Levy, to round out our coverage by giving us the scoop on four of COMPUTE Books' top PC titles. That added up to 20 books, the best in PC literature. And now, the envelope, please. . . . ▶

DOS

DOS: The Complete Reference, Second Edition

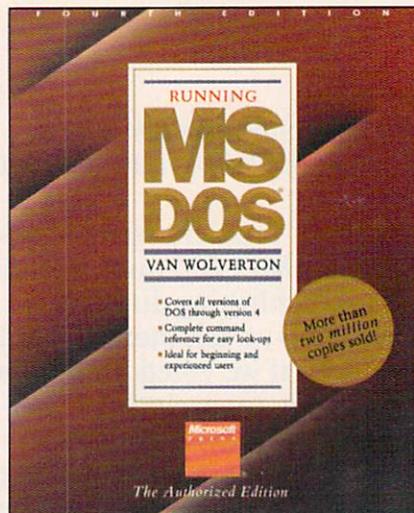
by Kris Jamsa
Osborne McGraw-Hill
\$29.95

If you're an aspiring power user, this may be the book for you. PC wizard Kris Jamsa has jam-packed these pages with everything you need to know to fine-tune your system and master DOS.

Weighing in at more than 1000 pages, *DOS: The Complete Reference* is noteworthy because it not only contains a wealth of information on the usual DOS commands (COPY, DIR, DELETE, and so on), but also has detailed discussions on tremendously useful but tough commands such as BREAK, DRIVPARM, and SHELL.

Additional chapters explain how DOS works, how to program with DEBUG, and how to get the most from *Microsoft Windows*. A thorough reference section on DOS commands is also included, as are appendices on ASCII codes and DOS error messages. For programmers, there's a detailed section of the DOS interrupt 21h functions. A must-have.

— Clifton Karnes



Running MS-DOS, Fourth Edition

by Van Wolverton
Microsoft Press
\$22.95

Power users and beginners both will benefit from the wealth of information offered in Van Wolverton's newest release of *Running MS-DOS*.

This book is divided into three parts. The initial section leads beginners hand-in-hand through their first encounters with DOS. The middle section is a thorough course in DOS basics, and the third section consists of appendices on preparing a hard disk, using DOS 4.0, the international aspects of DOS, a glossary, and a DOS command reference.

This book is a must for learning how to use DOS commands, manage disk files, create batch files, master re-direction of output, and much more.

After studying the examples and throwing in a few tricks of my own, I was able to create the menu that was published on the first *COMPUTE's SharePak* disk in October 1989.

— Joyce Sides

Supercharging MS-DOS, Second Edition

by Van Wolverton
Microsoft Press
\$19.95

Once I had mastered some of the techniques described in *Running MS-DOS*, I was ready to tackle the more

Not only did I discover ways to control screen output, but I also had my first lesson in DEBUG.

technical information in *Supercharging MS-DOS*, also by Van Wolverton.

With this book, not only did I discover ways to control screen output using ANSI.SYS commands, I also had my first lesson in using DOS's DEBUG to write a simple executable file. I was so impressed with the wealth of useful information I derived from this and *Running MS-DOS* that I bought a set to keep on my desk at work. — Joyce Sides

Using PC DOS, Third Edition

by Chris DeVoney
Que
\$24.95

More than just a list of DOS commands, *Using PC DOS* by Chris DeVoney is a step-by-step guide into the intricacies of Microsoft's sometimes confusing operating system. Starting from the very beginning, DeVoney takes you by the hand and leads you through DOS.

Using real-world examples and useful illustrations, this book will help you make sense of everything from hard disk organization and batch files to the complex BACKUP command and version 4.0's SHELL program. The book is easy to read and never misses a trick in showing you exactly what to do and when.

Naturally, there's a complete command reference, but it's special touches like the appendix on setting up a new hard disk and detailed comments on the differences between DOS versions that make this book a must for every DOS user. Its out-

standing index is another plus.

— George Campbell

HARDWARE AND GENERAL Computer Glossary, Fifth Edition

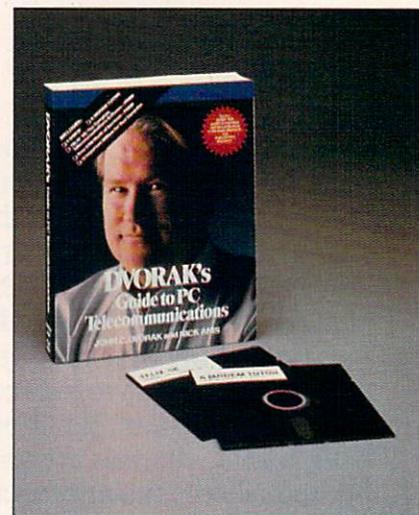
by Alan Freedman
The Computer Language Company
\$24.95

If you're confused by the barrage of computer terms such as LAN, EISA, ISAM, ISO, RLL, MFM, LRC, SQL, SPSS, USRT, and X.25, then run to the nearest bookstore and buy this book.

The Computer Glossary contains more than 4000 terms (including the acronyms listed above), and hundreds of illustrations. I use it everyday. And even when I don't need to look inside for help with a specific piece of information, I find this book is a blast just to browse through.

Although *The Computer Glossary's* strength is PC info, it contains words associated with other micros, most notably Apple, as well as mainframes, primarily IBM, and minicomputers, especially DEC. And for those who'd like to have this information at their fingertips, there's even an electronic edition for \$59.95.

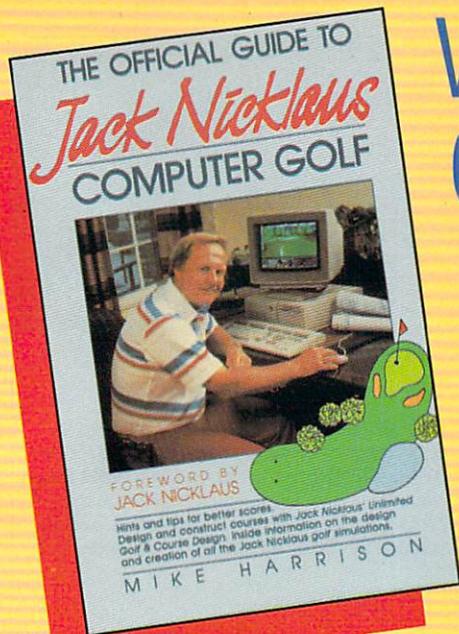
— Clifton Karnes



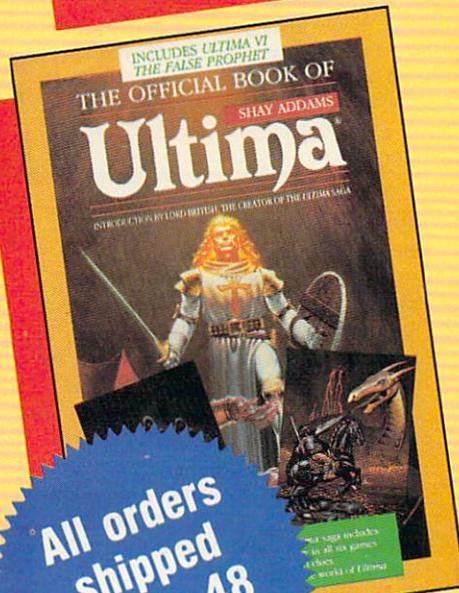
Dvorak's Guide to PC Telecommunications

by John Dvorak and Nick Anis
Osborne McGraw-Hill
\$49.95 (includes two 5 1/4-inch disks)
Everything from installing your first modem to a short history of facsimile machines is included in this huge, thorough volume.

Telecommunications can be a complex subject, but by dividing everything into sections for the layman and for the more technically advanced, Dvorak and Anis cover almost every topic in a way everyone can understand. But the telecommunications narrative, fine though it is, is only half of this book. ▶



WHETHER IT'S GOLF, AIR COMBAT, OR ADVENTURE COMPUTE HAS THE OFFICIAL GUIDE



The Official Guide to Jack Nicklaus Computer Golf

by Mike Harrison
Foreword by Jack Nicklaus
\$12.95

224 pages

Here's the inside story. Learn how professional course designers decide where to put bunkers, trees, and greens. Also includes tips for all the Jack Nicklaus golf games, including *Jack Nicklaus' Unlimited Golf & Course Design*. This is the only authorized guide to all the Jack Nicklaus computer simulations from Accolade.

The Official F-15 Strike Eagle Handbook

by Richard Sheffield
Foreword by Sid Meier
\$12.95

224 pages

This is *the* official guide to MicroProse's best-selling F-15 simulators. Covers both *F-15 Strike Eagle* and *F-15 Strike Eagle II*. Filled with step-by-step instructions and clear diagrams.

All orders shipped within 48 hours

The Official Book of Ultima

by Shay Addams
Introduction by Lord British
\$14.95

244 pages

Written with the assistance of Lord British, *Ultima's* creator, this official guide includes inside information found nowhere else. Packed full of hints, tips, anecdotes, and never-before-published clues for all six *Ultima* adventures.

Other official guides from COMPUTE

- The Official F-19 Stealth Fighter Handbook
- The Official Book of King's Quest
- The Official Book of Leisure Suit Larry

Yes! I want the official guides checked below.

- The Official Guide to Jack Nicklaus Computer Golf (236-2) \$12.95
- The Official Book of Ultima (228-1) \$14.95
- The Official F-15 Strike Eagle Handbook (231-1) \$12.95
- The Official F-19 Stealth Fighter Handbook (217-6) \$14.95
- The Official Book of King's Quest (155-2) \$10.95
- The Official Book of Leisure Suit Larry (215-X) \$12.95

Check or money order MC VISA

Signature _____ (required)

Acct no. _____ Exp. Date _____

Name _____

Street Address _____

City _____ State _____ ZIP _____

Offer good while supplies last. All orders must be paid in U.S. funds drawn on U.S. bank.

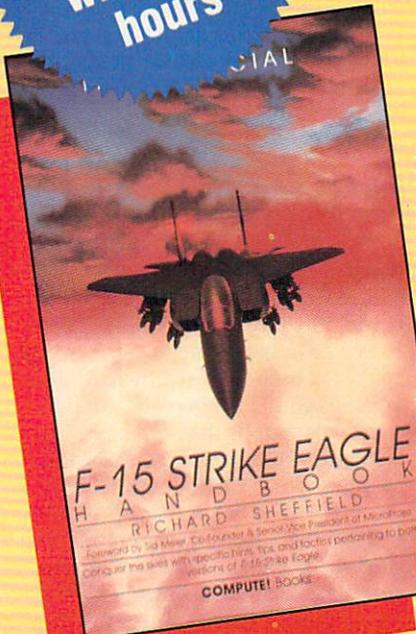
Mail to Compute Books
c/o CCC
2500 McClellan Ave.
Pennsauken, NJ 08109

_____ Subtotal

_____ Sales tax (Residents of NC, NY, & NJ add appropriate sales tax)

_____ Shipping and Handling: \$2 per book US and Canada; \$6 foreign

_____ Total Enclosed



And from COMPUTE Books

Maintaining, Upgrading and Troubleshooting IBM PCs, Compatibles, and PS/2 Personal Computers

by Mark Minasi
\$18.95

Packed full of charts and diagrams, Mark Minasi has put together a readable guide based on years of experience teaching folks like you and me to service and maintain their own PCs. You'll discover how to service and support your own computer including troubleshooting and installing peripherals.

Quick & Easy Guide to Learning Lotus 1-2-3, Second Edition

by Douglas J. Wolf
\$14.95

This second edition of COMPUTE's popular beginner's guide to Lotus 1-2-3 has been revised to cover versions 2.01, 2.2, and 3.0. If you're an advanced power user of 1-2-3, this is the book for you. And if you're new to spreadsheets or if your boss just handed you the software, you'll appreciate the step-by-step approach of this unintimidating guide.

Releasing the Power of DOS

by Paul S. Klose
\$21.95

This is *the* book for all DOS users: a comprehensive guide to all versions of DOS through version 4. Paul Klose unlocks the hidden secrets of DOS, clarifies confusing commands, and provides solutions to the inherent weaknesses of DOS. You'll appreciate the clear and complete explanations and scores of examples. Numerous tables and charts make this book an excellent reference, too.

Problem Solving with PC Tools

by Lynn Frantz
\$21.95

Filled with extensive charts, tables, and helpful tips found nowhere else, this friendly guide and tutorial to version 5 of *PC Tools* is just right for the novice as well as the experienced user. It covers all aspects of *PC Tools*, including *Desktop*, *PC-Shell*, *PC-Backup*, and more.

— Stephen Levy

The second half of *Dvorak's Guide to Telecommunications* consists of user's guides for the programs included on the disks. Although there are several useful utilities included here, the real gem is a special edition of *Telix* called *Telix SE*, which is arguably the finest telecommunications program around. Other utilities include *CED* (a command line editor), *SHEZ* (a shell for ARCED, ZIPed, and other compressed files), *PKWARE*, *QEDIT*, *LIST*, and more. If computers connected by modems do it, it's covered in this book.

— Clifton Karnes

Inside the IBM PC, Third Edition

by Peter Norton
Brady Books
\$24.95

Peter Norton is the E. F. Hutton of microcomputers: When he talks, people listen.

It's a good thing, because he's worth listening to. Here, in a book that has become as much of a classic as any five-year-old volume can be, Norton talks about both the brains and brawns of PCs, both hardware and software.

Norton's approach is comprehensive, if not encyclopedic, with an emphasis on the ways in which software uses hardware capabilities. To understand that, though, you must have a solid grounding in the hardware. The two go hand-in-hand.

The book is not formally divided into hardware and software sections.

Rather, Norton tends to give a hardware example, then provide a software example to take advantage of it. This is quite an effective approach to difficult material, and one that other writers could benefit from.

Norton has gotten most of his fame from *Utilities*, and rightly so. But he's also one the best writers on the technical side of computers, and this is without doubt his best book.

— Keith Ferrell

The Winn Rosch Hardware Bible

by Winn Rosch
Brady Books
\$29.95

"The computer is nothing to fear, and it need not be a mystery," Winn Rosch writes in the introduction to this substantial and indispensable volume. "It is a machine, and a straightforward one at that."

The success of this book rests upon Rosch's authority—he seems to know everything about PCs—and his sense of organization.

Not being a hardware person, I tend to take such introductory remarks with a grain or ten of salt. Yet

Rosch, in straightforward prose, proves his claims.

The success of this book rests upon Rosch's authority—he seems to know everything about PCs—and his sense of organization. As a writer, he's a born teacher, taking each subject from the ground up, ensuring that you understand foundations before progressing to technical details.

The approach works well, allowing Rosch to cover boards, processors, memory, BIOS considerations and circuitry, floppy and hard disks as well as tape drives, ports, printers, monitors, and more. Each receives a chapter that is thorough, sensible, and clearly written. If Rosch can make *me* understand hardware, he can do it for anyone.

An exemplary book.

— Keith Ferrell

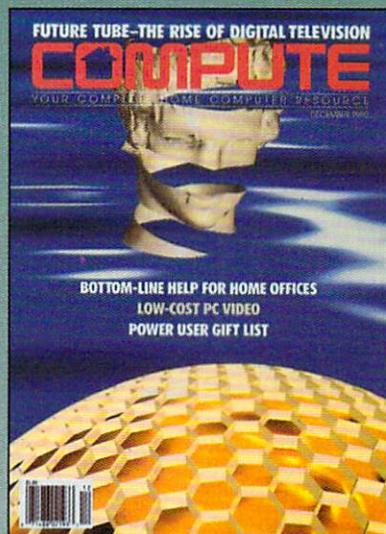
PROGRAMMING

DOS Power Tools, Second Edition

by Paul Somerson
Bantam Books
\$49.95 (includes 5¼-inch disk)

If you only buy one DOS book, *DOS Power Tools* is the one to get. Are you a new PC user confused by hard disk organization? This book has step-by-step explanations that will have you navigating directory trees faster than Magellan. Are you an intermediate user baffled by batch files? *DOS Power Tools* will take you from modifying your AUTOEXEC file to creating full-blown applications using only batch commands. True power users will en-

CHOOSE YOUR FUTURE



MIND

Expand your knowledge – and your understanding – with the magazine that takes you to the frontiers of modern science and beyond. Health. Technology. Space. Society. Human relationships. Science fiction. The exploration of mind. *Lowest possible price!* One year, only \$17.97 – save \$24.03 over what you'd pay at the newsstand!

MACHINE

If you've got a computer at home, you're leading the most exciting consumer technological evolution since TV. Every month – how to make your home office more productive – discovery software to light your kids' imaginations – the hottest new games, new products – and more! Separate sections for IBM compatibles, Amiga, Commodore 64/128 and Mac users. *Only \$12.97 for 12 jam-packed issues!*

OR BOTH

YES! I want the future now!

HPONO

Please send me one year (12 issues) of –

- Omni for only \$17.97! That's a savings of \$24.03 (57%) off the newsstand rate of \$42.00!
- Compute for only \$12.97 – a full \$22.43 (63%) off the newsstand rate of \$35.40!
- BOTH!** Omni and Compute, every month, for an unbelievable \$30.94. I'm saving a whopping \$46.46 off the combined newsstand rate of \$77.40!

Name _____

Address _____

City _____ State _____ Zip _____

Send no money now. We'll bill you later!

The regular subscription price for 12 issues is \$24.00 for OMNI and \$19.94 for COMPUTE. Canada and elsewhere add \$4.00, per subscription, payable in U.S. funds only.

Mail to: Omni/Compute, P.O. Box 3026, Harlan, Iowa 51593

joy sections examining drivers, DEBUG, and even EDLIN, in addition to tips on how to get your old reliable *WordStar 3.3* (why switch?) to run in 43-line EGA mode.

This 1275-page tome literally has everything. Along with the tutorials, there are complete explanations of all of the DOS 3.3 commands.

This 1275-page tome literally has everything. Along with the tutorials, there are complete explanations of all of the DOS 3.3 commands (better explanations than those in my MS-DOS manual), and interesting historical notes on the development of PC compatibles and MS-DOS.

If all this isn't enough, this book also comes with a disk that includes over 200 handy utilities, ranging from batch-file enhancement commands to pop-up phone dialers and appointment calendars. Is it any wonder this is the only DOS book I own?

— *Denny Atkin*

DOS Programmer's Reference, Second Edition

by Terry Dettman, revised by Jim Kyle
Que
\$29.95

If you could imagine the perfect reference for the DOS and BIOS interrupts, you'd be thinking of this book. It's more than just that, but I find myself turning to the half of the book that covers interrupts on a daily (if not hourly) basis to recall how the registers must be set when calling the DOS and BIOS interrupts.

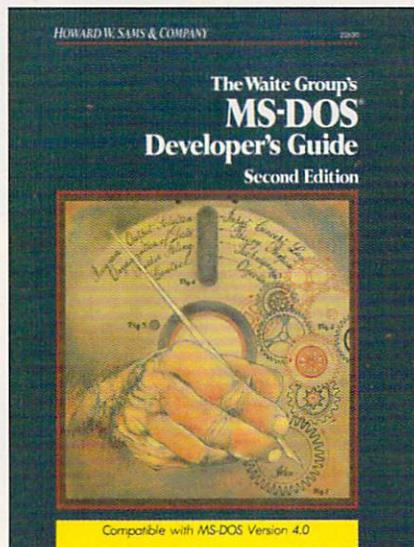
DOS calls are clearly labeled with the earliest DOS version that supports the call.

Each interrupt section is organized into easy-to-read chunks. There's a heading with an icon that quickly identifies the nature of the interrupt. And the DOS calls are clearly labeled with the earliest DOS version that supports the call. An itemized

listing of the calling and returning registers is next. Then come appropriate comments that contain essential information. Explanations are in clear language that even newcomers can understand.

Mouse and EMS interrupts are thoroughly covered. That's not always the case in reference books. The first part of the book is more didactic, with lengthy descriptions of how the operating system actually works.

— *Richard C. Leinecker*



The Waite Group's MS-DOS Developer's Guide, Second Edition

by John Angermeyer, Kevin Jaeger, Raj Kumar Bapna, Nabajyoti Barkakati, Rajagopalan Dhesikan, Walter Dixon, Andrew Dumke, Jon Fleig, and Michael Goldman
\$24.95

Howard W. Sams & Company
Practical, useful, and hard-to-find describe the information in this book. After learning a programming language, you need to learn MS-DOS. This group of world-renowned authors takes us a giant step closer to that goal with this book. They've compiled their programming experiences into a repository of useful techniques. I have literally saved hundreds of hours by using and adapting these code examples and ideas.

I found some of the EGA tricks especially helpful. Most graphics hardware books tend to be somewhat academic, but the routines I found here were real-life tricks that I immediately applied to my own set of graphics routines.

TSRs and device drivers become clear with the chapters on these subjects. If you want to trap the keyboard or any other interrupt in a memory-resident program, the code's all there. Just type it in, modify it to suit your needs, and you're in business.

— *Richard C. Leinecker*

The Waite Group's Microsoft Macro Assembler Bible

by Nabajyoti Barkakati
Howard W. Sams & Company
\$26.95

Once you've learned the basics of 8088 assembly language, it becomes an art. With several ways to do almost everything, finding the best one for any situation is a challenge on par with the most intriguing puzzle.

Sometimes the smallest code is the best, and sometimes the fastest code is preferable. This book is a must for helping you make these decisions.

All the timings for each instruction and the variations are listed along with the encoding specifications. That means you can see to the exact machine cycle how long your code will take to execute and how many bytes the object code will be.

An entire chapter is devoted to the details of the *Microsoft Macro Assembler (MASM)* directives and operators. You won't have any trouble writing effective macros after reading through it. Code examples are given, including an interrupt-driven serial port handler I found especially valuable. A short chapter on DOS and BIOS interrupts with the calling and return registers is also included.

— *Richard C. Leinecker*

APPLICATIONS

dBase III Plus

by Tom Rettig and Debby Moody
Addison-Wesley Publishing
\$22.95

dBase III Plus is an invaluable resource for anyone who programs *dBase III* applications.

The book is an alphabetical reference to all the commands and functions of *dBase*. Information is easy to find, and entries are enhanced by program fragments and screen illustrations where appropriate. The authors, who participated on the *dBase* development team, know their *dBase*.

Programmers will delight in the Warnings and Tips sections that accompany every entry.

Their insights have guided me to simple solutions to what I thought would be programming nightmares.

Programmers will delight in the *Warnings* and *Tips* sections that accompany every entry. *Warnings* identifies the most likely pitfalls of each command and offers advice

The Best...The Most...For Less!

Top Quality User-Supported PC-Compatible Software

Great Software
As Low As **99¢** Per Disk

BUSINESS/ACCOUNTING/FINANCE

- Business Forms 117 100 form letters for all purposes (employment forms, contracts, etc.)
- Business Kit 118 Two programs for small businesses: Simple Bookkeeper and Billing Statement.
- Easy Project 122 A superb project manager software package (Gantt charts, critical path)
- Names and Dates 125 A combination address book, calendar system, and mailing list manager. 512K
- Employee System 127 Personality analysis that helps you reduce turnover
- Form Master 142 An easy-to-use business form generator. Create any form, easily!
- Legal Forms 149 A do-it-yourself legal forms kit
- Manager's Planner 150 A calendar program that helps managers reach their maximum effectiveness.
- Medlin Accounting 157 A complete accounting package with G/L, A/P, A/R, and Payroll
- Painless Accounting 168-170 The most complete and easy-to-use accounting system (3 Disks) HD
- PC-Loans 181 This program computes payments using most common loan methods
- PC-Payroll 182, 183 A complete, menu-driven payroll system (2 Disks) HD
- Solve-It! 186 Does all necessary financial calculations (IRR, PV, FV, annuities)
- Stock Charting System 188 A portfolio management system that supports all types of transactions. 512K
- Tickler 191 Rated as the most powerful time-management software available! HD 512K
- Year Planner 199 A super calendar and organizer program that can print wall calendars!

DATABASE

- File Express 227-228 Database for sorting and storing information. HD (2 disks)
- Idea Tree 232 An incredible program that stores and organizes your ideas and thoughts
- Mass Appeal 236 Excellent mail list program that prints mailing labels
- Wampum 249 A powerful, menu-driven dBASE compatible program. HD

SPREADSHEET

- Aa-Easy-Aa 255 Fantastic Lotus 1-2-3 compatible spreadsheet program
- Lotus Macros 265 Collection of powerful macros for 1-2-3 or compatible programs
- Lotus Templates 269 Lot of useful templates for Lotus compatible programs
- Pivot! 282 Print your spreadsheets sideways. Dot matrix printer needed.

WORD PROCESSING

- Galaxy 310 The most easy-to-use word processing program available
- PC-Write 3.03 325-327 Full-featured word processing with spell checking. Rated #1 (3 Disks)
- Pro Scribe 337 This program will improve the clarity and impact of your writing
- Theaur 345 Very useful when you are looking for the perfect word to make your point

WORDPERFECT 5.0/5.1

- PC-Draft III 365, 366 Create your own graphic images. Several examples included (2 Disks)
- WP 5.0 Art/Graphics 375, 376 A big collection of clipart images for WordPerfect (2 Disks)
- WP 5.0 Learning System 380, 381 Learn to use WordPerfect 5.0 quickly and easily (2 Disks)
- WP 5.0 Macros 385, 386 Over 100 excellent macros for WordPerfect (2 Disks)
- WP 5.0 Menu/Mice 390, 391 A collection of menu systems and mouse drivers (2 Disks)
- WP 5.0 Tools 395, 396 Several WordPerfect utilities (2 Disks)

UTILITIES

- Baker's Dozen 409 13 handy utilities that every computer system needs
- Hard Disk Utilities 420 A whole range of hard disk utilities and enhancements
- HD Backup 424 An easy-to-use program that backs up your hard drive on floppy disks. HD
- HD Menu 425 An easy-to-set-up menu for the programs on your hard drive. HD
- List 430 The best file viewing utility ever created! A must-have program.
- MasterKeys 436 Disk multi-utility like Norton Utilities. You'll use this a lot!
- QuickCache 455, 456 This disk caching utility will speed up your computer, dramatically! (2 Disks)
- ScreenSaver 459 Saves your monitor (any kind) from burn-in
- SimCGA 463 Lets a monochrome system run many CGA programs
- TreView 472 A superior DOS command shell with pull-down menus
- Virus Killers 474 Several virus detection and elimination programs

GRAPHICS

- Charts Unlimited 505 Allows quick and easy creation of virtually any kind of chart or diagram
- Draft Choice 509 Excellent menu-driven CAD program with optional mouse support
- Finger Print 521 Your keyboard (or a mouse) to draw great color pictures. CGA
- Image 5-D 529 Create, view, move, scale, and edit 3-D objects. CGA 512K
- PC-Key Draw 542-545 Powerful CAD design program. Works with keyboard or mouse (4 Disks) HD
- VGA Paint 548 A super-duper paint program—only for you lucky people with VGA
- CompuShow 870 A fantastic graphics viewing utility for .GIF, MacPaint, .RLE, and more.
- Cartoon Characters 872 Your favorite cartoon and comic strip characters in .GIF format. EGA or VGA
- Cars 873 Several .GIF dream cars including a Porsche and Corvette. EGA or VGA
- Wildlife 874 Beautiful wildlife pictures in .GIF format. VGA
- Planes 875 Several pictures of planes (mostly warplanes) in .GIF format. EGA or VGA

PRINTING

- FormGen 133 An easy-to-use package for designing and printing business forms.
- FormFill 134 Fill in and print on pre-printed forms or FormGen forms.
- Form Collection 135 A great collection of pre-designed forms for many purposes.
- Address-O-Matic 553 Envelope printing utility
- Banner/Sign Makers 556 Print your own banners and signs on your Epson compatible printer
- Bradford 559 A super collection of beautiful dot-matrix fonts
- Calendar Printer 562 Design and print a calendar for any month or year
- City Desk 565 Create and print your own newsletters and flyers
- Epson Utilities 569, 570 Utilities and fonts to enhance your print quality (2 Disks)
- ImagePrint 579 Turns your 9-pin dot matrix printer into a letter-quality printer
- LaserJet Utilities 582, 583 Fonts and utilities for HP LaserJet compatible printers (2 Disks)
- Letterheads Plus 587 Print custom letterheads with your Epson or IBM compatible printer
- Mr. Label 589 Versatile address printing program
- On Side 591 Prints spreadsheets (or anything) sideways
- PrintMaster Graphics 593, 594 Large collection of clip-art for PrintMaster users (2 Disks)
- PrintShop Graphics 596, 597 Collection of graphics that you can edit/print with PrintShop (2 Disks)

EDUCATION

- Algebra 604 An excellent algebra tutor for the beginning to advanced student.
- Amie First Primer 605 A collection of six fun learning games for kids 4-8. CGA
- Computer/DOS Tutor 609 Makes learning to use the computer easy—and fun!
- DOS Learning System 613 Great DOS tutorial. Takes the frustration out of using a computer!
- French I & II 618-619 Master the French language with this 2 disk set. Requires BASIC.
- Funnels and Buckets 621 Wow! They've found a way to make learning math fun for kids. CGA
- Googol Math 624 Math learning system with graphics and several levels of difficulty. CGA
- Japanese 631 An entertaining program that teaches you about Japanese language and culture.
- PC-FastType 637 A really fun and useful interactive typing teacher. CGA
- Physics 641 High school level physics instruction
- Play 'r Learn 645 A collection of six learning games for small children 2-5 years. CGA
- Presidents 649, 650 Both a learning tool and quiz on the U.S. presidents (2 Disks)
- School Mom 654 Lessons on math, art, music, and spelling for children 2-12 years old
- Spanish I & II 658, 659 Makes learning Spanish vocabulary easier and more productive (2 Disks)
- Speed Read 665 Teaches you the principles and concepts of speed reading
- Total Recall 671 A menu-driven learning environment to help you learn almost any subject.
- Typing Teacher 673 Helps you practice and improve! Tracks and displays your progress
- Our United States 677 A fun U.S. trivia game with questions about each state
- Vocabulary Builder 681-685 7500 practice words for the SAT. Improve your word power! (5 Disks)
- World 690 A fascinating electronic globe/database of world geography. CGA

HOME/FAMILY

- Brother's Keeper 702-703 Document your family's history with this great genealogy program. (2 disks)
- C.A.P.S. 705 You'll program makes it easy to keep a record of all your auto expenses.
- Computer Chef 706, 707 A recipe database with several excellent dishes for you to try (2 Disks)
- Express Check 713 Checkbook program that handles several accounts and does reconciliation
- Family Tree 719 Use this excellent genealogy program to trace your family roots
- Gardener's Assistant 732 Helps you to plan and cultivate your garden
- Home Inventory 738 Keeps a record of all your personal possessions
- Home Manager 744 Keeps track of your household budget
- Video Librarian 768 Keeps track of your video collection
- Will Kit 771 Save attorney's fees by creating your own will, valid in all 50 states.

MISCELLANEOUS APPLICATIONS

- Trip Planner 735 Plan a detailed trip with this fantastic computerized road map.
- PC-Musician 789 Compose, edit, and play back your musical creations
- Astrology 802 Let this program tell you what lies ahead in your stars
- Biorythms 806 Computes and displays/prints your personal chart for any time period
- Handwriting Analyst 824 Does an in-depth personality analysis from any handwriting sample
- Lottol 832 See if your computer can help you win the lottery
- PC-Bartender 842 Learn to mix cocktails like a professional bartender
- Rental Management 846 Complete rental management system for landlords
- Resume 850 Helps you write a better, more effective resume
- Stress Test 854 Analyzes your level of stress and can give you warnings
- Wisdom of the Ages 862-865 Over 6000 of the greatest quotes from history's greatest minds (4 Disks)
- Zip Code Finder 868 Searches and finds any zip code—FAST!

Disks Ordered	PRICES	Price Per Disk	Direct Link Software
1-9		\$1.99	P.O. Box 2302 Muncie, IN 47307 1-800-999-6883
10-19		1.75	
20-49		1.49	
50-99		1.25	
100+		.99	

If you need 3 1/2" disks add \$1 each.
Count each disk in multiple disk sets.

GAMES

- Adventures 1 901 Five great adventure games that you are sure to enjoy
- Adventures 2 902 Five more adventure games that will keep you intrigued for hours
- Arcade Games 1 907 Two great PAC MAN games and much more! CGA
- Arcade Games 2 908 Several fun games featuring Q-BERT, the arcade favorite! CGA
- Arcade Games 3 909 A version of the classic arcade hit, CENTIPEDE and more. CGA
- Arcade Games 4 910 Collection of space games including SPACE WAR and ASTEROIDS. CGA
- Board Games 1 915 Two fantastic versions of everybody's favorite, MONOPOLY
- Board Games 2 916 Includes both BACKGAMMON and CHECKERS. CGA
- Board Games 3 917 You'll love this collection, which includes RISK and OTHELLO. CGA
- Card Games 923 Great versions of poker and blackjack, Video Poker/Ultimate 21
- Crime Lab 928 A fun graphic murder mystery game. CGA
- Double Blocks 931 A fun and addicting game based on the arcade favorite, Tetris.
- Ed's Chess 935 A great chess game with different levels. Beats ChessMaster 2000!
- Ford Simulator II 938, 939 Choose your Ford and test your driving skill on the tracks (2 Disks) CGA
- Miramar Flight Simulator 939 See if you're "TOP GUN" material as you fly a fully armed F-18! CGA
- NINJA 953 You must battle evil Ninja warriors to the death! CGA
- PC-Jigsaw 959 You see a nice picture, then it's scrambled. Can you put it together?
- Pinball 965 Five SUPER pinball games. Realistic sound and action. CGA
- Scrabble 973 Test your word power with this long-time popular game. CGA
- Tommy's Trivia 979 A great trivia game that will provide you with hours of enjoyment.
- Star Trek 977 A Star Trek strategy game and a Star Trek trivia game
- Wheel of Misfortune 996 Your chance to prove you are as good as you think at solving word puzzles.

EGA GAMES (These games require EGA graphics cards)

- Base Tour 981 An incredible fishing simulator with great graphics. EGA
- Captain Comic 984 Thrill to the commercial quality graphics of this FANTASTIC game. EGA
- EGA Arcade 1 986 Excellent EGA version of ASTEROIDS, BREAKOUT is also included. EGA
- EGA Coloring Book 989 Kids really love to use this coloring program! EGA
- EGA Cunniling Football 990 You call the plays and control the key players. Great fun! EGA
- EGA Games 1 992 A collection of favorites including SCRABBLE and SOLITAIRE. EGA
- EGA Golf 995 A game of skill, strategy and reflex. Great graphics and realism. EGA
- EGA Trick 999 This is the ULTIMATE Star Trek adventure. You're the captain! EGA

VGA GAMES (These games require VGA graphics cards)

- VGA Sharks 983 An underwater action arcade game. Avoid sharks as you collect treasures.
- Beyond Tetris/Joust 993 A great Tetris-like game with a twist. Also Joust—like the arcade game.
- VGA Jigsaw 998 Uses beautiful pictures to create puzzles for you to put back together.

CGA=Requires Color Computer HD=Requires Hard Drive 512K=Requires 512K RAM

Name _____	Phone (____) _____
Street Address _____	
City _____	State _____ Zip _____
Disks Ordered _____	x \$ _____ = \$ _____
Add \$1.00 for each disk if you need 3 1/2" disks (including free) . . . \$ _____	
Shipping	\$ 4.00
Foreign Shipping (Canada add \$2, Other Foreign \$4) \$ _____	
Method of payment: <input type="checkbox"/> Check <input type="checkbox"/> Money Order <input type="checkbox"/> Visa/MasterCard (all orders must be prepaid)	
Card Number: _____	_____
Exp. _____ / _____	Signature _____

1-800-999-6883



Direct Link Software • P.O. Box 2302 • Muncie, IN 47307

about how to avoid them. *Tips* provides hints on how commands and functions might be used in ways that are not necessarily apparent from the *dBase* documentation.

For *dBase III* users, this book is 600-plus pages of pure gold.
— *Tony Roberts*

Looking Good in Print

by Roger C. Parker
Ventana Press
\$23.95

All dressed up, but nowhere to go. That's how many of us feel when we master a powerful desktop publishing program, but we soon discover that it takes more than pull-down menus

Looking Good in Print is packed with instructive illustrations—which isn't surprising, considering that the book itself was desktop-published.

and dialog boxes to create great-looking documents. *Looking Good in Print* comes to the rescue with hands-on advice for budding desktop publishers.

The book begins with the vocabulary of basic design and moves on to the tools of the trade and common pitfalls. The last half of the book shows you how to produce attractive and effective newsletters, advertisements, brochures, manuals, correspondence, and more. There's even a section of design makeovers with eye-opening before-and-after examples.

The entire book is packed with instructive illustrations—which isn't surprising, considering that the book itself was desktop-published. If you're involved with desktop publishing or you just want to learn a thing or two about graphic design, this is one book you shouldn't be without.

— *David English*

Using 1-2-3: Release 3.1, Second Edition—\$29.95

Using 1-2-3: Release 2.2, Special Edition—\$27.95

Using 1-2-3: Special Edition—\$27.95
by Geoffrey T. LeBlond and Douglas Ford Cobb
Que

You bought *1-2-3* and thought the manuals were confusing. Or you use the program on your laptop and don't

want to lug the manuals home each night. Or you know the manuals backward and forward, but you're looking for a different perspective and some helpful hints and tips.

If any of these scenarios fits your situation, take a look at *Using 1-2-3*, the unofficial alternate-manual for *1-2-3*. When *1-2-3* became popular in 1985, its manuals were complicated and hard to read. *Using 1-2-3* was the manual that Lotus should have included. It quickly became one of the best-selling computer books of all time.

Today's *1-2-3* manuals are better organized than before, but we can still use a little help. For a comprehensive view of *1-2-3* that's clear and insightful, this is the book to buy.

— *David English*

Word Processing Power with Microsoft Word, Third Edition

by Peter Rinearson
Microsoft Press
\$22.95

This is *the* book on *Microsoft Word* and a model for what books on PC applications should be like.

Pulitzer Prize winner Peter Rinearson is a working journalist who's used *Word* since day one. He

knows every nook and cranny of this highly individual product, and in this book he shares his insights with us.

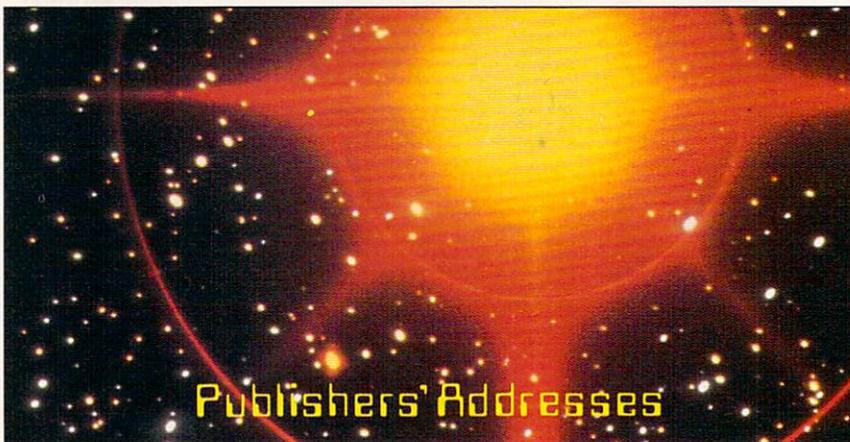
Introductory chapters introduce you to *Word* basics, including how to use menus, windows, and macros; in-

Almost every *Word* user will find a treasure chest of information in this excellent book.

termediate chapters dig deeper into *Word's* command structure with sections on undoing, copying, deleting, inserting, and searching and replacing; and the final section includes individual chapters on word power topics such as using the mouse, mastering the spelling checker, using hidden text, getting the most from the glossary, using multiple windows, and much more.

Almost every *Word* user from beginner to pro will find a treasure chest of information in this excellent, comprehensive book.

— *Clifton Karnes* □



Publishers' Addresses

Addison-Wesley
Rte. 128
Reading, MA 01867

Bantam Books
666 Fifth Ave.
New York, NY 10103

Brady Books
15 Columbus Cir.
New York, NY 10023

COMPUTE Books
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408

The Computer Language Company
5521 State Park Rd.
Point Pleasant, PA 18950-0265

Howard W. Sams & Company
11711 N. College Ave.
P.O. Box 775
Carmel, IN 46032

Microsoft Press
One Microsoft Way
Redmond, WA 98052-6399

Osborne McGraw-Hill
2600 Tenth St.
Berkeley, CA 94710

Que
11711 N. College Ave., Ste. 140
Carmel, IN 46032

Ventana Press
P.O. Box 2468
Chapel Hill, NC 27515

Enhance Your Tandy

Hard Cards and Hard Drives

IBM / Tandy Switchable, Pre-formatted for PLUG N' PLAY

Hard Cards for 1000, A, SX, TX, SL, TL, SL/2
TL/2, IBM & Compatibles

External Hard Drives
for EX / HX. Includes
cable and controller

43 Meg 39 MS \$299	43 Meg 39MS \$399
32 Meg 40 MS \$289	32 Meg 40MS \$389
21 Meg 40 MS \$279	21 Meg 40MS \$379
68 Meg 39 MS \$429	68 Meg 39MS \$489

15 Month Warranty, Toll Free Support
See a lower Price, We'll beat it by \$10.

Memory to 640K

1000, A to 640 K W/Clock, Ser.	\$279
256K EX or HX to 640K	\$189
256K 1200 or IBM to 640K	\$189
384K SX, EX, HX, SL to 640K	\$59
TX to 640K, TL, TL/2 to 768K	\$49
3000NL from 512K to 640K	\$59
1000RL from 512K to 768K	\$39

Memory Above 640K

Micro Mainframe 5150
For 1000, A, SX, TX, SL, TL, SL/2, TL/2, RL

0K	\$159	256K	\$199
1 Meg	\$249	2 Meg	\$349

16 Bit EEMS

For 3000's, 4000's, IBM AT Compatibles

0K	\$189	2 Meg	\$299
4 Meg	\$459	8 Meg	\$689

See a lower Price, We'll beat it by \$10

Speed Up Chips

30% Faster

For Tandy 1000, A, SX, and IBM XT \$29

For 1000SL, SL/2, and AT&T \$39

PC Sprint \$75
100% Faster
For 1000, A, IBM XT

Floppy Drive Solutions

Internal Drives
1000, A, SX, 1200, SL, SL/2, TX, IBM, Compatibles TL, TL/2

5.25" 360K	\$ 77	\$ 99
5.25" 1.2 Meg	N/A	\$229
3.5" 720K	\$ 99	\$109
3.5" 1.44 Meg	N/A	\$229

External For EX/HX

5.25" 360K	\$129
3.5" 720K	\$129

Books and Software

Dos 4.01

The latest for less, supports larger than 32 Meg partitions, and comes with DOS SHELL

3.5" or 5.25" Disks \$89

Upgrading the Tandy 1000 Series Computers

How to make your Tandy more powerful. Covers the 1000, A, EX, HX, SX, TX, SL, TL, SL/2, TL/2, and RL

Only \$19.95

The Tandy Owner's Guide to Hard Drives

Easy to understand help in installing, organization, and maintenance of hard drives and hard cards in 1000's series Tandy Computer.

Only \$9.95

VGA Combinations

For SX, TX, SL, TL, SL/2, TL/2, RL, 3000's, IBM, Compatibles

Combo \$489

Monitor: 14" CTX

.29 Dot Pitch

Card: Paradise 256K

640 X 480, 256 Colors

Super Combo \$649

Monitor: 14" CTX

.28 Dot Pitch

Card: Paradise 512K

1024 X 768, 256 Colors

IDE "Smart" Drives

42 Meg For TL/2, RL \$339

16 Bit IDE Drives

4000LX, DX, SX, 2500XL, Others

40 Meg 18 MS	\$399
80 Meg 18 MS	\$529
105 Meg 18 MS	\$589
210 Meg 18 MS	\$989

Modems

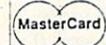
Hayes Compatible, Includes Software

2400 Baud Internal	\$79
1200 Baud Internal	\$59
2400 Baud External	\$129
1200 Baud External	\$89

Smart Mouse W/Software \$49

Serial Card All Except HX/EX \$29

C.O.D.



DCS Industries

5265 Hebbardsville Rd.
Athens, Ohio 45701

1-800-537-3539

Tandy, Hayes, IBM, AT & T, are registered Trademarks. Prices Subject to change without notice.
(614) - 592-4239 Foreign (614) - 592-1527 FAX (614) - 594-4180 Local

Circle Reader Service Number 120



FEEDBACK

QUESTIONS FROM OUR READERS

BASIC Blanking

Is there any way I can save a screen from inside my BASIC programs?

LELAND MOHAWK II
CLEVELAND, OH

It's very easy to incorporate a text-mode screen saver into a Quick-BASIC program. Since the PC treats the screen just like memory, simply find out where that memory is, save it, and clear the screen. To unblank the screen, just restore the memory.

First, you need to know whether the program is running on a monochrome or color system, because that determines where video memory is located. To do this, you look at byte 449 hexadecimal (abbreviated 449H) in a section of memory called the BIOS data area. If the value is 3 or less, it's a color system; and video memory is located at B800H. If the value is 7, it's a monochrome system; and the video memory is at B000H. If the value at 449H is anything else, then the computer is in graphics mode; so the program should quit.

Each character on your screen occupies 2 bytes in memory. The first byte is for the character itself, and the second is its attribute. Since the screen can hold 2000 characters (80 columns \times 25 rows) and each character uses 2 bytes, you need 4000 bytes to save an entire screen.

This is easy to do with a FOR/NEXT loop. Simply use DEF SEG to set video memory to the correct value and move the 4000 bytes of screen data to an array. The following program illustrates the whole process.

```
DEFINT A-Z
DIM ScreenMap(4000) AS INTEGER
```

```
' Determine display mode
DEF SEG = 0
VideoMode = PEEK(&H449)
ScreenPage = PEEK(&H44E)
SELECT CASE VideoMode
CASE IS <= 3
```

```
ScreenSegment = &HB800
CASE IS = 7
ScreenSegment = &HB000
CASE ELSE
' Screen is in graphics mode, so quit
END
END SELECT
```

```
' Put some stars on the screen
' so we'll have something to blank
CLS
FOR i = 1 TO 1760
PRINT "*";
NEXT i
```

```
PRINT : PRINT "Press any key to
blank the screen"
```

```
DO: LOOP UNTIL INKEY$ <>
""
```

```
' There's been a keypress, so blank
the screen
```

```
DEF SEG = ScreenSegment
' Save the screen info into the
' ScreenMap array
FOR i = 0 TO 3999
ScreenMap(i) = PEEK(i +
ScreenPage)
NEXT i
```

```
' Blank the screen
CLS
```

```
' Wait for another keypress
DO: LOOP UNTIL INKEY$ <>
""
```

```
' Restore the screen
FOR i = 0 TO 3999
POKE i + ScreenPage,
ScreenMap(i)
NEXT i
LOCATE 23, 1
END
```

Fantasy in Motion

I have been looking everywhere for an animation program that supports CGA and Tandy 16-color. I learned about *Fantavision* from a review I read, but when I went to purchase the product, my dealer said it had been discontinued. Why was it reviewed, if it has been discontinued?

SETH WILSON
DE WITT, AR

*Sometimes a distributor will stop carrying a particular product and inform the dealers that it has been discontinued. The distributor has discontinued the item even though it's still manufactured and marketed. That's probably the situation you encountered with *Fantavision*, which is still available from *Brøderbund*. If you want to order the product, call *Brøderbund* at (800) 521-6263 or write to the company at *Brøderbund Software Direct, Customer Service, P.O. Box 12947, San Rafael, California 94913-2947*.*

Our Mistake

In your October 1990 "Feedback," you listed JDR Microdevices as a source for replacement BIOS ROMs for the Kaypro 2861-C. This is not correct. We sell MCT BIOS, a single-chip XT-compatible BIOS; it won't work in any 286-based system that I'm aware of. We do sell EPROM and E²PROM chips that are capable of holding the BIOS code, but we don't sell the BIOS code itself.

If you have any questions in the future concerning the JDR Microdevices product line, feel free to call our technical staff at (800) 538-5002.

VOLKER KIRSTEIN, TECHNICAL SUPPORT
JDR MICRODEVICES

Thanks for the information. There you have it, folks. We goofed for the very first time. We're sorry about the mixup. At least we know you're paying attention.

Readers whose letters appear in "Feedback" will receive a free COMPUTE's PC clock radio while supplies last. Do you have a question about hardware or software? Or have you discovered something that could help other PC users? If so, we want to hear from you. Write to COMPUTE's PC Feedback, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. We regret that we cannot provide personal replies to technical questions. □

DAMARK

INTERNATIONAL, INC.

THE "GREAT DEAL" CATALOG
1-800-729-9000
ORDER TODAY!



386™ 25 COMPUTER with 80MB HARD DRIVE and 64K CACHE MEMORY

- Intel 386™ 25MHz, full 32 bit processor.
- 80MB hard drive/28 millisecond access time.
- 1MB RAM expandable to 8MB on motherboard.
- One 3-1/2" 1.44MB floppy disk drive.
- One 5-1/4" 1.22MB floppy disk drive.
- 64K disk cache memory expandable to 128K.
- 16-bit VGA card: 800x600 with 256K memory.
- Expansion slots: six 16-bit (4 available), one 8-bit, one 32-bit slot. • 2 serial ports, 1 parallel port, 1 game port.
- Five 5.25" drive bays exposed (three available).
- 80387 math co-processor socket. • MS-DOS 4.01.
- 101 AT-styled keyboard. • Includes instructional video tape for set-up. • 1 Yr. Mfr. Warranty! • Factory New!



80 MB Hard Drive!

Mfr. Sugg. Retail: **\$5,094.00**
DAMARK \$1,999⁹⁹
PRICE

Item No. B-2565-162737
 Insured Ship/Hand.: \$49.00



SUPERSLIM 286 LAPTOP WITH 20MB HARD DRIVE

- 80286 micro-computer operating at 12 MHz.
- Landmark speed test 16MHz.
- 1One MB RAM expandable to 2MB.
- 20MB Conner hard disk drive (25 millisecond) 1" high.
- 1.44MB 3.5" floppy disk drive.
- Lightweight: only 8.5 lbs.
- 10.5" supertwist non-glare LCD screen.
- Super-fast 1:1 interleave factor.
- Zero wait state.
- Removeable rechargeable Ni-Cad battery pack.
- Folds up for travel.
- 81 keys, full stroke keyboard.
- Real-time calendar/clock with battery backup.
- Built-in rechargeable battery.



- 2 RS232 serial port.
- Centronics parallel port.
- RGBI video port.
- Included software: MS-DOS 3.3, GW-BASIC™ 3.22.
- Uses 5 "AA" batteries (included).
- Color: Black.
- Dim.: 20"H x 4"W x 6"D.
- Model #: DH-200.
- 1 Year Mfr. Warranty!
- Factory New!

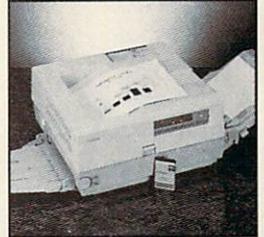
Mfr. Sugg. Retail: **\$3,695.00**
DAMARK \$999⁹⁹
PRICE

Item No. B-2565-164795
 Insured Ship/Hand.: \$20.00

UNISYS

LQ LASER PRINTER

- Continuous printing of 6 pages per min.
- Letter quality printing; resolution: 300 x 300 dpi.
- IBM compatible.
- 1.5MB memory expandable to 3MB.
- 4 emulations: HP® LaserJet Plus®, Enhanced Diablo® 630, Epson® FX80 and IBM® Proprinter XL®.
- 31 resident bit-mapped font families (italics, portrait, landscape, compressed, etc.) and 4 outline fonts (Vetica, TMS Roman, Gothic, Optima).
- Image receive buffer is variable from 5,000 bytes to 100,000 bytes.
- RS232C serial interface and Centronics®-like parallel interface. • Up to 512K strip buffer.
- One input paper tray (holds 150 sheets) with autofeed or manual feed.
- Two paper stackers included (face-up, face-down).
- Quiet operation (less than 55dB).
- Page image formats can be landscape or portrait with character imaging in two rotations (0°/270°).
- Includes toner cartridge.
- Dim.: 16.1"W x 16-1/2"D x 8.1"H.
- Model #: AP9206.
- One Year Mfr. Warranty!
- Factory New!



Mfr. Sugg. Retail: **\$2,995.00**
DAMARK \$899⁹⁹
PRICE

Item No. B-2565-164732
 Insured Ship/Hand.: \$49.00



286-12MHz AT COMPUTER with 40MB HARD DRIVE and 14" VGA COLOR MONITOR



- 80286 microprocessor, 12.5MHz.
- IBM compatible.
- 40MB IDE hard drive.
- One MB RAM on motherboard, expandable to four MB.
- One 5-1/4" 1.22MB floppy disk drive.
- One 3-1/2" 1.44MB floppy disk drive.
- VGA color monitor, 640 x 480 res.

BUNDLED SPINNAKER SOFTWARE Installed & ready to run on hard drive: Eight in One, Word Publisher, Resume Kit, DOS Manager, Kidwriter Gold, File Recovery, Personal Cash Manager, Backgammon, Stargoose Warrior, Sargon IV.

- Two expansion slots, 16-bit available.
- 80287 math coprocessor socket. • One serial port.
- One parallel port.
- One mouse port.
- 101 AT style keyboard.
- MS-DOS 4.01 with DOS Shell and GW BASIC™.
- Monitor dim.: 13.9"W x 14.7"D x 14.1"H.
- Model #: GT212 44 IAV/3051.
- 1 Year Mfr. Warranty!
- Factory New!

Mfr. Sugg. Retail: **\$3,200.00**
DAMARK \$1,199⁹⁹
PRICE

Item No. B-2565-161176
 Insured Ship/Hand.: \$49.00

FAMOUS MAKER

2400 BAUD MODEM

Set up your computer to interface with outside networks using this 2400 BPS Baud Modems. It operates on all two wire dial-up phone lines and is line powered. It has been rebranded and marked down to a sensational closeout price!



- 2400 bps speed modem.
- Operates on on all two wire dial-up phone lines.
- Line powered, no battery or AC hook-up required.
- AT command set.
- Tone/pulse dialing.
- Full/half duplex.
- Auto fallback.
- Non-volatile ram.
- Compact size.
- Great for laptops!
- Color: Black.
- 90 Day Mfr. Warranty!
- Factory New!

Mfr. Sugg. Retail: **\$209.95**
DAMARK \$69⁹⁹
PRICE

Item No. B-2565-162408
 Insured Ship/Hand.: \$6.00

OPC

SuperVGA 14" COLOR MONITOR

Our buying power allowed us a special purchase on this SuperVGA Color Monitor direct from the manufacturer.



- 0.28mm dot pitch display.
- Maximum resolution (8514/A mode): 1024 x 768.
- SuperVGA mode resolution: 800 x 600.
- Five display resolutions for text and graphics.
- Incredibly large color palette—almost infinite.
- IBM VGA, SuperVGA and PS/2 8514/A compatible.
- Anti-glare screen. • Tilt and swivel base.
- Front surface user controls.
- Dim.: 14.4"W x 14.1"H x 15.6"D.
- Weight: 30 lbs.
- One Year Mfr. Warranty!
- Factory New!

Mfr. Sugg. Retail: **\$799.00**
DAMARK \$399⁹⁹
PRICE

Item No. B-2565-163857
 Insured Ship/Hand.: \$19.50



FOR FASTEST SERVICE
 CALL TOLL FREE

1-800-729-9000

CUSTOMER SERVICE: 1-612-531-0082

QTY	DESCRIPTION	ITEM #	S/H/I	PRICE

DELIVERY TO 48 U.S. CONTINENTAL STATES ONLY

NAME _____
 ADDRESS _____
 CITY _____ ST _____ ZIP _____
 PHONE _____

Check/Money Order VISA

MasterCard Discover EXP. DATE _____

CARD NO. _____

SIGNATURE _____

SUB TOTAL

in MN add 6% Sales Tax

Total S/H/I

GRAND TOTAL

B-2565



Send To: DAMARK INTERNATIONAL, INC., 7101 Winnetka Ave. N., Mpls., MN 55428-1619

Copyright 1991
 DAMARK INTERNATIONAL, INC. All rights reserved.



HOT TIPS

H I N T S A N D T I P S F R O M O U R R E A D E R S

I've found that I need only two batch files to manipulate my path on a daily basis. I call them PATHR.BAT (PATH Restore) and PATHX.BAT (PATH + addition). The PATHR.BAT is basically the path you need 95 percent of the time. (It's the same PATH found in your AUTOEXEC.BAT file.) The PATHX.BAT file contains the following line:

```
PATH=%PATH%;C:\%1
```

To run the batch file, enter PATH *additional path* at the DOS prompt. The PATHX.BAT will set the PATH environment variable to your existing PATH and add the *additional path* typed in as %1 on the command line. For example, entering PATHX WIN at the DOS prompt adds C:\WIN to your PATH.

Kurt Zech
Sugarland, TX

Editor's note: You may encounter a problem with insufficient environment space if your PATH is too long. If you have a lot of subdirectories listed in your PATH, try to place those subdirectories directly under the root directory to keep the length of each entry to a minimum.

Partial Print

Do you ever need to print part of an ASCII text file? A typical example is when the printer jams or runs out of paper while using the COPY *filename* PRN command. In such a case, you don't want to print the whole file again.

A simple way to print part of a file is to use SLED (January 1989 COMPUTE!'s PC Magazine). To do this, load the ASCII file by entering SLED *filename*. Then use the Alt-N key combination to change the name of the file to PRN. Delete the part of the file you don't want to print.

For example, to delete the beginning of the file, use Alt-X to mark the first character of the file. Then go to the line before the first line you want to print and press Alt-L. Press Alt-D

to delete the marked portion.

When you've deleted the parts of the file that you don't want to print, press F4 to save the file. The file will be sent to the printer because you gave it the name PRN. You may get a message like *Ok to overwrite file?* when you try to save it. This is caused by the program's misinterpreting the printer signals when it's expecting a signal from the disk drive. Press the Y key. When the file has finished printing, you may get a message like *Disk full*. Again, this is the program's trying to interpret printer signals when it's expecting disk signals.

None of these actions change the disk file. Once you've changed the name to PRN, SLED treats your printer as if it were a new file. You can also use this technique to print any files you create with SLED. Quit the program by pressing F10.

David Leithauser
New Smyrna Beach, FL

DOS 2.x Batch Files

If you use DOS 2.x, you may have noticed that sometimes when you run your batch files the prompt appears twice when the batch file finishes. To avoid this harmless but annoying phenomenon, enter a carriage return after the last line of the batch file.

Rick Leinecker
Greensboro, NC

Subdirectory Search

While you can use the EXIST batch file command to determine whether or not a file exists, there's no command that allows you to check for the existence of a directory.

To solve this problem, I developed the technique shown in the batch file ISDIR.BAT. The syntax to use when checking for the existence of a directory is ISDIR *d:path*. You must enter the full pathname for the directory. For example, to see if the directory \WORK\BATCH exists, you enter ISDIR C:\WORK\BATCH.

```
ECHO OFF
IF "%1" == "" GOTO NONAME
```

```
IF NOT EXIST %1 \ *.* GOTO MAYBE
ECHO The directory "%1" has files.
GOTO END
:MAYBE
IF NOT EXIST %1 \ NUL GOTO
NOTTHERE
ECHO The directory "%1" is empty.
GOTO END
:NOTTHERE
ECHO The directory "%1" doesn't exist.
GOTO END
:NONAME
ECHO Syntax: ISDIR d:\path
:END
```

The command IF NOT EXIST %1 \ *.* won't detect the presence of an empty directory; therefore, I used the NUL filename. NUL is a device filename reserved by DOS as a dummy filename.

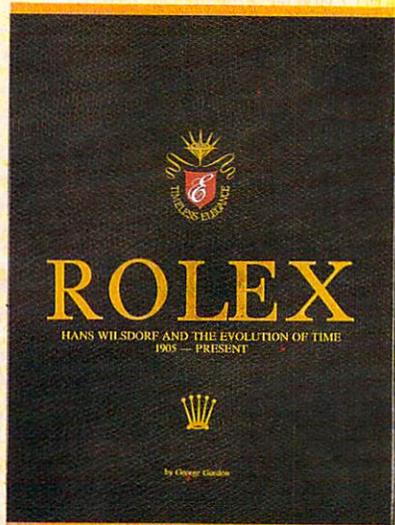
For every directory, there's a NUL, so if the directory exists, NUL will also exist. But even NUL won't detect if a subdirectory contains other subdirectories and no files. You'll get the *directory is empty* message.

In this batch file, a message is displayed according to the condition of the directory. You can substitute your own commands where the messages are located. For instance, if you want to create a directory and copy files to it, you first need to know if the directory exists. If it does exist, you could display a message that tells the user that the directory already exists and asks if he or she wants to continue. If it doesn't exist, you can use the MKDIR command to create it and the COPY or XCOPY commands to copy files to it.

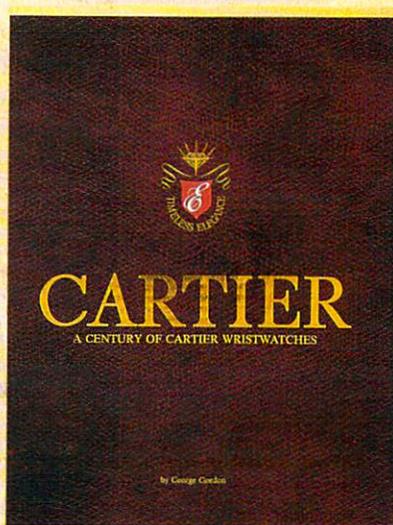
Vincent D. O'Connor
Babbitt, MN

If you have an interesting tip that you think would help other PC users, send it along with your name, address, and Social Security number to COMPUTE!'s PC Hot Tips, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. For each tip we publish, we'll pay you \$25-\$50 and send you a COMPUTE!'s PC LCD clock radio while supplies last. □

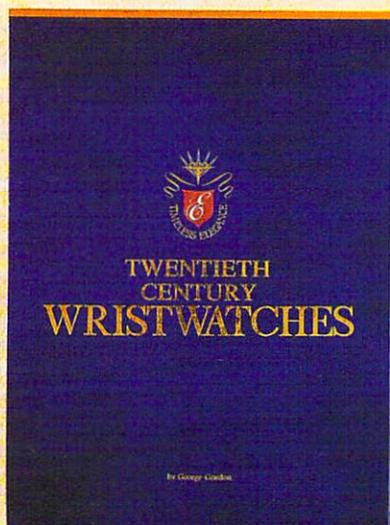
THREE OF THE MOST LAVISHLY ILLUSTRATED BOOKS EVER PUBLISHED ON WATCHES



Rolex: Timeless Elegance
by George Gordon. 12¼ × 9¼in./310 × 234mm. 350 pages, 292 colour illustrations, in slip case. A Certificated Limited Edition. ISBN 962 7359 01 7. Features the company's original designs, period advertisements and certificates. However, the highlight of this luxurious volume is the sumptuous modern colour illustrations of 635 Rolex watches of all ages. \$160.



Cartier: A Century of Cartier Wristwatches
by George Gordon. 12¼ × 9¼in./310 × 234mm. 552 pages, 450 colour illustrations, in slip case. A Certificated Limited Edition. ISBN 962 7359 02 5. Louis Cartier created the first man's wristwatch in 1904 and this book illustrates them from this date to the present day. The hallmark of this book is the lavish, high quality, modern colour illustrations of 1002 wrist watches. \$225.



Twentieth Century Wristwatches
by George Gordon. 12¼ × 9¼in./310 × 234mm. 364 pages, 300 colour photographs. ISBN 962 7359 03 3. Twentieth Century Wristwatches is a look at the development of wristwatches during this century. The finest wristwatches by the greatest Swiss companies from the beginning to their finest productions of the 1920-1950s have been assembled in this unique book including beautiful photographs and complete descriptions. \$180

Please add \$10.00 per book for airmail. Send your check or money order to: Timeless Elegance c/o Michael Stevens, General Media, 1965 Broadway, New York, N.Y. 10023 Tel: 212 496-6100. Fax: 212 874-1349. (N.Y. residents add sales tax.)

INTERNATIONAL COLLECTORS OF



A new international club for collectors and dealers of wristwatches is being formed with headquarters in four cities, Milan, London, New York and Hong Kong. Called "International Collectors of "Time Association", the club's purpose is to provide an avenue for the exchange of ideas and information between wristwatch collectors.

Each chapter will have its own Board of Directors to oversee that area's activities.

Four meetings of the International Collectors of Time Association (ICTA) are planned per year. The first meeting will be in May, 1990 in Hong Kong at the Park Lane Radisson. The second meeting is scheduled for September, 1990 in London at the Churchill Hotel, followed by the third conference in New York in December, 1990. More details will be provided later, but the Hong Kong meeting will give collectors an opportunity to meet other collectors and dealers from around the world.

We want to organize meetings in Italy, Japan, France and Germany. If you would like to help organize one of these meetings, or any of the three already scheduled, please contact one of the clubs.

A magazine comes complimentary with your membership. Published in English, bi-monthly, it will contain reviews on what's happening in the wristwatch market around the world with reports on sales and auctions, and news about new products just being designed. There will also be a question and answer column for collectors and dealers, as well as a column where watches can be sold or bought. If you have any interest in writing an article for the magazine, sharing an old catalogue or have stories about yours or others' wristwatches, the editor would like to hear from you. The association plans a new book next year, and your wristwatch could be included if you so desire.

Membership fees are US\$75.00 per year. (If you require your magazine sent airmail, there is an additional US\$25 charge.)

Name _____

Address _____

Country _____ Telephone No. _____ office

Fax _____ Home

I want to become a member of the London, Hong Kong, New York, Milan chapter of ICTA (circle one). Enclosed is my cheque for US\$_____ to cover membership fees plus any airmail charges.
Cheque made payable to International Collectors of Time Association

I might be interested in attending the Hong Kong, London, New York meeting. 'Please send me more information.

I have an interest in writing/contributing information to the magazine.

I want to help organize one of the meetings, Location: _____

INTERNATIONAL COLLECTORS OF TIME ASSOCIATION

U.S.A.: 1 Old Country Road, Suite 330, Carle Place, New York 11514
Tel: 212 838-4560 Fax: 212 838-9737

U.K.: 173 Coleherne Court, Redcliffe Gardens, London, England SW5 0DX, United Kingdom.
Tel. 44-71-373-7807 Fax. 44-71-373-0347

ITALY: Viale San Michele Del Carso, 5, Milan, Italy. Tel. 39-2-498-0464 Fax. 39-2-469-0890

H.K.: 224 Pacific Place, 88 Queensway, Hong Kong. Tel. 852-845-7514 Fax. 852-877-0518



ONLINE

G E O R G E C A M P B E L L

Calling local or national BBS systems offers an opportunity to expand your horizons, make new friends, and interact, sometimes anonymously, with scores of other users. Going online can release your inhibitions, allowing you to take on a new personality and express yourself more freely. This has some real benefits, but it can also lead to lapses of good taste you may later regret.

Even the way you use the BBS itself can be a source of concern. Do the wrong thing, and you could cause a system crash—an unforgivable sin.

Many sysops find themselves agonizing over what takes place on their systems. They don't want to deny access to users who abuse privileges, but sometimes they have no other option. Recent libel lawsuits have held sysops responsible for their users' actions.

Fortunately, it's easy to avoid the most common online faux pas. Here's a set of basic modem manners that will make you welcome on any BBS.

When leaving messages, public or private, on a BBS, use the same language you would use face-to-face with a friend. Obscenities are strictly bush league; there's always a better way to make your point. Similarly, avoid personal attacks against other users. It's OK to disagree with another user, but don't resort to name-calling or flaming others in your messages.

Watch your private E-mail messages, too. Most BBS software doesn't allow complete privacy. Chances are the sysop can read *all* messages left on the system. Most sysops don't do this, but keep your E-mail within the bounds of decency.

Keep your hormones in check as well. Sexual harassment in E-mail messages is an all-too-common problem in the BBS community. If you've ever wondered why there are so few women online, this is a major reason.

Most systems have an unpopular member or two who use the message areas as forums for interminable diatribes on religious or political issues. Don't be tempted into responding—it only encourages them.

Avoid sloppy spelling, grammar, and punctuation in online messages, too. Take the time to write clear, readable messages. Remember that you're putting your words on hundreds of computer screens.

The sysop is the ruler of the BBS domain. In most cases, the BBS is an expensive and time-consuming hobby. Developing a good relationship with the sysop just makes good sense.

HOW TO BE A GOOD BBS CITIZEN

Every BBS has a set of rules, which are usually spelled out in a bulletin somewhere on the system. In most cases, these rules make sense and are easy to follow. Break them regularly, and you may find yourself without access.

The first time you call most systems, even those that allow nicknames (or "handles"), you'll be asked for your name and phone number. Don't give false information; the sysop will find out and deny you access to the BBS.

Take the time to read bulletins and help screens on the system. Not only will this eliminate confusion, but it will also help you get more from your time online. Before sending a message to the sysop asking for help, try solving problems yourself.

If you do need to ask for help

with a problem, be sure to give all the details. Tell the sysop what communications program you're using and describe the problem completely, including any messages you saw on the screen. Simply saying *I can't download any files* isn't enough.

When using a system's message tools, you have an opportunity to help the sysop. After you've read messages addressed to yourself, especially private ones, delete them.

When it's time to hang up, always use the good-bye command in the BBS's menu. Using your communication program's hang-up command could crash the BBS software.

Take a moment now and then to let the sysop know that you appreciate having access to the BBS.

Exchanging public domain and shareware programs and files is the most popular BBS activity. Here, too, good BBS manners are important.

When downloading files, don't abort the process unnecessarily. If you must stop a transfer in progress, use your software's command to end the transfer and then use the BBS's command (usually Ctrl-X) to signal the canceled transfer. Dropping the connection with your software's hang-up command could cause a fatal crash.

Let the sysop know if there's a problem with a file you've downloaded. It's impossible for most sysops to run every piece of software uploaded. If you like a program, post a review on the BBS as a public message.

Before uploading a file, make sure the program you're going to upload is recent and not already available on the BBS. Upload only those files you've tested and found useful.

Above all, never, never upload a commercial program. In a number of cases, sysops have been prosecuted for software piracy after a user has uploaded a commercial program. If you're not sure of a file, keep it off the phone lines. Also, before uploading any program, use one of the many virus-detection programs, like *Scan*, to make sure you aren't accidentally passing along an infected file. □

COMPUTE's BEST PC GAMES

Super
Publisher's
Closeout
Sale



Block Out

Colorful and delightful strategy game that everyone in the family will want to play.

Don't miss these six dazzling, ready-to-run games complete with a 16-page magazine jammed with instructions!

Supplies Limited, So Order Early!

YES! I want to have the time of my life! Send me COMPUTE's BEST PC GAMES disk. I'll pay just \$5.95 for each 5 1/4-inch or \$6.95 for each 3 1/2-inch disk plus \$2.00 shipping and handling per disk.

Please indicate how many disks of each format you'd like:

___ 5 1/4-inch disks at ~~\$9.95 each~~ \$5.95 each

___ 3 1/2-inch disks at ~~\$10.95 each~~ \$6.95 each

___ Subtotal

___ Sales tax (Residents of NC and NY, please add appropriate sales tax for your area.)

___ Shipping and handling (\$2.00 U.S. and Canada, \$3.00 surface mail, \$5.00 airmail per disk. For delivery outside the U.S. or Canada, add \$10.00 for postage and handling.)

___ Total enclosed

Name _____
Address _____
City _____
State/Province _____
ZIP/Postal Code _____
___ Check or Money Order ___ MasterCard ___ VISA
Credit Card No. _____ Exp. Date _____
Signature _____ (Required)
Daytime Telephone No. _____

Send your order to **COMPUTE's BEST PC GAMES**
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408

All orders must be paid in U.S. funds by check drawn on a U.S. bank or by money order. MasterCard or VISA accepted for orders over \$20. This offer will only be filled at the above address and is not made in conjunction with any other magazine or disk-subscription offer. Please allow 4-6 weeks for delivery. Sorry, but telephone orders cannot be accepted. Disks available only for IBM PC and compatibles. Offer good while supplies last.

COMPUTE's DiscoveryDisks Presents:

MathVoyager

Have a blast while improving your math skills!

Introducing *MathVoyager*, the first release in COMPUTE's new DiscoveryDisks series of **engaging—and educational—games.**

Suddenly you're in command of a starship. You leave flight school and find yourself on the bridge of a battleship in deep space. Your mission: Rendezvous with the friendly craft on your radar screen to win. On the way, blast enemy saucers to pieces with your lasers. But be careful—if you run into too many UFOs, your shields will fail, and it's back to flight school.

Getting fuel and ammo is as easy as answering questions correctly. Maneuvering works the same way—answer a question correctly and go where you want.

Succeed, and you'll be eligible for the hall of fame.

Materials: Any IBM-compatible computer with DOS 2.0 or higher and a CGA, EGA, MCGA, VGA, Hercules, or Tandy 16-Color graphic card.

**ORDER YOUR COPY
OF MATHVOYAGER TODAY!**

Report Card

Program: MathVoyager
Subject: Math, ages 10 and older
Grade: **A+**

Terrific job!

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

YES! Please send me ___ 5 1/4 inch disk(s) (\$14.95 each) ___ 3 1/2 inch disk(s) (\$15.95 each).

___ Subtotal

___ Sales Tax (Residents of NC and NY please add appropriate sales tax for your area.)

___ 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 _____

Daytime Telephone No. _____

Name _____

Address _____

City _____

State/Province _____ ZIP/Postal Code _____

Send your order to MathVoyager, 324 W. Wendover Ave., Suite 200, Greensboro, NC 27408.



DISK UPDATE

J O Y C E S I D E S

For those of you who own laptop computers, we've changed the disk menu colors on the February 1991 disk so that the text is easier to read on your LCD display. We're sorry for the inconvenience caused by the menu colors on the previous disks.

And the Winner Is . . .

We received a solution for *ARGH!* (October 1990 *COMPUTE*). William Martin from Horseheads, New York, spent 96 hours to come up with the 130 moves to solve the game.

Press the letters in the order shown below. If +, -, ↑, or ↓ appears, move the letter in that direction.

E D C H I G F I H H† E D E
D-I G G- H D E D E† I C G F
G F↓ H D E† I C B B- A I I- C
B G F G F- H H↓ D E D E- C I
I- A G F G F- B I D E D E- H
H† I B D D↓ A G F D G F D- B
B- I E E- A G G↓ J C C- A G F
D B I G E G- A C C- J F D† B
I I- A F D F D- J C C- D F- H
G E G E† A F D F D↓ H E E† A

SLEDing News

To enter printer control codes in *SLED* (January 1989 *COMPUTE!*'s *PC Magazine*), use the F9 function key. This option allows you to see otherwise undisplayable characters. Most printers accept the code Esc 10 to invoke compressed print. To enter this code in *SLED*, press the F9 key and then press Shift-Alt-27 to display the escape character. Next press Shift-Alt-10. Use the numbers on the numeric keypad.

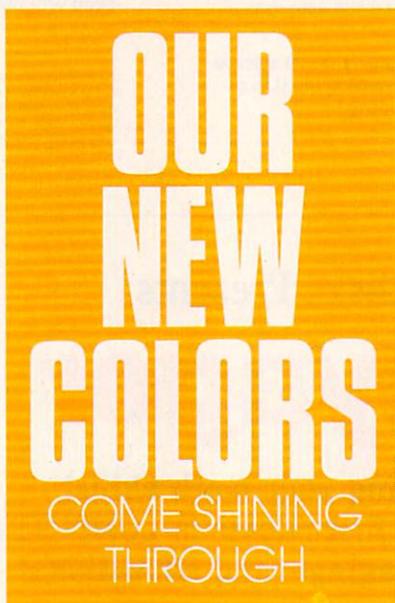
Check your printer manual for the correct printer control codes for your printer. After you've entered the codes and saved your document, you can use the Alt-Y command to bring up the DOS command line. Print your document with the TYPE *filename* > LPT1 command.

CHEXmate

You can't sort the items in the checkbook files in *CHEX* (March 1990 *COMPUTE!*'s *PC Magazine*) by cate-

gory. The sort fields for the program are the date and the check number.

You can print the items sorted by category. Enter the category in the CAT field with each item. Press F4 to bring up the Find menu. Enter the CAT string that you want to print and press Enter. Then press P to print the first occurrence of that category and find the next occurrence. Continue to press P until *Search string not found* appears at the bottom of the screen.



You'll get the date, the check number, the amount, the information in the To and Note fields, and the Category for the items. The total and net amounts will also be printed.

RAMifications

Installing *SetRAM* (May 1990 *COMPUTE!*'s *PC Magazine*) isn't as hard as you'd think. The first thing you should do is to add the line DEVICE = *drive: \path \RAM.SYS* to your CONFIG.SYS file. This command tells DOS where to find RAM.SYS.

Next enter SETRAM *drive: size* to run the program from the DOS prompt, or add the previous command to your AUTOEXEC.BAT file to run the program automatically

when you boot your computer.

The drive specified should be the next available drive letter. For instance, if you already have drive C, you should specify drive D for the ramdisk. To create a ramdisk with 64K of disk space, enter SETRAM D: 64. To remove the ramdisk, enter SETRAM D: at the DOS prompt.

Dandy Tandys

The shareware version of *TurboPaint* (October 1990 *COMPUTE*) may not run on some Tandy computers. You can register your version of the program and receive *TurboPaint Professional*. It should work on any Tandy.

The four-disk professional version includes a program disk with a screen-grabber program, a slide-show program, a font disk, an art disk, and a clip-art disk. If you register and aren't satisfied with the program, the author has agreed to refund your registration fee.

Please don't call our Greensboro office to register your copy of *TurboPaint*. Either call the author at (919) 342-9299 or send your name, address, and \$20 to Richard C. Leinecker, 309 Irvin Street, Reidsville, North Carolina 27320. Be sure to include information about your system such as video type and available memory. Also include the size disk you prefer, 5¼- or 3½-inch.

A Day Late, a Disk Short

Many readers received damaged disks when the magazine and disk were shipped together. We've decided to send the disks separately. Since the disks and magazines are shipped from different locations, it's hard to coordinate their ship dates. If your disk doesn't arrive the same day as your magazine, please be patient.

In fact, your disk and magazine may arrive up to two weeks apart. If you don't receive the disk within two weeks of receiving the magazine, call our toll-free subscription number in Harlan, Iowa: (800) 727-6937. If you live in Iowa or outside the U.S., call (515) 247-7500. □

**NEXT
MONTH'S
DISK**

THE ULTIMATE POWER DISK

Start getting the absolute most from your PC and *COMPUTE!* Subscribe to *COMPUTE's PC Disk* today!

Every other month—six times a year—you'll receive *COMPUTE's PC Disk* chock-full of ready-to-run programs, including the very best dazzling applications, powerful utilities, and eye-popping graphics. Get a direct connection to commercial-quality, free programs and the very best in shareware, all carefully debugged and fine-tuned by our experts. And all for the unbeatable price of less than \$2.00 per program.

Here's a list of the must-have programs coming on the April *PC Disk*.

- SuperMac**—Customize your keyboard for world-class performance.
- PrintPartner**—Create dazzling banners, signs, calendars, and more.
- KBD**—Control your Caps Lock, Num Lock, and Scroll Lock keys.
- File Hunter**—The last word in *Windows 3.0* text and file search.
- NewFiles**—Find files created on any date, anytime.
- SCROLOCK**—Teach Scroll Lock a new trick.

SUPER BONUS!

And that's not all. To make *PC Disk* as easy to use as possible, each issue contains *CMOS—COMPUTE's Menu Operating System*—a special menuing program that allows you to fly through installation, run programs, view and print documentation, get special tips on program requirements, and more.

So don't delay! Subscribe now! Super programs and our special menu can be yours.

All orders must be paid in U.S. funds by check drawn on a U.S. bank or by money order. MasterCard or VISA accepted for orders over \$20. This offer will only be filled at the above address and is not made in conjunction with any other magazine or disk-subscription offer. Please allow 4-6 weeks for delivery of single issues or for subscription to begin. Sorry, but telephone orders cannot be accepted.

Disks available only for IBM PC and compatible computers.

Current subscribers to *COMPUTE* or *COMPUTE's PC Magazine* will have their subscriptions extended accordingly.

YES! Start my one-year disk subscription to *COMPUTE's PC* right away.
— 5¼-inch \$49.95 per year — 3½-inch \$49.95 per year
For delivery outside the U.S. or Canada, add \$10.00 for postage and handling.

Name _____
Address _____
City _____ State _____ ZIP _____
Total Enclosed _____
Credit Card # _____
Exp. Date _____
Signature _____
Daytime Phone _____

Check or Money Order MasterCard VISA

Send your order to
COMPUTE's PC Disk
P.O. Box 3244
Harlan, IA 51539-2424
HPD2

MAIL ★ ORDER ★ MALL

A SELECTION OF USEFUL AND IMAGINATIVE PRODUCTS

▼ GOBBLE YOUR GARBAGE WITH A COMPAC™ TRASH COMPACTOR

The garbage crunch is upon us. So—no house should be without the all new Compac™—the world's first manual trash compactor. So easy to use—just pull, lift, and push! Trash is mashed to 1/5 of original size. It measures only 19½" x 12½" x 9½"—yet it holds 2 to 3 times as much as standard cans. No need to buy special bags—the Compac™ uses standard 8, 10 or 13 gallon bags. So compact, it's perfect for kitchens and bathrooms, boats and motor homes. Sleek attractive design, but tough polypropylene construction makes it withstand bending and cracking. Available in White/Blue: #A1913; All White: #A1914; White/Red; #A1915; **\$34.98** (\$7.00).



▼ SHARPEST OF THE SHARPENERS

The classic knife sharpening tool is the butcher's steel, but most people find it intimidating. The Chantry Knife Sharpener duplicates butcher steel action but makes it so simple anyone can sharpen and realign a blade edge perfectly in moments. As the knife edge is drawn between a pair of hard (Rockwell 64-65) Sheffield Steel rods, spring-loaded at just the proper angle, both sides of the blade are aligned. Works on stainless or carbon steel knives, straight or serrated edges. The Chantry is made of heavily enameled steel, can be countertop mounted. It is included in the permanent design collection of the Museum of Modern Art. **\$34.98** (\$5.00) #A1878.



▼ FRESH AIR



Concern about air pollution is on the rise. The Pollenex® Pure Air "99" Air Cleaner with Ionizer will help clear the air around you. A high voltage generator produces negative ions that help reduce minute particles of dust, tobacco smoke and other airborne pollutants. An electrostatic air filter intercepts larger airborne particles and has a deodorizing action too. Two speed air flow control. So now you can breathe easier with Pure Air "99" **\$69.98** (\$7.50) #A1962; 2 for **\$125.98** (\$10.00) #1962/2

▼ ZERO RESET SCALE



Dishwasher safe. The bowl inverts over scale for easy storage. **\$19.98** (\$5.00) #A1904.

Convenience was costly until Mouli introduced this scale. Easiest to use. Now you do not have to keep emptying the bowl, just keep adding your ingredients and set the bottom back to zero. Has a 7 PD capacity.

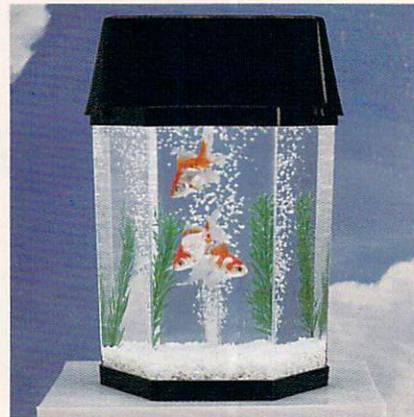
▼ EVERYTHING BAG

People on the go always have so much to carry around. The Everything Bag makes it a snap. This oversized shoulder bag is constructed of tough, water-resistant canvas material and features nine roomy pockets. Plus, an unusual zipper design enables the bag to expand to double its normal width—to a full eight inches. Adjustable 2" wide straps provides a real comfort feature. In 3 great colors. **\$24.98** (\$4.00) #A1955-Blue; #A1956-Khaki; #A1957-Gray.



▼ THE AQUARIUM THAT FITS ANYWHERE!

Create a relaxing mood anywhere with this extra quiet Mini Hex™. It's smaller than most aquariums and hold a gallon of water so it fits where others won't. Use this Mini Hex™ in the office, kids room, anywhere. You'll love the calming affect and aquariums have been approved to relieve stress. Acrylic tank and hood with built-in lamp (4 to 7 watt bulb not incl.). Under-gravel filtering systems keep your water cleaner and clearer longer. 110-120v air pump, complete set-up and maintenance instructions. Lifelike greenery and free fish food. Made in the USA. **\$24.98** (\$5.75) #A1934.



▼ TEACH AN OLD LAMP NEW TRICKS



Any lamp that takes a standard bulb can be updated. No rewiring needed—just screw into lamp socket. A touch on any metal part of lamp becomes the "switch". Once for low light, twice for medium, third for full wattage. U.L. listed; one-year factory warranty. **\$15.98** (\$4.00) #A1700. 2 for **\$27.98** (\$6.00) #A17002.

▼ INFRAVIB INFRARED HEAT MASSAGER



The Infravib Massager is good news for your aches and pains. This state of the art device combines infrared heat and a powerful wand massager in one unit. Deep penetrating Infrared has two settings and gives fast temporary relief to sore joints and muscles. Massager soothes and relaxes tired and aching muscles. Massager has a long flexible shaft with four massaging attachments (body, acupoint, leg and foot, and scalp) and two massage levels. Try Infravib—it might be just what the doctor ordered. **\$89.98** (\$6.25) #A1952.



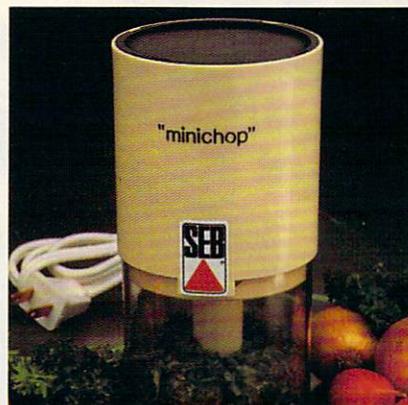
▼ LAMBSWOOL DUSTERS

Lambswool contains a natural static charge that makes dust literally leap off surfaces. This magnetic attraction is just the thing for dusting off bric-a-brac, china, crystal, pictures, anything. Our dusters are imported from England. They are the fluffiest, highest quality lambswool in the world! We offer a set of four lambswool dusters: our 27" duster, our telescoping duster which extends to more than four feet—lets you reach high corners, top shelves, overhead lights and collapses to 28", and two mini dusters for extra fragile objects. **\$22.98** (\$4.00) #A1870.



▼ CHOP, CHOP, QUICK, QUICK

Food processors are great for big slicing jobs, but have you ever tried to mince parsley in one? You end up with a combination of chunks and parsley juice. From France, where mincing is an art and garnishes are *de rigueur*, comes the electric Minichop for all those in-between jobs that are too tedious to do by hand, too small for a full-size processor. The Minichop gives you fine even chopping for onions, garlic, fresh herbs; nuts, coffeebeans, peppercorns; even baby food. Simple to use and a snap to clean and costs **\$24.98** (\$5.00) #A1107.



▼ A REMOTE FOR ALL REASONS



Looking for a way to simplify your handling of modern electronic gadgets? Then the One For All Remote Control is for you. Remarkably easy to use, it can replace up to 13 different remotes for your TV, cable, VCR, CD or other infrared appliances. When combined with its command center and X-10 modules (purchased separately) it can control lighting, infrared signal burglar alarms, and a host of small appliances. And, with its computer interface, it can be upgraded to work with the new, more advanced infrared-controlled security and energy management systems. So — simplify your life with the one remote that replaces all the rest. Includes 4 AAA batteries. 90 day limited warranty. 7 1/2" H x 2 3/8" W x 1/2" D. **\$129.98** (\$6.00) #A1907.

▼ SPIN WASH, SPIN DRY

The Jet Spin Washer/Dryer for salad greens and vegetables, does a better job with less effort than any other method of preparation. As the stream of water hits the spinning inner basket, it bursts into spray, giving the contents a good drenching before being carried off by centrifugal action. Flywheel action keeps basket spinning with only a few gentle tugs. Spray wash coaxes dirt and grit from innermost lettuce wrinkles. Turn off the faucet and with a few more tugs the remaining water spins away, leaving you with crisp clean salad greens, so dry they are positively perky. Also works for fruits and vegetables. The Jet Salad Washer/Dryer is self-draining, splashfree. **\$19.98** (\$4.50) #A1520.



HOW TO ORDER

30 Day
Money Back
Guarantee
For Exchange
or Refund

CALL TOLL FREE 24 HOURS A DAY, 7 DAYS A WEEK

1-800-365-8493

For Customer Service Only
1-800-678-4955 (M-F: 9 AM-5 PM EST)

We Honor:
MasterCard, Visa, and American Express.

If ordering by mail send remittance to **MAIL ORDER MALL**, Dept. CP-031; P.O. Box 3006, Lakewood, N.J. 08701. Item price is followed by shipping and handling in (). Be sure to add both together to arrive at total price. N.J. residents add 7% sales tax. When using credit card — include account number, exp. date, signature. Sorry, no Canadian, foreign or C.O.D. orders.

**SMASH HIT
RETURN ENGAGEMENT**

THE SECOND ANNUAL

WORLD OF AMIGA IN NEW YORK CITY

★ STARRING ★

THE AMAZING AMIGA

★ FEATURING ★

**AMIGA HARDWARE • AMIGA SOFTWARE
AMIGA ACCESSORIES • SEMINARS • BARGAINS**

Pier 90, New York Passenger Ship Terminal, New York NY

APRIL 5-7, 1991

Friday, Saturday & Sunday, 10 am - 5 pm

PRE-REGISTRATION (Deadline March 15):

\$10 per single day, \$25 for all 3 days

REGISTRATION AT THE SHOW:

\$15 per single day, \$30 for all 3 days

Admission includes exhibits and seminars.

World of Amiga in New York City is restricted

to persons 12 years of age and older.



**WORLD OF
AMIGA
IN NEW YORK CITY**

Sponsored by Commodore Business Machines.
Produced by The Hunter Group. For more information
call (416) 595-5906 or fax (416) 595-5093.

SAVE WITH PRE-REGISTRATION

World of Amiga in New York City, April 5-7, 1991

Please register me for World of Amiga at the Special Pre-registration Rate

\$10 for a single day \$20 for 2 days \$25 for all 3 days

NAME _____

COMPANY (if applicable) _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

Make Check or Money Order payable to

The Hunter Group, 3380 Sheridan Drive, Suite 120, Amherst, NY 14226



64/128 VIEW

T O M N E T S E L

Before I left for Toronto, I'd heard the World of Commodore held there each year is the biggest Commodore show in the world. So it wasn't too much of a surprise to find out that more than 30,000 people attended the eighth-annual show held late last year. For us at COMPUTE, it was a great opportunity to meet and chat with our Canadian readers, as well as the many American Commodore 64/128 and Amiga owners who crossed the border to attend.

The Hunter Group did an outstanding job organizing the show, signing up exhibitors, arranging for seminars, informing the public, and helping solve the myriad of problems that inevitably crop up at shows this size. Gordon Hunter, Karen Jewel, and the rest of the staff deserve thanks for all the fine work they do to make these shows run so smoothly.

Even the weather cooperated—for the most part. Neither rain nor snow impeded attendees this year as they made their ways to the Toronto International Centre. Some exhibitors had difficulty leaving after the three-day show closed, but more about that later.

Of course, not everything came off without a hitch. I arrived a day early to set up the COMPUTE booth. We had shipped computer books, disks, ball caps, and other items to sell, plus credit card forms, signs, pens, pencils, paper, tape, and other incidental items. They all arrived in good order and on time. There was only one thing missing. Well, actually it was more like 1500 things: our magazines.

We had shipped more than 1000 copies of the Gazette subscrip-

tion edition and 500 copies of the Amiga Resource edition, but they were nowhere to be found. There's nothing like being an exhibitor at a trade show with nothing to exhibit.

After making several telephone calls to Greensboro, New York, and points beyond, we finally located the missing magazines. Despite relaxed trade restrictions between Canada and the United States, we found the magazines had been delayed in customs. The Gazette subscription editions did arrive shortly after the show opened on Friday morning, and we finally had something to offer.

The Amiga Resource editions weren't quite so forthcoming. They were delayed longer but cleared just as the customs office closed for the weekend. We could pick them up first thing Monday morning. Since the show closed Sunday, that didn't do us much good.

As far as I know, the magazines

are still there. If you stop by a customs warehouse in Toronto, you might be able to pick up a copy of the November 1990 issue at a reasonable price. Better yet, tell the officials you're a friend of a COMPUTE editor, and he said you could have one free.

Things went a little smoother for most exhibitors, although new products for the 64 were in short supply. One exception was an exciting GEOS product on display at the Creative Micro Design (CMD) booth.

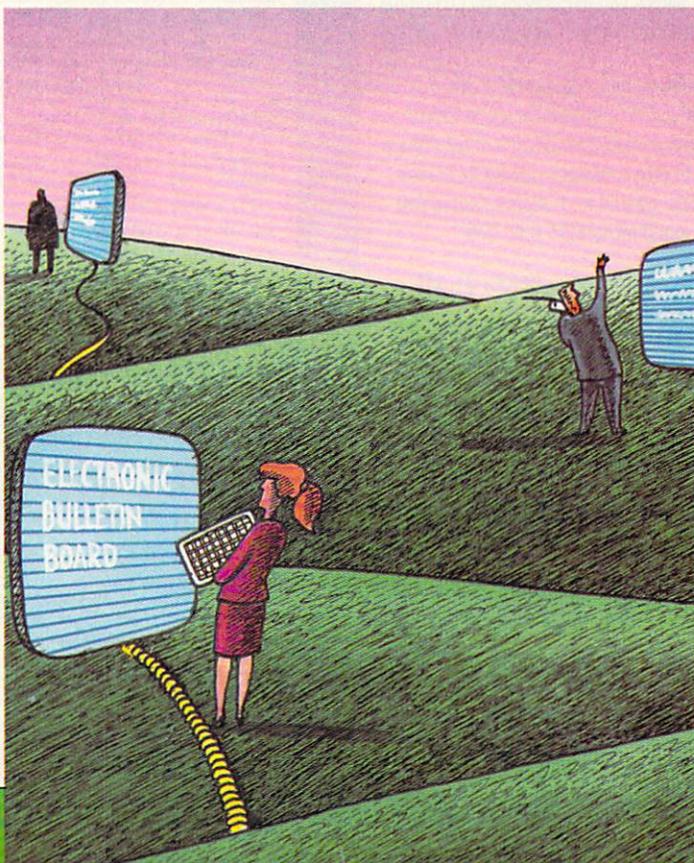
CMD is distributing a program called *gateWay*. It's an improved replacement for the GEOS deskTop. Author Paul Bosacki was on hand to show off some of its features.

For one thing, *gateWay* offers full three-drive support with autoswapping for those applications that recognize only two drives. Now you can launch your favorite applications from drive C and copy to and from drive C without swapping drives.

Other big news at the show was Commodore's first showing to the public of its CDTV interactive compact disc system. CDTV combines audio, video, graphics, and computer interactivity into a single CD-based system that resembles a VCR or CD player.

CDTV had been shown to the press and trade at earlier shows, but this was the first time it was shown to the public. CDTV titles include games, reference material, sports and leisure topics, and self-improvement programs—and more are on the way. The system should be available by now, selling for less than \$1,000.

While there weren't many new 64 products, we still liked the show. □





• Your Memory Location •



HD Series™ Hard Drives

THE NEW STANDARD
IN 64/128 HARD DRIVES



The CMD HD series of hard drives for the Commodore 64 and 128 have been designed to provide the highest level of compatibility and performance. These drives incorporate the latest in SCSI technology with advanced circuit design to bring you the most features at an affordable price. CMD drives allow you to achieve the higher level of productivity you require to get the most from your existing software - today!

- Compatible with GEOS™, CP/M™, BBS programs and most commercial software.
- 3 1/2" SCSI technology for quiet reliable operation in a compact case about the size of a 1581.
- Built-in Commodore compatible DOS responds to all 1541, 1571 and 1581 commands.
- Up to 254 partitions in sizes ranging from 256 blocks to 65,280 blocks each.
- Built-in real time clock automatically time and date stamps all files.
- Compatible with Amiga, IBM and Macintosh systems for convenient upgrading.
- Connects easily to the serial bus, leaving ports open for use with cartridges, REU's and RAMLink.
- Supports all serial and JiffyDOS protocols, plus parallel interface for connection to RAMLink.
- Easy-to-use utilities allow backing up and copying files to and from 1541, 1571, or 1581 drives.
- Supports an unlimited number of true subdirectories which share all blocks within a partition.
- Built-in Q-Link software allows easy access to America's most popular 64/128 online service.
- External power supply avoids overheating and wear on computer power supply.
- Includes standard SCSI port and all utilities needed to expand the system (up to 4 Gigabytes).

HD-20 \$599.95 • HD-40 \$799.95 • HD-100 \$1149.95 • HD-200 \$1499.95

SD Series SCSI Hard Drives - Add-on drives for the CMD HD or any other SCSI interfaced computer such as the Amiga™, Macintosh™ or IBM™. SD series drives come mounted in our sturdy steel case and include an external power supply and connecting cable. SD drives also come equipped with a second SCSI port to allow chaining of additional SCSI devices.

SD-20 - \$449.95 SD-40 - \$549.95 SD-100 \$899.95 SD-200 \$1299.95

Lt. Connector - Increase the performance and compatibility of your LTK and CMD HD. The Lt. Connector allows you to connect the two drives for greater capacity. \$19.95 (\$14.95 with purchase of any HD or SD drive)

JiffyMON - A high performance Machine Language Monitor designed to work in conjunction with JiffyDOS. JiffyMON is loaded with useful features and can be used without exiting from BASIC. It also has a built-in drive monitor for easy access to drive memory. JiffyMON comes complete with a well documented user's manual and offers features just not found in other machine language monitors. \$19.95 + \$1 S/H

Serial Cables - 30' high quality serial cables. \$3.95 + \$1 S/H

1541-II/1581 Replacement Power Supplies

These switching power supplies are the same heavy duty, cool running units found on the HD series hard drive and are much more reliable than the supplies issued by Commodore as standard equipment. They are also repairable and reasonably priced. \$49.95 + \$6.00 S/H

- Supports CMD HD Series Hard Drives and RAMLink.
- 1581 support. Simplified partition selection.
- Quick printer output toggle. No more complicated command sequences.
- Adjustable sector interleave. Increase performance on hard-to-speedup software.

JiffyDOS™ Version 6.0

The Ultimate Disk Drive Speed Enhancement System

JiffyDOS 64 System - \$59.95 JiffyDOS 128 System - \$69.95

Each system includes computer Kernel ROM(s) and one drive ROM.
Please specify computer and drive model numbers and serial numbers when ordering.
Additional Drive ROMS - \$29.95 each.

- Ultra-fast multi-line serial technology. Enables JiffyDOS to outperform Cartridges, Burst ROMs, Turbo ROMs, and Parallel Systems - without any of the disadvantages.
- Speeds up all disk operations. Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL,USR & direct-access files up to 15 times faster!
- 100% Compatibility Guarantee - Guaranteed to work with all Software and Hardware
- Uses no ports or extra cabling. ROMs install internally for speed and compatibility.
- Easy Installation. No experience or special tools required for most systems.
- Supports C64, 64C, SX64, C128, C128D, 1541, 1541C, 1541-II, 1571, 1581
- Can be completely switched out. Returns you to a 100% stock configuration
- Built-in DOS Wedge. Plus 17 additional commands and convenience features.

- Built-in two drive file copier. Supports all file types and drive types.
- REU support. Fully supports Commodore REUs (RAM Expansion Units) under RAMDOS.
- Enhanced text screen dump. Auto-recognition of uppercase/graphics & lowercase.
- Redefinable 64-mode function keys. Easily redefine the keys to suit your specific needs.

• SUPER SAVINGS COUPON •

Any JiffyDOS System
ONLY \$15.00*

*with the purchase of any HD hard drive

To receive these low prices (US & Canada), send in this coupon with your order. For ordering, shipping and credit card details see the adjoining box. Offer expires 2/31/91. This coupon may not be used with any other offer.

Ordering Information and Shipping Charges

HD and SD Hard Drives: Continental US: \$25.00 per drive (UPS ground), \$35.00 (2nd-Day), \$45.00 (Next-Day), Canada: \$50.00 (Airmail). COD to U.S. only \$4.00 add'l charge. Foreign prices: 20Mb, \$699.95, 40Mb, \$899.95, 100Mb, \$1249.95, 200Mb, \$1599.95 Postage: \$35.00
JiffyDOS & Lt. Connector: Add \$4.50 per order (UPS ground), \$8.50 (2nd-Day Air), plus \$4.00 for APO, FPO, AK, HI, and Canada, or \$14.50 for overseas orders. No additional shipping if ordered with any hard drive. COD's to US only - add'l \$4.00
Tax: MA residents add 5% sales tax.
Terms: We accept VISA, MasterCard, Money Orders, C.O.D., and personal checks (allow 3 weeks for personal checks to clear). Credit card orders provide the following: Card holders name, billing address, home/work phone, card number, expiration date and issuing bank.

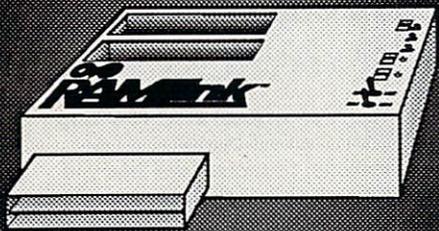
• WE VERIFY ALL CREDIT CARD INFORMATION AND PROSECUTE INDIVIDUALS ATTEMPTING TO PERPETRATE FRAUD •

Note: Prices and specifications subject to change without notice. Geos is a trademark of Berkeley Software, CP/M is a trademark of Digital Research, Commodore 64, Commodore 128, Commodore 1541, Commodore 1541-II, Commodore 1571, Commodore 1581 and Commodore RAMDOS are registered trademarks of Commodore International, Amiga is a trademark of Commodore-Amiga, Macintosh is a trademark of Apple Computer, IBM is a trademark of International Business Machines, Lt. Kernel is a trademark of Xetec Inc. and Fiscal Information Inc.

**Now accepting
advance orders
Call for details**

RAMLink™

**Power-backed REU interface and
expandable RAM Disk**



What is RAMLink?

RAMLink is a multi-purpose hardware interface designed to overcome the limitations of existing RAM expansion units (REUs). RAMLink delivers the performance and compatibility lacking in past REU's by incorporating CMD's proprietary RL-DOS and advanced features into a compact unit which allows most software to utilize Commodore 1700 series REU's, GEORAM, PPI's RAMDrive, and CMD's RAMCard as if it were a disk drive. Optional RAMCard installs internally and can be used alone or in combination with the storage of an external REU for a maximum capacity of 16 Megabytes.

- Supports Commodore 1700, 1764, 1750, Berkeley Softworks GEORAM and PPI's RAMDrive.
- Optional RAMCard allows RAMLink to be used as a RAM Disk with or without a separate REU. User Expandable from 1 Mb to 16 Mb using standard SIMMs.
- Pass-thru connector allows use of cartridge port peripherals such as utility cartridges.
- Reset, Disable, Direct Access mode and SWAP functions are all standard features.
- RAM port provides power back-up to REU's.
- Parallel port provides ultra-fast data transfer when connected to CMD HD series hard drives.
- Includes separate power supply - optional battery available to protect against power failure.

RAMLink (w/out internal RAM)	\$149.95	RAMCard w/ (1 Mb)	\$149.95
RAMLink w/ RAMCard (1 Mb)	\$259.95	RAMCard w/(2 Mb)	\$239.95
RAMLink w/ RAMCard (2 Mb)	\$349.95	RAMCard w/ (3 Mb)	\$329.95
RAMLink w/ RAMCard (3 Mb)	\$439.95	RAMCard w/ (4 Mb)	\$419.95
RAMLink w/ RAMCard (4 Mb)	\$529.95	1 Mb SIMM (User Installed)	\$100.00
RAMLink Battery back-up unit	\$24.95	Parallel Cable for CMD HD	\$14.95

Shipping: US: \$10.00 (UPS), \$18.00 (2nd day), COD add \$4.00 Canada \$20.00

BOTH RAMLINK AND RAMDRIVE INCLUDE RL-DOS

- Allows vast amounts of commercial software, including GEOS, to access all available RAM as a high-performance RAM Disk.
- RL DOS performs up to 20 times faster than Commodore RAMDOS, up to 400 times faster than a stock 1541 and provides full DOS command compatibility.
- Up to 32 1541/1571/1581 emulation or Native mode partitions, plus true subdirectories.
- Includes built-in JiffyDOS Kernel for high-speed access to JiffyDOS equipped disk drives.
- Software for copying files (FCOPY) and complete disks (MCPY) included.
- Many other features, including CMD's exclusive device number SWAP functions.

WHICH ONE IS RIGHT FOR YOU?

Both RAMLink and RAMDrive give Commodore users powerful features never before available in a RAM expander. RAMDrive is intended mainly for those who do not require the high RAM capacity of RAMLink (up to 16 Mb), RAMLink's Pass-Thru port or the parallel port for communicating with the CMD HD Series of hard drives. RAMDrive is an excellent choice for those who desire portability since the internal battery pack can keep the contents of RAMDrive intact for several days. RAMLink is the perfect choice for geoRAM owners who want the ability to use that device with programs other than GEOS. RAMLink has a built-in RAM port for easy use with a geoRAM or Commodore REU. No matter which CMD RAM device you select, you'll benefit from fantastic capabilities of having a high speed RAMDisk equipped with RL-DOS and the outstanding value of CMD support.

What is RAMDrive?

RAMDrive is a fresh new approach to RAM expansion for the Commodore 64 and 128. RAMDrive is a self contained battery backed cartridge with capacities of 512K, 1 Mb and 2 Mb. RAMDrive incorporates RL-DOS, an ultra-fast, easy-to-use operating system similar to the HD-DOS found in CMD HD series hard drives. This proprietary DOS allows various types of partitioning along with compatibility and speed unsurpassed by previous RAM Expansion systems.

- Compatible with vast amounts of commercial software as an ultra-fast RAM disk.
- RL-DOS operates up to 20 times faster than Commodore's RAMDOS.
- Power back-up eliminates the loss of files upon powering down the computer while the battery protects data during transportation or power outages.
- Available in 512K, 1 Mb and 2 Mb models at incredibly low prices.
- DOS includes JiffyDOS Kernel routines for high speed disk access with JiffyDOS equipped disk drives.
- Software for copying and GEOS compatibility included.
- Reset switch allows computer reset without losing data in RAMDrive.
- Disable switch allows RAMDrive to be disabled at any time.

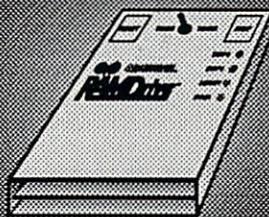
RAMDrive w/512K \$149.95 RAMDrive w/1 Mb \$199.95 RAMDrive w/2 Mb \$289.95

Shipping: US: \$7.50 (UPS), \$14.00 (2nd day), COD add \$4.00, Canada \$15.00. See Ordering and Shipping information elsewhere in this ad for credit card information.

RAMDrive™

**HIGH PERFORMANCE BATTERY
BACKED RAM DISK CARTRIDGE**

Designed and manufactured by
**PERFORMANCE
PERIPHERALS Inc.**



CMD

Creative Micro Designs, Inc.

50 Industrial Dr., P.O. Box 646, East Longmeadow, MA 01028

ORDERS ONLY: 800-638-3263

BBS: 413-525-0148

Questions/Support: 413-525-0023

FAX: 413-525-0147



NEWS & NOTES

Only Two Things Are Certain

It's almost the time of year again when Uncle Sam asks for his piece of your financial pie. Paying your taxes is never easy, but the people at Taxaid Software (800 Middle Road, La Pointe, Wisconsin 54850; 715-747-5862) can make filling out the tax forms a little easier. *Taxaid* (\$49.95), designed for home use, was written by experienced tax accountants and thoroughly tested.

The latest edition of *Taxaid* includes all the current changes in the tax laws for the 1990 tax year. Included are IRS Form 1040; Schedules A, B, C, D, E, and SE; and Form 2441 (Child Care). Calculations are automatic, and all tax tables are built in.

Forms are printed in IRS-approved plain-paper format and can be submitted exactly as they come off your printer. Updates for 1991 will be available for \$18.

Rescue the Princess

You're on a quest to rid your kingdom of an evil demon and his minions. Your quest will lead you through caves, swamps, temples, and castles as you attempt to rescue the lovely princess.

Wrath of the Demon (\$39.95) from ReadySoft (30 Wertheim Court, Unit 2, Richmond Hill, Ontario, Canada L4B 1B9; 416-731-4175) features three megabytes of graphics data, 600 screens of action, and more than 1400 frames of animation.

80-Column Dialogue

If you have a 128 or 128D with an 80-column display, *Dialogue 128* (\$49.95) is advanced terminal communications software that's available from Shining Star Software (#1205-1640 Bayview Avenue, Toronto, Ontario, Canada M4G 4E9).

This terminal program supports 64K video RAM, REUs, all disk drives, burst mode, partitions, joysticks, trackballs, mouse and all serial bus interfaced printers. It also supports CompuServe Quick B, Punter C1, Xmodem checksum, Xmodem CRC, Xmodem 1K, and YModem Batch protocols.

Dialogue 128 also has a 64,000-character capture buffer and a 9,000-character scrollbar review buffer. An autoexecute script language allows unattended and automated operation. All commands are available through hot keys or drop-down menus. The program also supports most popular modems.



Hatteras

Hatteras by Robert Woodall of Rural Hall, North Carolina, is this disk's Picture of the Month.

Welcome to "Gazette Gallery." Each month *Gazette Disk* features a collection of the best 64/128 artwork submitted by our readers. We pay \$50 for each piece of art we accept and an extra \$50 for the one selected as Picture of the Month. Send your original artwork to Gazette Gallery, COMPUTE Publications, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. □

FOR ORDERS AND INFORMATION IN USA & CANADA CALL

1-800-759-6565

Order Hours: Mon-Thurs, 9am-7pm/Fri, 9am-4:00pm/CLOSED Sat/Sun, 9:30-6(ET)

WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS DISCOUNTS FOR QUANTITY ORDERS RUSH SERVICE AVAILABLE!

MONTGOMERY GRANT

TM COMPUTE (GAZETTE) 3/81

OUTSIDE USA & CANADA CALL

(718)692-0790

ESTABLISHED 1967

OR WRITE TO:

MONTGOMERY GRANT: MAIL ORDER DEPT.
P.O. BOX 58 BROOKLYN, NY, 11230
FAX #7186923372 / TELEX 422132 MGRANT
RETAIL OUTLET
PENNY STATION, MAIN CONCOURSE
(Beneath Madison Sq. Garden) NYC, NY 10001

RETAIL OUTLET

Store Hrs: MON-WED 9-7/THURS 9-8/FRI 9-4/CLOSED SATURDAY/SUN 9:30-7

FOR CUSTOMER SERVICE CALL: (718) 692-1148

CUSTOMER SERVICE HOURS: MON-THURS, 9am-5pm / FRI, 9am-3:00pm



NO SURCHARGE FOR CREDIT CARD ORDERS

WE INVITE CORPORATE AND EDUCATIONAL CUSTOMERS. DISCOUNTS FOR QUANTITY ORDERS. RUSH SERVICE AVAILABLE.

CUSTOMER TOLL FREE TECHNICAL SUPPORT

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. All APO FPO orders are shipped first class priority air. All orders can be shipped air express. Call for details. We check for credit card theft. DCA #800233.

Commodore 128 D

C-128D w/Built-in Disk Drive
Includes 1 FREE Game
(a \$19.95 Value)

\$349



128D COMPLETE PACKAGE

- Commodore 128-D Computer with Built-in Disk Drive
- Commodore Color Printer
- 12" Monitor
- FREE Game (a \$19.95 Value)

\$399

128D DELUXE PACKAGE

- Commodore 128D Computer with Built-in Disk Drive
- Magnavox RGB Color Monitor
- Commodore Color Printer
- FREE Game (a \$19.95 Value)

\$569

Commodore 64C

- Includes:
- GEOS Program - Quantum Link Software
 - One Joystick



\$149.95

FREE Joystick (Necessary for GEOS - a \$19.95 value)

64C STARTER PACKAGE

- Commodore 64C w/Excelsior Plus FSD-2 Disk Drive
- GEOS Program
- Quantum Link Software
- FREE Joystick

\$269

64C TEST PILOT PACKAGE

- Commodore 64C Computer
- Commodore 1541-II Disk Drive
- Ace Joystick
- GEOS Program
- Quantum Link Software

5 SOFTWARE PACKAGES INCLUDES:

- Advanced Tactical Fighter
- Infiltrator II
- Harrier
- Crazy Cars
- Tomshawk

\$289

COMMODORE 64C COMPLETE PACKAGE

- Commodore 64C Computer
- Commodore 1541 Disk Drive
- Commodore Color Printer
- 12" Monitor
- 10 Diskettes
- GEOS Program
- Quantum Link Software

\$329

COMMODORE 64C COLOR PACKAGE

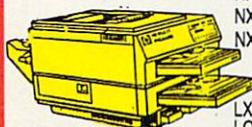
- Commodore 64C Computer
- Commodore 1541 Disk Drive
- Commodore Color Printer
- Color Monitor
- 10 Diskettes
- GEOS Program
- Quantum Link Software

\$439

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

PRINTER SPECIALS

STAR	CITIZEN
NX-1000C.....\$189.95	GSX-140.....\$284.95
NX-1000C Rainbow...\$227.95	200GX.....\$169.95
NX-1001.....\$149.95	COLOR OPTION
NX-1020 Rainbow.....\$194.95	KITS.....CALL
NX-2420.....\$289.95	
NX-2420 Rainbow.....\$329.95	
	PANASONIC
	KXP-1180.....\$149.95
	KXP-1191.....\$219.95
	KXP-1124.....\$279.95
	KXP-1624.....\$339.95
	EPSON
	LX-810.....\$189.95
	LQ-510.....\$279.95
	FX-850.....\$329.95
	COMMODORE
	MPS 1230.....\$189.95



BROTHER HR-5
80 Column Thermal Printer

\$39.95

COMMODORE 1520
40 Column Color Plotter Printer

\$19.95

SANYO PR-3000
Daisy Wheel Letter Quality Printer

\$59.95

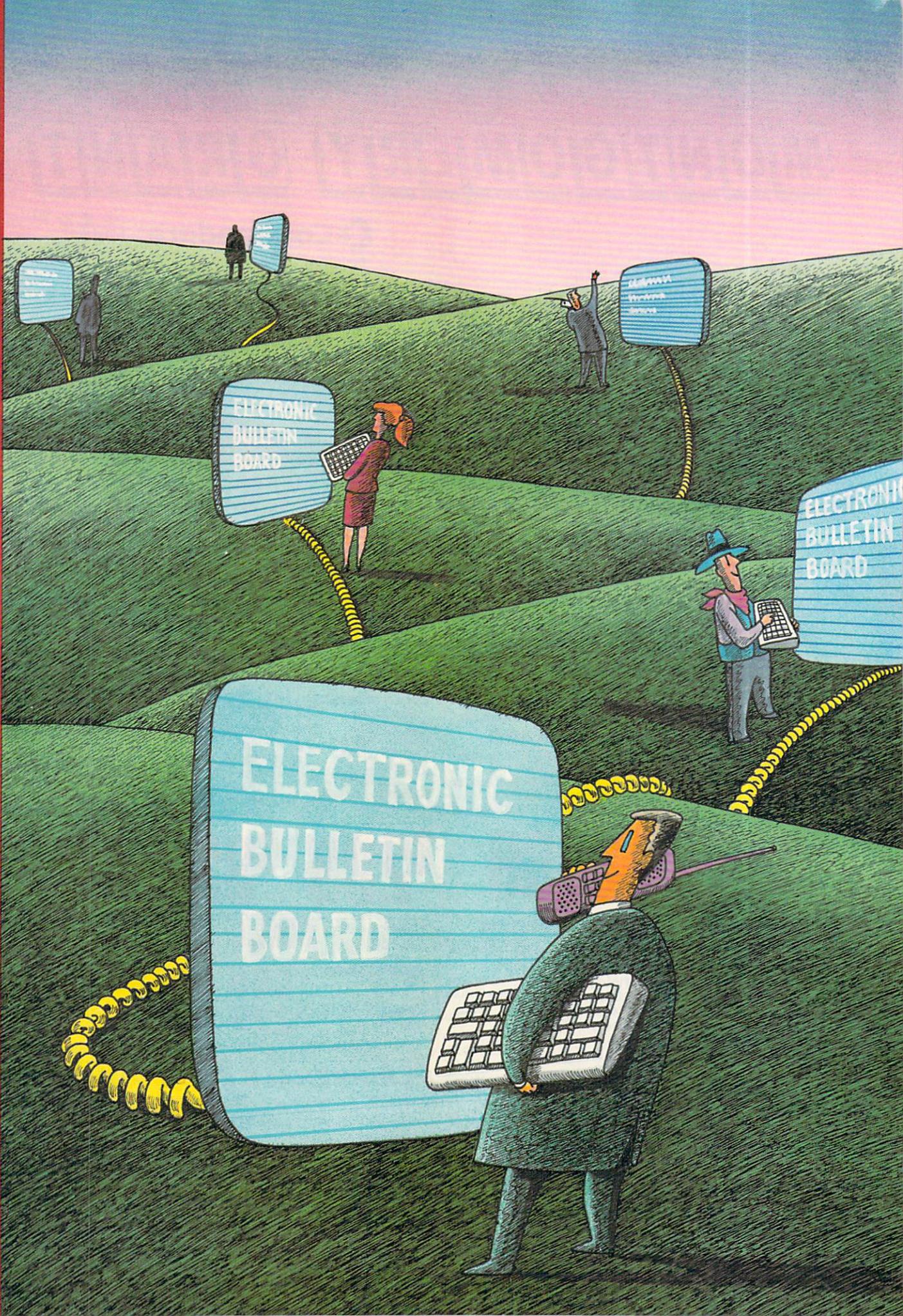
COMMODORE 1571 DISK DRIVE	CALL	MAGNAVOX 18" COLOR COMPOSITE MONITOR MODEL 8702	\$165
COMMODORE 1541II DISK DRIVE	\$159	MAGNAVOX 18" COLOR RGB/COMPOSITE MONITOR	\$259
COMMODORE 1084 MONITOR	\$279	1750 CLONE RAM EXPANSION	\$189

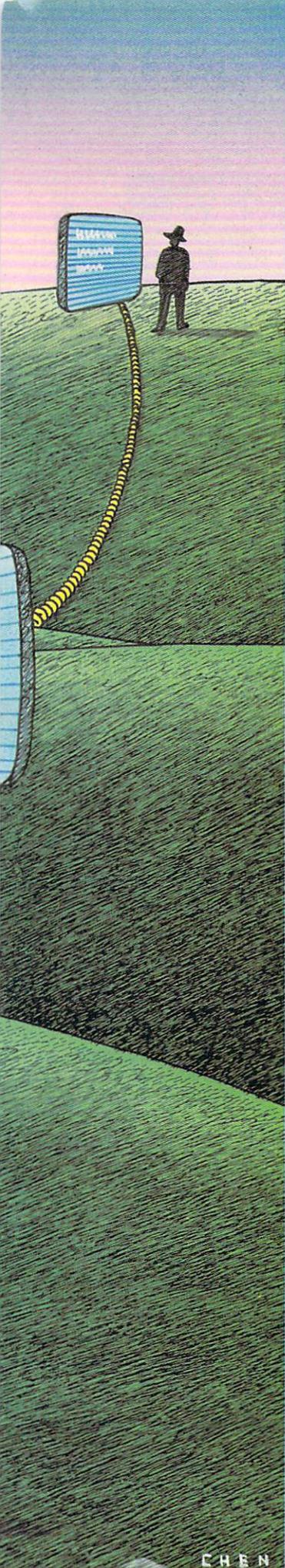
OTHER ACCESSORIES FOR YOUR COMMODORE COMPUTER AVAILABLE

PERIPHERALS FOR COMMODORE

COMMODORE 1700 RAM Expansion.....\$79.95	C-64/C-64C Power Supply.....\$29.95
COMMODORE 1764 Expansion Module.....\$119.95	WINNER M3 Mouse.....\$49.95
CARDCO G-WIZ Interface.....\$49.95	XETEC S. Graphix Jr. Interface.....\$29.95
CARDCO SUPER G Interface.....\$69.95	XETEC S. Graphix Sr. Interface.....\$49.95
COMMODORE 1660 Modem.....\$19.95	XETEC Supergraphix Gold.....\$74.95
COMMODORE 1670 Modem.....\$79.95	Micro C-128 Power Supply.....\$59.95

SEE OUR AD IN THIS MONTH'S AMIGA SECTION OF THIS MAGAZINE FOR GREAT AMIGA SPECIAL VALUES





SO YOU WANT TO BE A SYSOP?

IF YOU'VE EVER
THOUGHT ABOUT SETTING
UP YOUR OWN ELECTRONIC
BULLETIN BOARD, HERE'S
SOME ADVICE
FROM AN EXPERT

Many computer users who call electronic bulletin boards often wonder what it would take to operate their own systems. It takes time, effort, and sometimes money to become a systems operator (sysop), but the rewards can be many. We'll take a look at what it takes to run your own bulletin board system (BBS). ▸

DAVID CHEN

R I C K L E M B R É E

With your computer and a modem, a device that transmits and receives computer signals by telephone, you can call practically any BBS in the country or world for the price of the phone call (see "How to Access a BBS"). Most BBS callers enjoy reading messages from other callers and posting their own comments and questions. They also like to download the free software and play the online games many boards offer. It's easy to understand a BBS's appeal, but what enjoyment does the sysop derive from having his or her computer and telephone tied up for the benefit of others?

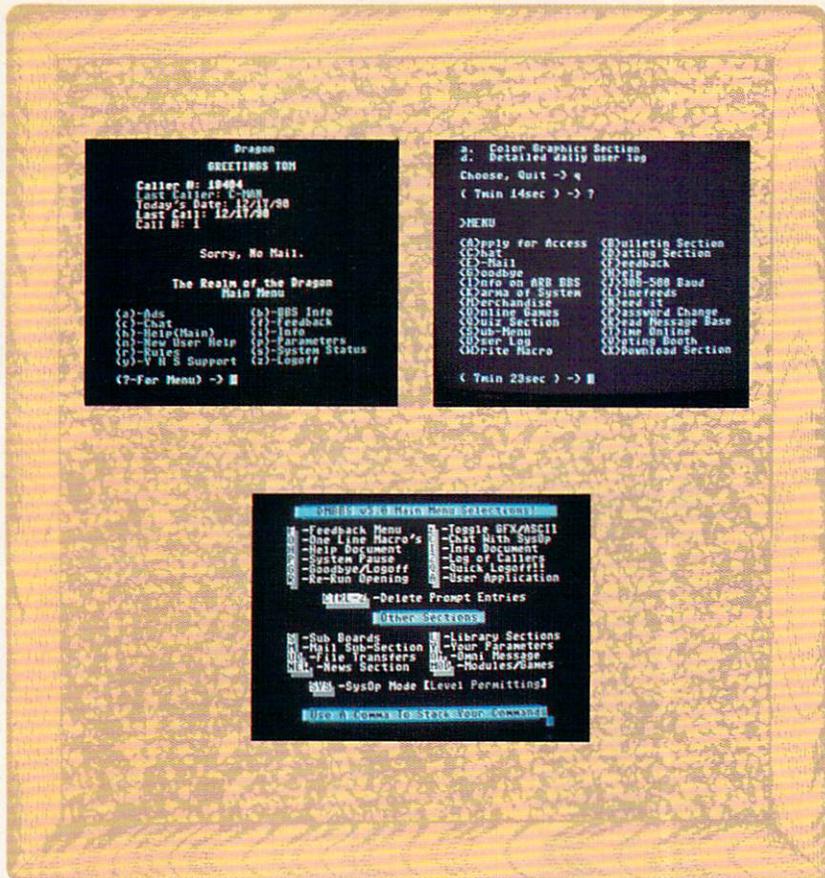
With your own BBS, you can literally speak to the computing world via your own little soapbox. You can use it to exchange programs and files, to voice your opinion, or to create your own fantasy world. I've seen some BBSs that are operated like an adventure game, where the users are citizens of a fantasy kingdom. A BBS is merely a form of communication between you, the sysop, and the users. Bear in mind the importance of interaction between users. Without that, you will not have a successful BBS. The spirit of a BBS is in the sharing of knowledge among fellow computer enthusiasts. As in a conversation, both parties must contribute for a bulletin board to be successful.

The First Steps

In this article, I'll attempt to instruct the neophyte sysop on the ins and outs of starting his or her own BBS, describing the minimum requirements for a system run on a 64 and those for a larger 128 system. Before you attempt to start a BBS, however, I can't emphasize enough the importance of joining a user group. A user group is a great place to obtain help with a project like this, and it will most likely have several public domain (PD) or shareware BBS programs available for you to try at little or no cost.

If your user group runs a BBS, you may want to get involved with it to get your feet wet before attempting to start your own. In addition, once you've set up a BBS, you'll want a ready supply of PD software to make available to your callers. A user group is a great place to obtain good PD software.

Before you set up your BBS, ask yourself what you want it to do. Do you want it to be your own private BBS that only your friends can access, or will it be open to the public with restricted or unrestricted use? My suggestion is to do as I did in 1984: Start small and allow only friends online at first. Don't release the telephone num-



Here are sample menus from three bulletin boards available for the 64 (clockwise from upper left): Dragonfire BBS, ARB BBS, and DMBBS.

ber to the public. This way, you can see if you are sysop material. It's also a good way to test how your system will perform on your voice phone before you make a decision to go public and possibly spend money on a separate telephone line. I'll discuss that in further detail later.

Do You Know What Time It Is?

A few words of caution if you do decide to run a board on your only home phone. Do so only during the times you aren't expecting voice calls. Make it a part-time BBS, and don't give your number to the public. Once you've released your number, if you decide that you don't want to be a sysop or if you change to a full-time system on another telephone line, you're liable to be plagued with calls on your voice telephone line at three in the morning. You'll answer the phone only to hear a computer on the other end. I made that mistake in 1984, and I still get calls.

If you do decide to go public, get another phone line and use that one for your BBS. The initial installation may be expensive, but it's worth not having the aggravation of answering your voice line only to have your ear blasted with the high-pitched sound of a caller's modem. The monthly phone bill will be minimal if you have basic

service only. If you can persuade your callers to voluntarily contribute a few dollars, the system could possibly pay for itself.

Some sysops ask for donations to help with the monthly expenses, but don't dive into a BBS with the notion that you will make money. You won't. It's as simple as that. Operating a BBS is a hobby, and trying to make a buck off your users is unrealistic and unfair to them. No one is going to throw money at you for a BBS. People will pay for online services such as QuantumLink, but not for a BBS.

Bare Bones

The second thing to consider is what you'll need in the way of hardware. You can start out with a small but adequate system, consisting of a 64, one disk drive, a monitor, a 300-bps modem, and an optional printer. While you probably already have this much equipment, it would limit the size of the message bases and files available for uploading and downloading. It would, however, give you the experience you need without draining your wallet. Most 64 owners considering a BBS have what is required with the exception of the appropriate software.

Let's discuss bare bones for a second. With a basic system, even with an extra disk drive, you'll be limited

Memory Expansion!

GEORAM

\$124⁹⁵



Believe it or not, GEORAM's disk transfer rate is actually 35 times faster than the 1541, 1571, or 1581 disk drive! This means that screens redraw in a flash, and that your Commodore doesn't waste time spinning disks looking for data. GEORAM makes the GEOS family of programs faster and more powerful than ever. NOTE: GEORAM is designed for use ONLY in the GEOS environment—it cannot be used with non-GEOS software.

GEORAM (requires GEOS)

88604

\$124.95

1750 Clone

\$199⁹⁵



The 1750 Clone offers 512K, and works with all software that is 1750 compatible (e.g., GEOS, Paperclip III, and Maverick). Furthermore, you can use it to create a RAM disk to store files or programs for lightning-fast access. (Unlike GEORAM, the 1750 Clone works with non-GEOS software. Some computers may require power supply.)

1750 Clone

89517

\$199.95

Super Mouse Bargain!

\$38⁹⁵



Includes GEOS 1.5 Plus Graphic & Utility Software!

M3 MOUSE. Proportional mode, joystick mode and paddle mode—three modes in one mouse. Features Hi-Res graphic design software with predefined graphics, sprite and icon designers, and mouse controller, plus, handy disk utilities such as windows, pull-down menus, file, and notepad. Also includes GEOS 1.5. From Contriver Technology, Inc. One-year warranty. Sug. Retail \$49.95/\$39.95

M3 Mouse

82704

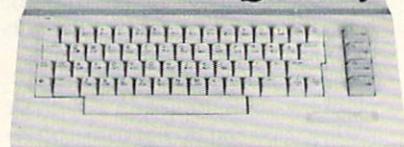
\$38.95

M4 Mouse for AMIGA

88171

\$34.95

\$129⁹⁵ Limited Quantity!



Commodore 64C

The complete computer for home, school and small business. Supported by high-quality peripherals and over 10,000 software programs. Full typewriter-style keyboard, 64K RAM, eight sprites, three voices. Includes GEOS.

64C Computer

54574

\$129.95

Commodore Hardware

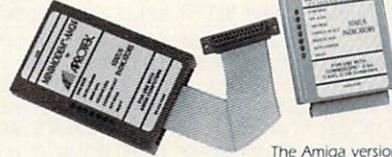
1670 Modem, 1200 Baud	36952	\$69.95
1351 Mouse C64/C128	37885	\$32.95
10845 RGB Composite Monitor	74095	\$319.95
1541 II Disk Drive (Includes GEOS)	54586	\$CALL
1764 RAM Expansion C64	72513	\$114.95

The Best Prices & Service

Now For Amiga, Too!

2400 Baud C64/C128

\$79⁹⁵



Both the Minimodem-C and C24 are completely Hayes compatible (not just partially compatible like the 1670 and some Avatex models) and 1670 compatible. This means they'll work with ALL communications software for the 64, 64C, and 128. Key features include seven status indicators, Busy Detect, DTR signal support, High Speed Detect Line, and Auto Answer/Auto Dial. Includes Multiterm 64 and 128 software so you can start communicating right away, plus a free trial hour on CompuServe! Full-year warranty.

1200 Baud C64/C128

\$59⁹⁵

The Amiga versions of the Minimodems are equipped with a female connector to plug directly into the Amiga 500 or 2000. They need no external wall plug for power, and they use the Amiga's audio output for maximum fidelity.

Minimodem-C24 (2400 Baud for C64/C128)	88148	\$79.95
Minimodem-C (1200 Baud for C64/C128)	81576	\$59.95
Minimodem-AM24 (2400 Baud for Amiga)	88150	\$79.95

Quality TENEX Power Supplies

From

\$34⁹⁵



Lifetime Warranty!

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

Tenex MW 701-A

84513

\$34.95

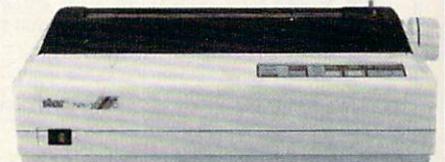
TENEX MW 705. Perfect for your C-128! This is a heavy-duty, switching power supply rated at 3 amps at 5VDC. If your C-128 power supply needs to be replaced, this is the only unit you'll ever need. Lifetime warranty. Sug. Retail \$69.95

Tenex MW 705

90686

\$49.95

Commodore-Ready Printers!



\$CALL

NX-1000C
Ready to plug into your Commodore and go!

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.

	Sug. Retail \$299.00
NX-1000C Printer	75060 \$CALL
Ribbon for NX-1000C	75471 \$5.95
Dust Cover	77789 \$8.95

\$CALL

NX-1000C Rainbow
Full color and Commodore ready!
Works great with geoPaint.

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. Sug. Retail \$379.00

NX-1000C Rainbow Color Printer, Commodore Ready	75783	\$CALL
Ribbon for NX-1000/NX-1000C Rainbow Color Printer	75485	\$9.95
Dust Cover	77789	\$8.95



Call for Lowest Printer Prices!

FREE 60-Page Catalog

Thousands of products for your COMMODORE 64, 128 and AMIGA computers.

CALL TODAY to receive your FREE copy!



TENEX
Computer Express

We gladly accept mail orders!

TENEX Computer Express
P.O. Box 6578
South Bend, IN 46660

(219) 259-7051 — FAX (219) 255-1778

No Extra Fee For Charges!



We Verify Charge Card Addresses

*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

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. G5H

Circle Reader Service Number 118

VIDEO BYTE II the only FULL COLOR! video digitizer for the C-64, C-128

Introducing the world's first FULL COLOR! video digitizer for the Commodore C-64, 64-C, C-128 & 128-D computer. VIDEO BYTE can give you digitized video from you V.C.R., LASER DISK, B/W or COLOR CAMERA or OFF THE AIR or CABLE VIDEO (thanks to a fast! 2.2 sec. scan time). New version 3.0 software features full RE-DISPLAY with MULTI CAPTURE MODE, MENU SELECT PRINTING, EXPANDED COLORIZING FEATURES, SAVE to DISK feature and much more!

FULL COLORIZING! Is possible, due to a unique SELECT and INSERT color process, where you can select one of 15 COLORS and insert that color into one of 4 GRAY SCALES. This process will give you over 32,000 different color combinations to use in your video pictures. **SAVES as KOALAS!** Video Byte II allows you to save all your pictures to disk as FULL COLOR KOALA'S. After which (using Koala or suitable program) you can go in and redraw or color your V.B. pic's. **LOAD and RE-DISPLAY!** Video Byte II allows you to load and re-display all Video Byte pictures from inside Video Byte's menu. **MENU DRIVEN!** Video Byte II comes with easy to use menu driven UTILITY DISK with V3.0 digitizer program. (64 MODE ONLY). **COMPACT!** Video Byte II's hardware is compact! In fact no bigger than your average cartridge! Video Byte comes with it's own cable. **INTEGRATED!** Video Byte II is designed to be used with or without EXPLODE! V5.0 color cartridge. Explode! V5.0's menu will return you to VIDEO BYTE II's menu. **EXPLODE! V5 is the PERFECT COMPANION!** Video Byte II users are automatically sent **FREE SOFTWARE** updates along with new documentation, when it becomes available. **PRINT!** Video Byte II will printout pictures in BLACK and WHITE GRAY SCALE to most printers. However when used with Explode! V5.0 your printout's can be done IN FULL COLOR 8 by 11's SIDEWAYS on the RAINBOW NX-1000, RAINBOW NX-1000C, JX-80, Seikosha 3000 AI.

ONLY
\$79⁹⁵

(OKIDATA 10/20's (print larger 6" by 9") USER SLIDE SHOW program w/auto or manual display is standard with VIDEO BYTE program. And can be backed up!)
Why DRAW a car, airplane, person or for that matter . . . anything when you can BYTE it. . . VIDEO BYTE it instead!

NEW! SUPER CARTRIDGE by The Soft Group EXPLODE! V.5

The MOST POWERFUL, DISK DRIVE and PRINTER CARTRIDGE ever produced for the COMMODORE USER. Super USER FRIENDLY with all the features most asked for. New FEATURES. . . (a) Faster non-blanking FASTLOAD. (b) MIRROR imaging of all HI-RES screens. (c) 4 Way color selection with insert, for all HI-RES screens. (d) Infinite FILE COPY for all SEQ. & PRG. files, copy your file only once, then write that file to as many disks as you like. . . great for single file copying by small user groups. (e) FULL COLOR PRINTING of ALL COLOR HI-RES & MULTI-COLOR SCREENS to ALL COLOR DOT MATRIX PRINTERS (not for INK JET printers). (f) Direct ONE KEY access back to VIDEO BYTE software thru EXPLODE! V5.0's 2nd MENU. (g) Supports all popular printer interfaces. (h) FREE upgraded utility disk.

SUPER FASTLOAD and SAVE (50K-9 SEC'S) works with ALL C-64 or C-128's NO MATTER WHAT VINTAGE or disk drives EXCEPT the 1581, M.S.D. 1 or 2. **SUPER FAST FORMAT (8 SEC'S)** . . . plus FULL D.O.S. WEDGE w/standard format! **SUPER SCREEN CAPTURE.** Capture and Convert ANY SCREEN to KOALA/DOODLE. **SUPER PRINTER FEATURE** allows ANY DOT MATRIX PRINTER even 1526/802 to print HI-RES SCREENS in FULL COLOR (using 16 shade GRAY SCALE). ANY PRINTER or INTERFACE COMBINATION can be used with SUPER EXPLODE! V5.0. NEW and IMPROVED CONVERT feature allows anybody to convert (even TEXT) SCREENS into DOODLE or KOALA TYPE PICTURES w/FULL COLOR! **SUPER FAST SAVE** of EXPLODE! SCREENS as KOALA or DOODLE FILES w/COLOR. **SUPER FAST LOADING** with COLOR RE-DISPLAY of DOODLE or KOALA files. **SUPER FAST LOAD or SAVE** can be turned OFF or ON without AFFECTING the REST of SUPER EXPLODE! V5.0'S FEATURES. The rest of Explode! V5.0 is still active. **SUPER EASY LOADING and RUNNING** of ALL PROGRAMS from the DIRECTORY. **SUPER BUILT-IN TWO WAY SEQ. or PRG. file READER** using the DIRECTORY. NEVER TYPE a FILE NAME AGAIN when you use SUPER EXPLODE! V5.0'S unique LOADERS.

CAPTURE 40 COLUMN C or D-128 SCREENS! (with optional DISABLE SWITCH).

All the above features, and much more!
PLUS A FREE UTILITY DISK w/SUPER EXPLODE!
MAKE YOUR C-64, 64-C or C-128*, D-128* SUPER FAST and EASY to use. THE BEST THING OF ALL. . . IS THE PRICE!!! still only \$44.95 or w/disable \$49.95.

*Note UP GRADES for V5.0 are offered to V4.1 owners only.
\$20.00. w/dis add \$5.
**Note V4.1 owners w/disable will be sent V5.0 w/disable for only \$20.00

ONLY
\$44⁹⁵

All units come w/90 day WARRANTY. All orders add \$3 for UPS BLUE LABEL S/H. UPS BLUE available only in 48 states. FOREIGN ORDERS are US FUNDS +\$6.35 S/H. ORDER BOTH EXPLODE! V5 & VIDEO BYTE II together and receive FREE!! UPS S/H. ***Note all SALES are FINAL. 90 DAY WARRANTY covers PARTS & LABOR ONLY. All SOFT GROUP UTILITY DISKS COME w/built-in CATALOG of PRODUCTS.



PLUS \$3.00 S/H. NO C.O.D.'S. FOREIGN ORDERS U.S. FUNDS ONLY \$6.35 S/H. Personal Checks 10 Days to Clear

THE SOFT GROUP, P.O. BOX 111, MONTGOMERY, IL 60538

Circle Reader Service Number 123

continued from page G-8

to a small message base and be forced to swap numerous disks to give your users a decent selection of software to download. On my first system, I simply changed disks every day, and my users had to take what was available on a given day.

Uploads are a different story. You want users to upload programs that you can share with other callers, but too many uploads can pose a problem. Users can easily crash a small system like this if they fill your disk space with multiple uploads before you have a chance to change disks. You must constantly watch and tend a small system, or you'll be inviting trouble.

The ideal system would be a 64 or 128 with a 2400-bps modem. Some 8-bit systems use modems with higher baud rates, but there are two reasons to stick to a maximum of 2400 baud. First, few if any software packages for the 64 or 128 support higher baud rates, and these computers have difficulty communicating at speeds above 2400 bps. Second, if your callers are mainly other Commodore users, it's unlikely that they'll be using higher baud rates. So a 4800- or 9600-baud modem is not cost efficient.

Other items in the ideal system

include a high-speed dot-matrix printer and a 20-megabyte or larger hard disk drive. A complete system can be had for under \$1,000 if you can find a good used one. Even new, \$1,500 is a reasonable startup price.

Bigger Is Better

Let's take a quick look at a large system. A large system with a 20MB hard drive is easy to maintain, needs little attention, and can store a vast amount of software for your users as well as yourself. Multiple message bases are possible, online games are a snap, and the sheer speed of a hard drive compared to the sluggish 1541 makes using the system a pleasure.

My last system before changing to my Amiga 2000 was a 128 with a 20MB hard drive. The drive, Xetec's Lt. Kernal, communicated with the computer via a parallel bus instead of a serial bus. My users were amazed at the change in speed between the hard drive and the 1541. If you're serious about a BBS and can afford it, I suggest you get a hard drive. The new hard drives from Creative Micro Design are a bit slower, but the advantage is total CBM-DOS compatibility.

This Board's for You

As for software, call other bulletin

boards to see what they are running. If you find a particular BBS you like, ask the sysop what he or she is using. Most sysops are happy to direct you to a good source of software, whether it's PD, shareware, or commercial.

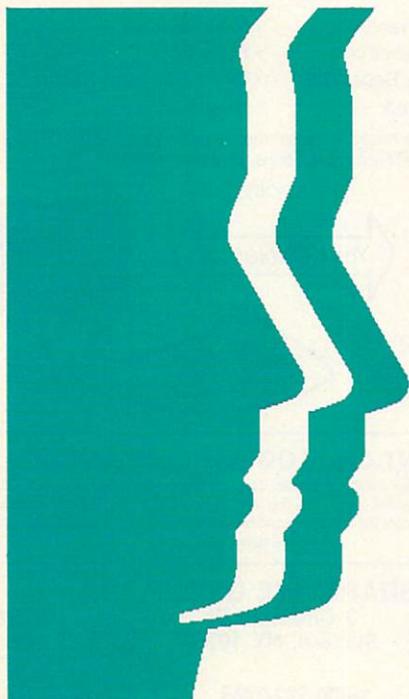
Before you buy commercial BBS software, send away for literature describing the capabilities of the program. There is nothing worse than plunking down money for a software package you end up not using. So research what you want carefully. Try to find one that is reliable—that is, one that's not prone to frequent crashes. (See "BBS Software" for my recommendations.)

Now that you have the hardware and software to get your BBS up and running, you have to make it work. I can't go into specifics of every possible configuration, but I will touch on a few points I've learned along the way. Start out by considering your BBS's primary purpose. Will it be a system where only messages are exchanged, a file-exchange system, or both? Do you want to have online games; if so, does your software support them?

You'll definitely benefit by sitting down with paper and pencil to map the layout of your BBS, its menu structure according to the documentation *continued on page G-13*

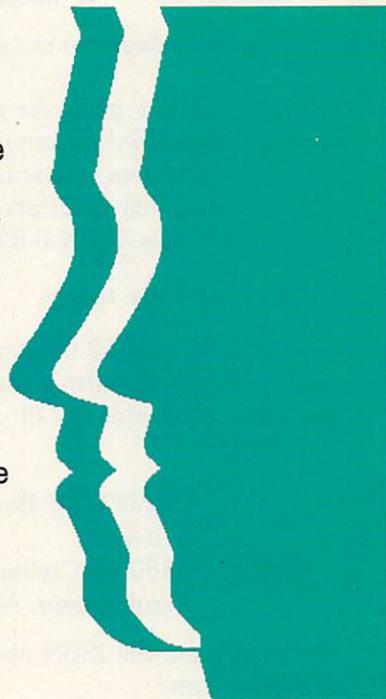
ATTENTION USER GROUPS!

WE WANT TO HEAR FROM YOU!



Each year Gazette features an up-to-date list of Commodore 64/128 user groups across the U.S., throughout Canada, and around the world. We are now in the process of updating this information. If your group did not appear in last year's list and you wish to be included, send your club name, address, and bulletin board service telephone number to

Commodore 64/128 User Group Update
COMPUTE's Gazette
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408



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

Mapping the Amiga

by Rhett Anderson and Randy Thompson

A comprehensive guide for programmers. Includes alphabetized descriptions of system calls and data structures, a discussion of libraries and devices, and a full description of Amiga hardware. 464 pages. ISBN 0-87455-195-1.

Order your copy today.

Send \$22.95 plus \$2.00 shipping and handling (\$6.00 for orders outside the U.S. and Canada) and applicable sales tax (if you live in NC, NJ, or NY) to:

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

Please indicate the ISBN number on your check or money order.

MAR91CP



JUST RELEASED
FROM COMMODORE



A SUPER HEAVY REPAIRABLE C-64 POWER SUPPLY WITH AN OUTPUT OF 4.3 AMPS.
That's over 3X as powerful as the original!

FEATURES

- 1 Year Warranty
- Includes Schematic
- Completely Repairable
- UL Approved
- External Fuse
- Runs Cool
- Direct Replacement/No Rewiring

A must for multiple drives, external memory cartridges (e.g. 1750 unit), additional peripherals, or packet radio.

— TWO MODELS —

1.8 AMP
Output
\$24.95*

Your Choice of

4.3 AMP
Output
\$39.95*

C-128 Version
Available for
\$45.50*

*Plus UPS

Includes FREE
Commodore Diagnostic II
\$6.95 value

• IMPORTANT CATALOG ANNOUNCEMENT •

Call for your NEW FREE 30-page catalog of specialty items for Amiga, Commodore, and IBM. The catalog contains low cost replacement chips, parts, upgrades, 34 diagnostic products, tutorial VHS tapes, interfaces, complete power supply line and other worldwide products YOU WON'T find anywhere else.
Call for Catalog.

THE GRAPEVINE GROUP, INC.

3 Chestnut St.
Suffern, NY 10901



914-357-2424
We Ship Worldwide

1-800-292-7445

FAX 914-357-6243
Prices Subject to Change

Circle Reader Service Number 166



How to Access a BBS

To access a BBS, you must have a modem (MODulator-DEMulator). This is a piece of hardware that enables your computer to communicate with another via telephone lines. A good modem to purchase is one that will operate at a high speed or baud rate. *Bits per second (BPS)* is a more accurate term.

You'll also need terminal software to let your computer communicate with your modem. Rather than going into specifics of how to use a terminal, I strongly suggest that you read the program's manual or documentation. It's vital that you understand how and why a terminal works before you go online. If you simply don't understand what it's all about, contact someone in your local user group for help.

Accessing a local BBS is relatively simple, and it doesn't have to be a Commodore BBS. You can access one running on an IBM, Atari, or any other computer.

Load your terminal software and configure it to 8-bit ASCII mode, no parity, and one stop bit. There's usually a menu option that lets you set these parameters. Most BBS's operate on this standard, and you should have no trouble connecting. It's unusual to find one operating at 7-bit, even parity, and two stop bits, but they exist. Make sure that you are set for the correct baud rate (BPS) for the board you're call

ing. Most boards can handle speeds between 300 and 2400 baud.

If you don't know of any BBS's in your area, contact your user group or local computer dealer. If you can get just one number, you're on your way to finding others. Most BBS's have a good list of local, state, national, and sometimes international BBS's.

Once you've made your connection, you may have to hit Return or Enter a few times to "wake up" the BBS. Once you're in, you'll probably see a message welcoming you to the board. At that point, it may ask for your name and password or for you to type *New* if you're a new caller. From there, follow the instructions.

Once you've gained access to a new BBS, read what appears on your screen. Most BBS's offer clear instructions for what to do next, but new users often are intimidated and fail to comprehend what they're reading. Take a deep breath, read, and try to comprehend before you panic.

You'll probably have limited or no access on your first call, and you may have to register. This involves filling out some sort of online registration form. Occasionally, you may get instant access to the BBS and its numerous features, but this is the exception rather than the rule. You'll more than likely have to wait a day or

two and call back after the sysop processes your application.

Some systems require a fee to access. I often find that a BBS that requires a fee is not worth the money. BBS's really worth calling are the ones that are free and for which fees are voluntary.

Once you have access, go to and read the help files; otherwise, you'll be lost. Try to capture them in your terminal software's buffer to print out and read later. This is your map to the BBS and will facilitate your moving around the system. Not only will help files save you time and make it easier for you to find your way through a strange BBS, but these files also usually explain many of the board's special features that can make your visit more fun.

Try reading and leaving messages. Peruse the available files and download (receive) an interesting program or file. If you need help, try paging the sysop. If available, he or she may come online with you in chat mode.

The rest is really just exploring the system and getting to know it. Some may offer online games for one or more callers. Other boards have multiple telephone lines that allow several callers to chat live with each other. Each one is different. Check out the menus to see what's offered and don't forget to read the help files.

BIG BLUE READER

Read & Write IBM MS-Dos Disks!

Big Blue Reader 128/64 is a fast, easy-to-use, menu driven program for both novice and expert alike. Transfers word processing, text, ASCII, and binary files between Commodore 64/128 and IBM MS-Dos 360K 5.25" and 720K 3.5" disks. Big Blue Reader 128 V3 supports: C128 CP/M files, 17xx REU, 40/80 columns, reading MS-Dos sub-directories and much more. 1571 or 1581 Disk Drive is required. Does not work with 1541. BBR 128 Version 3.1 upgrade, send original BBR disk & \$18
BIG BLUE READER 128/64 only \$44.95

BIBLE SEARCH

Guaranteed Fastest and Easiest-to-Use C64/128 Bible Study Program Available!

Why settle for a slow 15-30 disk Bible program when you can have it ALL, on seven 1541/71 disks. Including: Entire Old and New Testament text; The fastest Exhaustive English Concordance (with 700,000+ words), both C64 & C128 programs; printer and disk output; many versatile search options; and much more.

Complete KJV or NIV Bible - \$69

Special KJV-Gospel Bible Search (C64/1541 disk) - \$14.95

Order by check, money order, or COD. US Funds only.
Free shipping in North America. No Credit Card orders.
Foreign orders add \$5 (\$12 whole Bible)

SOGWAP Software - (219)724-3900

115 Belmont Road; Decatur IN 46733

FREWARE FOR COMMODORE 64/128 HOME, HOME, HOME!

- ☐ (6047) UNIQUE / NOVELTY - Contains Eliza, Biorhythm, Kaleidoscope, Luscher and more.
- ☐ (6215) MISC PROGRAMS 1 - Contains home programs, Desk Set and Last Will & Testament.
- ☐ (6178) THE SUBURBS / 1 - 12 programs for use in the home including JOFFE DIET PLAN.
- ☐ (6179) THE SUBURBS / 2 - 20 programs for use in the home including BABY CARE.
- ☐ (6249) RECIPES / 1 - This disk contains 50 miscellaneous recipes.
- ☐ (6250) RECIPES / 2 - This disk has more miscellaneous recipes; 51 in all.
- ☐ (6251) RECIPES / 3 - This disk contains another 51 miscellaneous recipes.
- ☐ (6221) DATA BASE PROGRAMS - Data Base programs including DB Master, Data File, and more.
- ☐ (6002) DO-IT-YOURSELF BUSINESS PAPER - Customize and print invoices, purchase orders, memos & more. Req: Printer
- ☐ (6105) PRODUCTIVITY PROGRAMS - Contains Recipes, Alarm Clock, Bartender, Mortgage and more.
- ☐ (6004) COPY DISK - Copy programs and disk utilities with Unicoopy and others.
- ☐ (6218) DISK AND FILE UTILITIES - Assorted utilities: V Fast File Copy, Superclean, and more.
- ☐ (6003) MENU MAKERS - A collection of menu making programs with 3-D Menu & others.
- ☐ (6016) PS GRAPHICS LABEL MAKER - Collection of menu-driven label makers, Print Shop graphics.
- ☐ (6093) NOVELTY DEMO - The classic Commodore Xmas, Garfield, Optical Illusion & more.
- ☐ (6097) IN THE MALL / 1 - Contains 14 arcade games. Try your skill on these gems.
- ☐ (6099) IN THE MALL / 2 - Contains 14 arcade games. Includes Moondog, Skiing, & more.
- ☐ (6142) IN THE MALL / 3 - 12 more arcade games including BOULDER DASH and KANGA.
- ☐ (6101) LADY LUCK / 1 - Contains 10 casino games. Roulette, Craps, BJ, Poker & more.
- ☐ (6202) LADY LUCK / 2 - 10 gambling games including ONE ARMED BANDIT, and 21.
- ☐ (6203) LADY LUCK / 3 - 17 gambling games including DODGE CITY POKER and KENO.
- ☐ (6098) ON THE BOARDS / 1 - Contains 11 board games. Includes Yahtzee, Battleship & more.
- ☐ (6119) ON THE BOARDS / 2 - 12 board and card games including battleship and chess.
- ☐ (6120) ON THE BOARDS / 3 - 17 more board and card games including CRIBBAGE and BINGO.

Call or write for FREE catalog of
1,000's of programs for your PC!
(800) 233-2451

Mon - Fri 9am - 5pm PST

To order, please check the desired disk and include \$2.99 for each disk ordered. Include shipping and handling of \$4 per order. CA residents add 7% sales tax.

Buy 5 disks and get the 6th one free!

Please send order, payment, name, address and daytime phone # to:

Paradise Software

We accept Check, MO,
Mastercard & Visa.
Sorry—No COD's.

Hours: Mon-Fri, 9am-5pm PST

7657 Winnetka Ave, Ste 328-C, Winnetka CA 91306
(818) 700-0784 Voice/Fax **(800) 233-2451** Orders Only

Circle Reader Service Number 108

NOW ONLY
\$149!

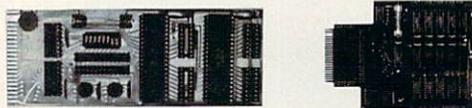
Make your Commodore a Speed Demon



TURBO MASTER CPU™ 4.09 MHz Accelerator Cartridge for C64

- Four times faster processing speed combined with five times faster disk Load and Save.
- Software actually runs four times as fast. Basic, word-processor scrolling and search, spreadsheets, assemblers, graphics, GEOS etc. Compatible with most software. GEORAM compatible.
- Jiffy DOS compatibility option available (by Creative Micro Designs). HD Compatible.
- Why upgrade when you can enjoy dazzling performance from your C64 now?
- Only \$149. Shipping Included, 10-day satisfaction guarantee.

Don't tie up an expensive computer with a job a Commodore Can Do \$\$\$



Data acquisition and control interfaces C64 & C128

- 80-line Simplified Digital I/O Board with ROM cartridge socket. Model SS100 Plus. \$139.
- Ultimate Interface. Universally applicable dual 6522 versatile interface adapter board. Model 64IF22. \$169.
- 16-channel, 8-bit analog-to-digital conversion module add-on. Model 64IF/ADC0816. \$69.
- Interface boards include extensive documentation and program disk. Manuals available separately for examination. Quantity pricing available. Call or write for detailed brochure.

Resources for Serious Programmers.

- Symbol Master Multi-Pass Symbolic Disassembler. C64 & C128. \$49.95
- PTD6510 super-powerful Symbolic Debugger. C64. \$49.95
- MAE64 6502/65C02 Macro Editor/Assembler. \$29.95
- C64 Source Code Book. Kernal and Basic ROMs. \$29.95

"We engineer miracles."

SCHNEDLER SYSTEMS

Dept. G3, 25 Eastwood Road, P.O. Box 5964
Asheville, North Carolina 28813 Telephone: (704) 274-4646

VISA and MasterCard accepted.
All prices include shipping
prepaid to US addresses.

tion, and the possible combinations of message bases and transfer sections you intend to have. This is a great timesaver and will save you headaches down the road when you want to reconfigure your setup. Design your menus carefully, if your bulletin board software has that capability.

Know the Password

Before you start your BBS, you should decide whether to make the system open to all callers or require that callers be verified and use a password for access. As a sysop, I want to know who's calling my BBS, even if I let people use fictitious names or handles online. I also strongly suggest using passwords. They'll cut down on the number of hackers trying to crash your board and ensure the privacy of your users' messages and electronic mail.

If you're fussy, you can verify all potential users by making them supply their correct names and addresses by mail. Some sysops ask for a photocopy of a driver's license as proof of a caller's identification. On the other hand, you can simply screen applications for suspicious names and addresses, such as John Doe or 12345 USA Street. I don't usually permit callers full access to my board unless

the information they supply is complete and accurate.

If I happen to be at my computer when someone new calls my BBS and registers online, I often get on my voice phone and call the number listed on the application while the caller is still connected. That number should

be busy when I call. If it's not, I get suspicious and investigate further.

No Hogs, Please

I suggest you limit your callers to 45 minutes per call and two or three calls per day. If you give everyone unlimited time, you'll find some users abuse the privilege and hog the line so others cannot use the BBS. The same holds true for downloading privileges. Don't give too much, or it will discourage other callers who constantly get a busy signal because someone is downloading program after program.

This includes you. If you hog the system by playing games, people trying to connect will get frustrated. If you want to use your computer for personal use, do so only during slow periods or, in the case of a part-time BBS, during the board's off hours; or buy another computer.

Callers can get discouraged with a BBS if it's difficult to connect, and sysops can get discouraged if people don't call. Don't expect your BBS to overflow with callers the minute you put it online. If you decide to go public, advertise your board's number on other BBSs; make leaflets with *The PrintShop*, *PrintMaster*, or a similar package; and distribute copies to bookstores, computer stores, schools, and libraries. During summer months especially, expect a slowdown in log-ons. Not too many people sit at home calling a BBS on a bright summer day; don't let it discourage you.

Other things can get on your nerves as a sysop. These include users' not obeying rules you've established and asking you questions that are plainly explained on the board. Those who simply disconnect instead of properly logging off and who complain because your system doesn't meet their expectations are other examples of callers a sysop can do without.

If you're willing to put up with these relatively minor aggravations, you may be sysop material, especially when you begin to reap the fruits of running a BBS. You'll learn more about computers, have PD and shareware software uploaded to you, communicate with people from all over. Best of all, you don't have to call out; people call you. In closing, the best rewards for me in running a BBS since 1984 are all the appreciative users I've met. They've become more than callers; they've become good friends. ☐

Rick Lembrée is the CEO of Harbour Lights Communications, a desktop publishing firm; chief sysop of Harbour Lights BBS, the oldest continuously operating BBS in Maine; chairman of Southern Maine Commodore User Group; and editor of its newsletter, *C-Link*.



BBS Software

To set up your own electronic bulletin board system, you'll need the proper software, whether it's commercial or public domain. Public domain software and shareware are available through your user group or can be downloaded from many bulletin boards, including my BBS, Harbour Lights, at (207) 967-3719. If you use shareware, please send in your registration fee to the author. Here are a few available titles: *EBBS 64*, *EBBS 128*, *RIBIT BBS*, *All American BBS*, *64 Messenger BBS*, *Star BBS*.

Here's a sample of some of the commercial BBS programs available for the 64 or 128. *ARB BBS* gets my vote as being one of the better bulletin board programs available. It supports multiple message bases, X-Modem and Punter protocols, story boards, multiple levels, online games, E-Mail, and more. Its manufacturer, L & S Computers, also offers good support. But all those listed here are sure to get you off on the right foot.

ARB BBS
L & S Computers
Box 392
Brooklyn, NY 11229
(718) 336-2343 (Voice)
(718) 645-1979 (BBS)
\$54.95

Dragonfire BBS 128
Yodahead Software
P.O. Box 177
Marlton, NJ 08053
(609) 596-1772 (Voice)
(609) 596-4835 (BBS)
\$75.00

Dynamically Modifiable Bulletin Board System (DMBBS)
ARTISoft
P.O. Box 96
Glen Burnie, MD 21060
(301) 553-0301 (Voice)
(301) 553-0001 (BBS)
\$69.95

Vision BBS
AML
7138 Myrtle Ave.
Queens, NY 11385
(718) 326-1110
\$69.95

C-NET
Prospective Software
P.O. Box 87175
Canton, MI 48187
(313) 981-4113
64 version—\$59.95
128 version—\$89.95

The 90's Will Be The Decade of Taxes! Fight Back! Get Organized. But, Don't Spend Thousands on EXPENSIVE Computers & Softwares!

Press a key. Weekly, quarterly, or year-to-date receipts and expenses including **childcare** are totaled to analyze - or for that **tax deadline**.

- Easy recording from checkbook and cash receipts.
- Plenty of error correction ability.

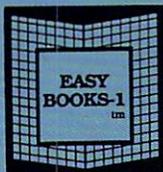
for YOUR Commodore 64™

- More easily analyze and help control expenses.
- Extra disks for \$7.00 + postage and tax.
- View or print weekly, quarterly, or YTD.
- Print with or without % analysis on weekly summary
- Print all annual expenditures for each Expense category. **The program automatically highlights which categories have expenses!**
- Trailing zeroes. \$91.50 instead of \$91.5.
- Project Year-To-Date to end of year.
- Prepare and print a Balance Sheet.

"The reports were superior..."

EASY BOOKS DISTRIBUTING

P.O. Box 216
Iowa Park, TX 76367-0216



\$34.95 Unique Effective.

plus \$3.50 S & H
(Tx residents add 7.25%)
NEW YEAR'S SALE!

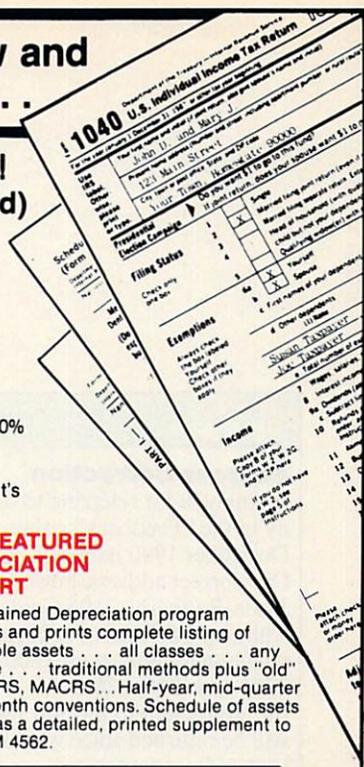
Send CHECK or MONEY ORDER and DEDUCT \$4.00

1-(817) 592-4727 FAST SHIPPING!

1-800-835-2246, ext. 209

Circle Reader Service Number 210

TAXPERFECT™ Get TaxPerfect™ now and relax on April 15th . . .



• EIGHTH SUCCESSFUL YEAR! • MANY THOUSANDS ALREADY IN USE! • Your Simple Answer to the Tax Reform Act of 1986 (As Amended)

- TaxPerfect is the quick, correct, easy way to do your taxes • Absolutely up-to-date with the Tax Reform Act of 1986 / 88 and **all new** tax changes • Simplest tax return preparation program available — at any price • Single-keystroke form-to-form change • Automatically calculates and transfers data from every FORM and Schedule to FORM 1040 • Simply answer the questions — TaxPerfect calculates return, tax due or amount of refund due you • Automatically elects the greater of Standard or Itemized deductions • Prints data to all FORMS or Schedules you need for your complete return — ready to sign and file • Highly acclaimed by tax pros, CPAs and tax preparers, TaxPerfect is easy to understand and a pleasure to work with. Available for Commodore 64 and Commodore 128.
- TaxPerfect is fully screen-prompted, menu-driven and easy to use. System includes comprehensive User's manual with helpful tutorial example.
- With a single keystroke, TaxPerfect instantly recalculates your entire return when you change any item.
- TaxPerfect also prints directly onto IRS forms.
- TaxPerfect data files can be stored on disk.
- TaxPerfect yearly updates are available at 50% discount to registered TaxPerfect users.
- TaxPerfect is an essential addition to your personal software library — and best of all, it's tax deductible.

TAX PLANNING

- Most powerful program features available — at any price • Supports RAMdisk • Prints the input sheets to organize your data • Built-in calculator feature accumulates input and enters total • 32 PF key functions achieved with 1 or 2 keystrokes
- Fast, complete tax calculations — 20 forms in under 2 seconds (most returns in under 1 second)
- On-line pop-up Help menus • Full calculation-override capability • Follows IRS text & line #s **exactly** • Exclusive context-sensitive Datachek™ pinpoints omissions — and alerts you to effects of your input • Our exclusive Current Values Display constantly reflects all changes with your input • In Planning Mode all unnecessary text input prompts are eliminated. Only numeric input is prompted for.

New for 1990: 1040A and Schedule 1, 2 & 3.

RETURN PREPARATION

TaxPerfect **PRINTS THE INCOME TAX RETURN FOR YOU: TaxPerfect 64** — prints page 1 & page 2 of the FORM 1040 and Schedules A, B, C, D, E and SE as well as FORM 2441, 3903 and 6251 on standard IRS government forms or on blank computer paper for use with transparent overlays. **TaxPerfect 128** — supports all of the above forms **plus** Schedules F and R and FORMS 2106, 2119, 2210, 3800, 4136, 4255, 4562 and 4684. All other forms and schedules are considered in the calculation. TaxPerfect features direct screen input using fast ten-key style on the Commodore 128.

FULL-FEATURED DEPRECIATION SUPPORT

Self-contained Depreciation program calculates and prints complete listing of depreciable assets . . . all classes . . . any length life . . . traditional methods plus "old" rules, ACRS, MACRS . . . Half-year, mid-quarter & mid-month conventions. Schedule of assets attaches as a detailed, printed supplement to the FORM 4562.

Commodore 64 and Commodore 128 are TRADE-MARKS of Commodore Business Machines Corp.

Complete 1990 Edition: TaxPerfect 64 **\$89** TaxPerfect 128 **\$99**

TO ORDER Call Toll Free 1-800-525-5611 24 Hrs. from anywhere outside Dallas. In Dallas Call 214/386-6320, MasterCard, VISA, Money Orders, Bank Checks and COD Orders Accepted (add 3% surcharge for credit card processing) (Texas residents add 8 1/4% sales tax) (add \$5.00 COD) (\$5.00 Shipping)

Financial Services Marketing Corporation • 500 North Dallas Bank Tower • 12900 Preston Road • Dallas, Texas 75230

Circle Reader Service Number 217

1990 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 1990 GAZETTE INDEX TODAY!
(MasterCard and Visa accepted on orders with subtotal over \$20.)

YES! Please send me 5 1/4 inch disk(s) (\$7.95 each).

_____ Subtotal

_____ Sales Tax (Residents of NC and NY please add appropriate sales tax for your area.)

_____ 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 _____

Daytime Telephone No. _____

Name _____

Address _____

City _____

State/Province _____ ZIP/Postal Code _____

Send your order to 1990 Gazette Index, 324 W. Wendover Ave., Suite 200, Greensboro, NC 27408.



FEEDBACK

EDITORS AND READERS

Address Correction

Thank you for referring to our company in the "Feedback" column of the December 1990 issue of *COMPUTE*. Our correct address, however, is Jason-Ranheim, 3105 Gayle Lane, Auburn, California 95603; and our telephone numbers are (800) 421-7731 and (916) 878-0785. We fear that the letters sent to the San Jose address will be returned since we moved from that address some years ago.

JUDITH HANSON
MARKETING DEPT.
JASON-RANHEIM
AUBURN, CA

Our apologies to Jason-Ranheim and any readers who may have written for EPROM information to the old address we mistakenly provided.

Keep It Clean

I followed the instructions for cleaning my keyboard as you suggested in "Feedback" (November 1989), but now I'm having problems with it again. Some keys require excessive pressure to work, while others print double characters at the slightest touch. According to a discussion on our local bulletin board, cleaning may not solve the problem. Some people say a little piece of rubber that bridges the switch gap between the key and metal contacts on a printed circuit board may be wearing out. I would appreciate your comments.

JOSEPH J. KNUEVEN
WYOMING, OH

The "Feedback" you referred to essentially recommends the use of compressed air, a pencil eraser, and rubbing alcohol. Alcohol is a great cleaner providing it's ethyl alcohol. A Commodore repair person we contacted, who has corrected this particular problem many times, says dirty contacts are usually the culprit for the majority of keyboard ailments and that a cleaning is called for. Using alcohol isn't always necessary, however. Instead, use a pencil eraser to clean the metal contacts; then score the connec-

tor, which is plastic rather than rubber, with a small wire brush.

Back to the Board

I was very pleased with the *Electronic Billboard* program (June 1990), but I have one problem. My word processor won't save files in the proper Commodore ASCII format for the program to read from disk. I decided to modify the program to write to disk the 99 lines the user can enter directly from option 2 on the *Billboard* menu. The program can then load the text into memory with the load routine from option 1.

First, load *Billboard.Bas* and type in the lines listed below. Remember to save the program when you've finished. To use this routine from the main menu, select option 2 from the main menu and enter the lines of your message in the usual way. When you've finished, type an asterisk (*) on the last line as you normally would. Then press S at the prompt, and the message will be saved to disk automatically as "BILLBOARD.DATA." Later, when you want to load this file from disk, select option 1 from the main menu. Lines 1100 and 1110 are simply disk error-checking routine from the 1541's user manual.

MIKE TENNANT
WASHINGTON, PA

```
CH 130 DIMS1$(MX),S2$(MX),L$(9
9):R1$="{RVS}":R2$="{
{OFF}":S1$=SP*3:S2$=SP*
5-5
RX 200 PRINT"{DOWN} PRESS RETU
RN TO START MESSAGE SCR
OLL"
HR 205 PRINT"{SHIFT-SPACE}ENTE
R S TO SAVE MESSAGE":PR
INT" PRESS Q TO QUIT";
PF 210 CH$="":INPUTCH$:IFCH$="
Q" OR CH$="Q" THEN SYS2
048:END
XF 215 IFCH$="S"ORCH$="S"THEN
{SPACE}GOSUB1000:GOTO20
0
RG 300 POKE214,23:PRINT:PRINTS
P$;:POKE214,23:PRINT:PR
INTB$;:SYS828
XE 570 S1$(N)=C$:L$(N)=C$:
{6 SPACES}IFS1$(N)="-"T
```

HENGOTO440

```
PJ 1000 OPEN15,8,15:GOSUB1100
AH 1010 OPEN2,8,2,"0:BILLBOARD
.DATA,S,W":GOSUB1100
XC 1020 FORZ=1TON-1:PRINT#2,L$(
Z):NEXT:GOSUB1100
GG 1030 CLOSE2:GOSUB1100:CLOSE
15:PRINT"SAVED.":RETUR
N
QH 1100 INPUT#15,EN,EMS,ET,ES:
IFEN>1THENPRINTEN,EMS,
ET,ES:STOP
CE 1110 RETURN
```

A Charitable Offer

As a former treasurer of the church I attend, I have developed Commodore 64 programs to manage the finances of the church and make periodic reports to the governing body and congregation. I converted some of these programs for use on a PC owned by the church, and they are still in use. I would be happy to share either the 64 or the PC version of these programs with any church or other charitable organization that would care to contact me.

WALTER L. JOHNSON
515 SE NOLAN ST.
DEKALB, TX 75559

My Own BBS?

Last year you ran an article that talked about people running their own BBSs (Bulletin Board Systems). That sounded interesting, but I have a lot of questions to ask. How could I run my own BBS? Does it cost a fortune? Does it tie up the phone lines?

If I couldn't run my own, could you tell me how to become a member of someone else's BBS? I heard you need certain things such as a BBS program. Could you tell me how to get one?

TIM HEALY
RAYMOND, NH

You picked a good time to write, Tim. In this issue, Rick Lembreé, who's been operating his BBS in Maine since 1984, shares his expertise with our readers. If you already have a 64 and a modem, you have all the hardware you need for a small system. You will need a BBS

REPLACEMENT CHIPS, PARTS AND UPGRADES

6526A CIA	12.25
6567 VIA	15.95
PLA/82S100	12.95
6581 SID	12.95
ANY 901 ROM	10.95
8580 SID	13.95
251715 CONTROLLER	23.95
251913 ROM	21.95
8562 VIDEO	22.50
6510	11.50
C-64 KEYBOARD (NEW)	39.95
SX64 KEYBOARD (NEW)	49.95
HVY DUTY C64 P/S 1.8AMP	24.95
HVY DUTY C64 P/S 4.3AMP	39.95
SERVICE MANUAL C64	22.00
SERVICE MANUAL 1541	22.00
SERVICE MANUAL C128/D	33.00
SERVICE MANUAL 1571	29.95
SERVICE MANUAL 1084S/P	16.00
SERVICE MANUAL 1526/802	25.95
SERVICE MANUAL 1581	25.95
CALL FOR OTHER MANUALS	
1750-512K RAM EXPAN. CARTRIDGE	169.00
COMMODORE DIAGNOSTICIAN II	6.95

Add UPS charges to all prices.

OUR NEW FREE CATALOG HAS 34 DIAGNOSTIC PRODUCTS; 22 INSTRUCTIONAL VIDEO TAPES, 11 TYPES OF COMMODORE POWER SUPPLIES, AND PAGES OF PRINT HEADS, RIBBONS, INTERFACES, CABLES, AND UPGRADES.

THE GRAPEVINE GROUP, INC.

3 Chestnut St.
Suffern, NY 10901

1-800-292-7445

Fax 914-357-6243
We Ship Worldwide

914-357-2424
Prices subject to Change

Circle Reader Service Number 165

GET MORE FEATURES FOR BIBLE STUDY LANDMARK The Computer Reference Bible offers:

- Complete Old and New Testaments in King James Version or New International Version. Individual verse (marginal) references, words of Christ in color, complete NIV footnotes and a Concordance.
- Searching for up to 12 partial words, wildcard characters, words or phrases at once. Search not only the Bible, but also your own files, or even the results of a search, to narrow your search down further.
- Creating of your own files, using the built in text editor to copy Scripture, text or search results into your file. You can also convert your files for use with most wordprocessors, like Paperclip and GEOS to add graphics or different type styles.
- Compiling your own Personal Bible containing all your notes, comments, outlining of text in color and keep it organized. Make new references, add to the existing references, or reference your own files!
- Compatibility with all disk drives for the C64/128 including 1541, 1571, 1581, SFD1001, and hard disk drives. Also will take advantage of cartridge or hardware speedup products like FAST LOAD or Jiffy DOS to improve performance of the program. Entire Bible with references fits onto eight 1581 disks. C64 v1.2 and C128 v2.0 on same program disk!

KJV \$89.95 NIV \$99.95 /Both \$155.00
plus \$4.00/\$6.50 shipping in cont. USA

CALL OR WRITE FOR FREE BROCHURE
P.A.V.Y. Software P.O. Box 1584
Ballwin, MO 63022 (314) 527-4505
MC/VISA accepted. Foreign orders write for shipping

Circle Reader Service Number 258

World Geography

for the Commodore 64/128



Full-color 3-D rotating globe!

World Geography is the fun way to learn the world's countries, their flags, capitals, populations, languages and currencies in an entertaining 1- or 2-player educational game for the whole family. Updated every year!

"Kids and adults will enjoy this program for hours and hours!"

—Family Computing

"The entire presentation is outstanding . . . This is really an achievement!"

—Commodore Magazine

"An awesome achievement . . . the execution is flawless."

—Compute's Gazette

To order call

800 331-4321

In California call 800 851-1986

Outside US call 408 462-1551

Only \$19.95 postpaid!

BOBCO Interactive Software

200 7th Avenue, Suite 111, Santa Cruz, CA 95062

Circle Reader Service Number 141

program, but check the article for further information about this interesting computer activity.

A Reader Helps

A couple of letters in the January 1991 "Feedback" are worth mentioning. John Potter asked about disabling the programmed function keys on his 128. Here's an easy way. Poke 828, 183 to get the 64 values; then poke 828, 173 to reenable the 128 definitions.

Walter Stegemiller asked about delays in programs that use extensive arrays. Creating simple variables, such as A or B\$, after the arrays are DIMensioned is the usual cause for one-time delays. Each new variable causes a delay.

To avoid this, preassign all simple variables using a DIM statement, such as DIM A, B\$, X, Y, Z, before creating the array. Also, the notorious *garbage collection* delay occurs only when using strings. This might help Walter isolate the cause of the delays in his programs.

BOB RENAUD
WASHINGTON, MA

Thanks for the tips, Bob.

Stars for Sale

I am 72 years old with vision only in one eye, so I like ready-to-run programs on disk. You have one in the June 1990 *Gazette* called *Starburst Graphics* that I would like to use for camcorder graphics. Is there any chance you will have this on sale soon?

RICH MAUNEY
MT. HOLLY, NC

FACTORY AUTHORIZED COMMODORE REPAIR CENTER A.L.R.

1-800-772-7289

(708) 879-2888 IN ILLINOIS

C64 Repair (PCB ONLY)	42.95	C128D Repair	CALL
C-128 Repair (PCB ONLY)	64.95	IBM Compatibles	CALL
1541 Permanent Alignment (PCB ONLY)	29.95	Printers	CALL
1541 Repair	79.95	Monitors	CALL
1571 Repair (PCB ONLY)	79.95	Other Equipment	CALL

CALL BEFORE SHIPPING FOR AUTHORIZATION NUMBER

(Have Serial and Card Numbers ready)

PARTS AND LABOR INCLUDED

FREE RETURN SHIPPING

(AFO, FPO, AIR ADD \$10.00)

24-48 HR. TURNAROUND

(Subject to Parts Availability)

30 DAY WARRANTY ON ALL REPAIRS

COMMODORE PARTS

CALL (708) 879-2350

C-64 Power Supply	34.95*
C128 Power Supply	59.95*
Other Parts	CALL

*Plus \$4.00 Shipping/Handling

TEKTONICS PLUS, INC.

117 S. BATAVIA AVE.

BATAVIA, IL 60510

Circle Reader Service Number 259



SOFTWARE CLOSEOUTS

For Commodore 64 & 128:

SSI Bargains \$14.50

Phantasie 3, Sons of Liberty, Shiloh, Grant's Trail, Wargame Construction Set, Demon's Winter, Eternal Dagger, Questron, Questron 2, 1st Over Germany, Heros of the Lance.

More Bargains \$5.00

Artist, Beyond Castle Wolfenstein, GO, Congo Bongo (CA), Deadline, Starcross, Electronic Address Book, Math 6, Home Manager, Musician, Pro-Golf, 1 Man & His Droid, Programming Kit 3, Suspended, Assembler, Toy Bizarre, Zenji, Zork II or III, Super Expander 64.

Infocom, Activision, More ... \$9.50

Leather Goddesses, Border Zone, Enchanter, Hitchhiker's Guide, Ghostbusters, Last Ninja 2, GFL Football, Hacker, Fairy Tale Adventure, Hollywood Hijinx, Plundered Hearts, Take Down, America's Cup, Gee-Bee Air Rally, Aliens, Airborne Ranger, Logic Levels (CA), Monopoly, Movie Musical Madness, Ninja, Mindshadow, Borrowed Time, Murder on the Mississippi.

TO ORDER, SEND CHECK OR MONEY ORDER TO:

COMPSULT

DRAWER 5160, SAN LUIS OBISPO, CA 93403-5160

Include \$4.00 for shipping charges to U.S. addresses, \$6.00 for Canada, \$8.00 for International. California orders must include 6% sales tax.

CREDIT CARD ORDERS CALL TOLL-FREE

1-800-676-6616

ORDERS ONLY, PLEASE!!!

All other info, including requests for our FREE CATALOG, which includes 100's of additional closeout products Call (805) 544-6616, or write to the above address.

Circle Reader Service Number 161

THE BASEBALL DATABASE

LET YOUR COMPUTER KEEP TRACK OF YOUR TEAM'S BASEBALL STATS!

EASY TO USE • COMPREHENSIVE \$49.95 APPLE IIe/IIc/IIgs
DETAILED PRINTED REPORTS \$39.95 COMMODORE 64/128

Add \$2.50 shipping & handling; 15 day money back guarantee. VISA/MC/check or MO: Program specs & details available upon request.

JACOBSEN SOFTWARE DESIGNS

Attn: Order - CPG
1590 E. 43rd Ave., Eugene, Oregon 97405 Phone: (503) 343-8030

FAMILY GENEALOGICAL DATA BASE

512 ANCESTORS - 9 GENERATIONS

- Prints Five Generation Pedigree
- Prints Family Group Charts
- \$34.95 MC/VISA Accepted
- For Orders Call: 800 - 366 - 1372
- Supports C64, IBM, Apple

PFA • 8600 Old Spanish Tr. #79 • Tucson, AZ 85710

Circle Reader Service Number 200

COMMODORE 64 SOFTWARE SALE!

Forcaster _____ business predictions	\$9 EA
Entrepreneur _____ business start-up	OR
Decision Maker _____ answers questions	\$ FOR
Project Planner _____ manage tasks	\$27
Numbers at Work _____ business math	

President Elect --- Sons of Liberty --- Shiloh --- B-24
Roadwar 2000 --- Eternal Dagger --- Wrath of Nika.
Questron II --- Heroes of the Lance --- \$11 ea.
Printer Util. --- Prof. Tour Golf --- Word Trivia \$9 ea.

WACKER CAT - 8101 SE DIVISION - PORTLAND, ORE. 97266
PHONE: 1-503-774-4402 + + + + + ADD \$3.00 SHIPPING

Circle Reader Service Number 202

FEEDBACK continued from G-17

All of the type-in programs that appear in Gazette are available on disk, and right now is a great time to subscribe. A one-year's subscription to the magazine and disk is only \$49.95 for 12 issues. Subscriptions can be ordered by calling (800) 727-6937. While supplies last, single issues of the disk are available for \$9.95 by writing to Single-Copy Sales in care of our Greensboro office. The address is the same as the "Feedback" address, which is printed below.

PET Vets

Your magazine is informative when it comes to the 64, but once in a while it would be fun and interesting to read an article about the old datasette, 1520 plotter, and my old Commodore 16 computer. I am sure there is more than a minority of dedicated Commodore owners who would enjoy taking this old hardware down from the attic, dusting it off, and exploring its capabilities again. Where else can we get information on this old hardware? They haven't written a book on an-

tique computers yet, but maybe there's someone with ideas on how to expand their use despite the newer PCs.

DENNIS KOZIK
WEST ISLIP, NY

Perhaps you and other Commodore veterans might want to contact the writer of this next letter. You might also try your local user's group.

If anyone out there is a fellow Commodore collector or user of older Commodores (PET, VIC-20, Plus/4, C16, or B128), write me. Let's share information on software, hardware, and other resources before they become nonexistent.

LARRY ANDERSON
547 LEWIS ST. #14
STAR RTE. 2
SAN ANDRÉAS, CA 95249

Who's Got the Ribbon?

I was reading your "Feedback" column in December, and I was able to help out someone with the Tech Sketch light pen. Now I hope someone can help me find a ribbon for my Okimate 10 printer. I sent an order to the Okidata supply address, and the postal service returned my letter, stating that Okidata was no longer there.

Should I have to discard my printer because I can't find ribbons?

DOROTHY REYES
HOLLIS, NY

We don't know what address you used to order your ribbon, but when we contacted Okidata, a spokesperson said the company is still very much in business and offered the following advice. Contact Okidata and someone will either direct you to a dealer near you who stocks the ribbons or else arrange to have one sent to you by mail. Write to Okidata, Customer Service, 532 Fellowship Road, Mount Laurel, New Jersey 08054. Okidata ribbons are also available through Ramco Computer Supplies, P.O. Box 475, Manteno, Illinois 60950; (800) 522-6922. A black ribbon from Ramco sells for \$5.25, a color one for \$5.75. You might also try contacting a local computer store.

If you have a question, comment, or problem, we want to hear from you. Send your letters to Gazette Feedback, COMPUTE Publications, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. □



D'IVERSIONS

F R E D D ' I G N A Z I O

Recently I attended the Consumer Electronics Show in Chicago, previewing new computers. I passed by the Sharp Electronics booth and was struck by its line of pastel-colored products. There were juicy peach TVs, baby blue calculators, lime green radios, and shocking pink boom boxes. I also noticed that the products' cases didn't have sharp right angles with well-defined corners. Instead the cases were contoured, their corners rounded, smooth, and soft-looking. The products looked less like an engineer's chassis but more like something organic and alive. It was all high-tech designer chic—something with a decidedly human look and feel.

The "in" look now in southern California is clothes that haven't seen the inside of a washer or the underbelly of an iron. Beards, legs, and underarms that haven't been shaved and unwashed hair that has a stiff, greasy, "sexy" look are also fashionable.

Rumpled is in. People are rumpled. Clothing is rumpled. Technology with a rumpled look is next.

Rampant miniaturization and "digital fusion" will help rumple technology and give it a much more human look and feel. Appliances will fuse: cameras, VCRs, and TVs; telephones, fax machines, laser copiers, and answering machines; computers, radios, TVs, CD players, CD-ROMs, and laser discs.

If technology continues to shrink and converge, then it will become possible for appliance and clothes designers to work closely together to design intelligent clothing in which the appliances are housed. If high-tech becomes microminiaturized, just think of all the computing power you will be able to fit inside a woman's shoulder pads, a Texan's cowboy hat, or a teenager's pump tennis shoes.

Whole entertainment centers will travel with us. We'll wear them as microspeaker earrings, laser disc neckties, and CD-ROM belts. We'll carry entire libraries as encyclopedia suspenders, fax machine necklaces, and

data-dump jumpsuits.

It won't stop there. In the future when high-tech is built into our clothes, even our underwear will be intelligent. Undershirts will have body sensors and release deodorant as needed. Undergarments will have environmental-control panels that will keep us toasty warm on cold days and frosty cool during the dog days of summer. Our underwear will be multitasking. While it keeps us from



being socially suspicious, it may also be working on a tough engineering problem, sorting out a personalized newspaper, calculating our taxes, or designing a challenging videogame for us to play when we get home at night.

At the end of the 1990s, we'll look back at our desktop computers, and marvel. "How could a computer be so big?" we'll say, shaking our heads. "And look at it. It just sits there, all blocky, square, and squat."

The term *desktop computing* will become a quaint term that carries the same nostalgia as hula hoops, tail fins, Howdy Doody, or Bing Crosby.

Nobody will be doing desktop computing because the desktop computer will have disappeared. In rare cases where a megamainframe is required, the computer will have disappeared into the desk. In all other cases, we'll wear all the computing power we need in our different outfits.

Getting dressed in the morning

will be a hard thing to do—especially when we are naked and don't have any onboard computing power. "Do I want to feel really intelligent today and wear my 20-gigabyte sport coat, or do I feel lowbrow enough to get by with my old 100-meg T-shirt?"

In the future, everyone will wear glasses. The glasses will "correct" our vision from real-world reality to a virtual reality that has a computer-display screen overlaid on top.

When we need to access information at school, at work, or in a meeting, we'll reach into our pockets and pull on pairs of sunglasses. In most cases we'll see facts, figures, pictures, simulations, and so on; but we might secretly be looking at digital movies, controlling a CD player embedded in our earrings, or playing videogames using our eye movements to control optical joysticks.

Technology clothing can be pretty flashy, but it's only a waystation to the real high-tech look of the next century. By the year 2001, many trendsetters will have abandoned clunky high-tech clothing for the new look: technology embedded in your body. After all, what are people to do on the beach in skimpy bathing suits? Or in the shower, or in bed?

We can take our technology with us, but it'll soon be a bother to wear all-terrain technology "wetsuits" that can go anywhere. Instead, people in the know will be carrying all their appliances as *dermal implants* inside their bodies. And it will be a gas! Imagine pressing your belly button to call your mom, who is vacationing in some renovated gulag, or closing your eyes and watching the new Rocky movie (*Rocky XXV*).

Technology in the near future will be everywhere, but it will also be invisible. It may be under your clothing, inside a tooth filling, or on the tip of your tongue. For heavy-duty computing, though, you can mount a mainframe unit as a collar around the neck of your favorite pet. And if you're smart, you'll get a really intelligent collar that will also kill fleas. □



BEGINNER BASIC

L A R R Y C O T T O N

For many computer users, the first time they encounter BASIC is when they turn on their machines. On the 64 or 128, the first screen you see is a BASIC screen. The computer attempts to interpret anything typed on the keyboard as a BASIC command.

If you type your name and press Return, the computer will look it up in its internal BASIC dictionary. And unless your name happens to be LIST or another BASIC keyword, the computer will announce that you've entered a syntax error; your name wasn't in its BASIC interpreter.

The 64's version of BASIC is similar to the original BASIC invented at Dartmouth College almost 30 years ago. The 128's version contains all of the 64's commands and adds many of its own, such as RDOT and SPRDEF. Since these commands are unique to the 128, we won't spend much time on them in this column; I have to cover what's common to both computers.

There's been a lot of press—mostly bad—about BASIC's speed. There's no doubt about it; BASIC is slow. Every instruction the computer sees in a program must be translated just as if it had never seen it before. If you say PRINT X+Y, the computer must first look up PRINT to see if it's a valid BASIC statement, then look up the value of X, and then check to see if the + sign really means anything. It then looks up the value of Y, does the addition, and prints the result on the screen.

If you say PRINT A-B, the computer doesn't remember that PRINT has passed the validity test, so it looks it up again, then goes through essentially the same procedure as PRINT X+Y, except with a different mathematical operation and different variables.

Even at this snail's pace (electronically speaking), the answer's usually on the screen by the time you've lifted your finger from the Return key. In other words, BASIC is quite fast enough for some programs.

It's not fast enough, however, for high-resolution graphics or arcade-style games. That's because moving several objects simultaneously in a blast-the-aliens-as-fast-as-you-can game or updating flight-simulator scenery calls for rapid math calculations. The program must also react quickly to joystick movements and print recognizable pictures onscreen.

If you're into programming games, don't depend on BASIC to be able to handle the speed. Such programs virtually grind to a halt if they're written in BASIC, so programmers must resort to another language

WHERE TO FROM HERE? SOME BASIC RAMBLINGS

or else program in the language the computer understands—machine language. (But that's a topic Jim Butterfield covers in his column.)

Another bad reputation BASIC has garnered over the years is that it's unstructured and encourages sloppy programming. In other words, since there are so many ways to accomplish a given task, each programmer can approach a program in an individualistic and often hodgepodge way.

Quite a few columns back, Todd Heimarck and I debated the relative merits of structured and unstructured programming. You can program either way in BASIC; other languages require more structure. I argued that structuring restricts creativity, elegance, and flexibility.

I tend to write programs top-down, starting at the top and working down until the program's finished.

BASIC's perfect for this. You simply tinker, test, and tweak until the program works. But does it really work under every conceivable condition?

A better way is to think of the structure before you ever begin. What are the main things you want to accomplish? Can tasks be broken into manageable modules of code? Can you use meaningful variable names? Can you help explain the code with remarks? Can you keep lines short?

So what is BASIC good for? In its ability to manipulate large amounts of data, in doing complex math problems, in the programming of simple music and sound effects, in giving tests, or in collecting data, BASIC shines.

For instance, if you want to write a program that creates and maintains a list, BASIC is the ideal programming language. First, it collects data using the INPUT and/or GET statements. It remembers data in the form of text (strings) or numeric variables. It can save your list to a disk and load it back into the computer. BASIC also works well sending data from the computer to a printer.

Two of the most popular programs I've written to illustrate various BASIC programming techniques are a quiz that teaches state capitals and a list-making program. Both are easily written in BASIC and work well. The user never realizes that the programs are not extremely fast.

All these ramblings are leading to a plea for your input to help me write this column. BASIC is a wonderful language, but what would you like to do with it? Would you like to gather data? Control appliances? Play music? Learn to type? Time reactions? Dial a phone?

I'd also like to know how long you, the reader and BASIC programmer, have been with me. Are you a programming veteran or a novice?

I'd really like to know what you would like to learn about, and do with, BASIC. I can be reached in care of COMPUTE, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. □

ONLY
10
LEFT

Ashton-Tate's dBASE II \$195.00 (List 495.00)
data and application compatible with MS-DOS version: dBASE IV.

WordStar® v2.26 \$39.95 with 736 page
User's Guide and command keytops (data files compatible with MS-DOS version)—includes
Osborne CP/M System Manual with extensive CP/M Tutorials as well.

with WordStar, purchase any or all of following for **only \$10.00 each**:
SpellGuard® checker with dictionaries, **Grammatic**® checks Grammar and syntax,
MailMan® Mailing list manager and label maker, **FORTH** language, **P.D. 3 Disk Index**.

and/or combine WordStar with any/or all of following **\$39.00 Programs at 3/\$95.00**:
SuperCalc® v1.05 spreadsheet, MicroSoft **BASIC** With DRI's **Compiler BASIC**, MicroSoft's
BASCOM® Compiler, **WordPac**® Incl. SpellGuard Grammatic **Documate** and **MathStar**,
MicroSoft's **FORTRAN-80**® With Macro-Linking Compiler (\$90, List 295), **SuperSort**®,
DataStar®, **Personal Pearl** 6 disks menu-driven Executive's Data Base, **Real Estate
Investor**® for SuperCalc, **Personal Datebook**® also schedules office.

All Programs Above T.M. Reg. U.S. Pat. Office by their respective Publishers.

Please add \$4.50 P & H per order. Send Checks to P.D.S.C., Suite L-3, 33 Gold Street, New York,
NY 10038. **MasterCard/VISA Please Call 1-800-221-7372 (PDSC) Don Johnson**

Circle Reader Service Number 117

JASON-RANHEIM CARTRIDGE MATERIALS FOR YOUR COMMODORE 64 or 128

*Quality Products
from the World Leader!*

- Promenade C1 EPROM Programmer
- Game Type Cartridges
- Bank Switching Cartridges
- RAM/ROM Combination Cartridges
- Capture Archival Cartridge System
- Cases, EPROMS, Erasers, Etc.

Call or write for complete information!

Call Toll Free	800-421-7731
from California	916-878-0785
Tech Support	916-878-0785



JASON-RANHEIM
3105 Gayle Lane
Auburn, CA USA 95603

Circle Reader Service Number 216

Best-Selling Commodore Books from COMPUTE

**Machine Language Routines for the
Commodore 128 and 64**

By Todd D. Heimark and Patrick G. Parrish
For both beginners and advanced ML programmers.
585 pages. \$18.95

Mapping the Commodore 64 and 64C

By Sheldon Leemon
Comprehensive memory map and programmer's guide.
324 pages. \$18.95

Music System for the Commodore 128 and 64

The Enhanced Sidplayer

By Craig Chamberlain
Includes programs, utilities, and sample music.
Book/Disk Only. 274 pages. \$24.95

Order your copies today.

Send the appropriate amount plus \$2 shipping and handling for
each book (\$6 for orders outside the U.S. and Canada) and ap-
plicable sales tax* to:

COMPUTE Books
C/O CCC
2500 McClellan Ave.
Pennsauken, NJ 08109

*Residents of NC, NY, and NJ add appropriate sales tax for your area.
All orders must be paid in U.S. funds drawn on a U.S. bank. Please allow 4-6
weeks for delivery.

MAR91CP



MACHINE LANGUAGE

J I M B U T T E R F I E L D

It seems pointless to have code that adds 0 to a number, or for that matter subtracts 0. After all, anything plus 0 gives an unchanged value, right?

In the case of a carry, adding/subtracting 0 can make good sense. For example, suppose you have the address of a variable stored in \$FD/FE and you want to move to the next variable, seven bytes away. After an initial CLC to clear the carry, you would add to the low part of the address with LDA \$FD, ADC #\$07, STA \$FD. How about the high part of the address? One way to do the job is to let the carry add in "naturally" with LDA \$FE, ADC #\$00, STA \$FE. The 0 might be viewed as the high-order part of the value 7.

There are several such tricks that involve adding 0; usually the carry flag plays a role. This time, I'd like to concentrate on a special trick: adding or subtracting 256 to a byte, in steps, causing its value to roll around to the original number.

All bytes must contain values in the range of 0 to 255, or \$00 to \$FF in hex. If I should add, say, 128 (hex 80) to any value and then do it again, the number will return to its original value. What's the point?

One example of adding 0 can be found in every Commodore 8-bit computer. It's part of a routine called CHRGET. On the 64, you'll see this code at addresses \$84-\$89. It looks like this:

```
0084 SEC
0085 SBC #$30
0087 SEC
0088 SBC #$D0
```

Successively subtracting hex 30 and D0 (decimal 48 and 208) walks the value in the A register completely around, leaving it where it started. What's the point?

As it turns out, this clever piece of code adjusts the carry according to the value in the A register. If the value is below hex 30, the carry will be set; if it's above, the carry will be clear. The

flag will be used by the program that called this subroutine.

Another clever and interesting piece of code that has been showing up lately is used in converting a value to hexadecimal ASCII prior to printing it. The number is split into two four-bit groups, each of which will be translated to a printable character in the hexadecimal range 0-9 or A-F.

carry flag is cleared, and we add 90 decimal. The code so far reads as follows:

```
SED
CLC
ADC #$90
```

Let's see what happens so far. If the original value was in the range 0-9, adding hex 90 in decimal mode will yield \$90-\$99, and the carry flag will be clear. If the number was in the range 10-15 (hex A-F), adding will produce 100-105, or more accurately, 00-05 hex with the carry flag set. Note that decimal mode has been used with numbers that aren't in true decimal format; in principle, values such as A or F would not be legal BCD. No matter—the computer will adjust the value correctly.

The rest of the calculation is straightforward. Remaining in decimal mode and leaving the carry flag as is, we add 40. The code is a simple ADC #\$40, followed by clearing decimal mode with CLD.

If the original value was in the range 0-9, its modified value of 90-99 will be added to 40 (decimal mode, of course), producing the correct result of \$30-\$39. There will be a resulting carry, but that doesn't matter.

On the other hand, if the original value was 10-15 (hex A-F), the modified value of 00-05 will be added to 40, plus a carry! This will yield a result of 41-46, the correct ASCII values for letters A-F.

Numeric or ASCII, the number is ready to print. And there were no comparison tests.

The little program that follows simply displays its first 12 bytes in hexadecimal. It gives you an easy way of checking the above method and seeing the usual way of separating a byte into its two nybbles.

The program runs on virtually all 8-bit Commodore computers. One caution should be observed: If an interrupt occurs while the computer is in decimal mode, the interrupt program will run in decimal mode. That's

EVERYTHING
MEANS
**LESS
THAN
ZERO**

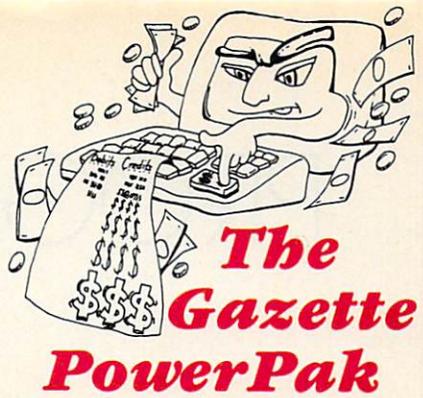
Once you've isolated the four-bit nybble with a value ranging from 0 to 15, the usual method is to test to see if it's less than 10. If so, add hex #30 to create a character from 0 to 9; otherwise, add hex #\$37 to produce A to F. There are many variations of this basic method, but they all involve two additions and a test.

The clever method rolls the number completely around, and then some! If you do this in decimal mode, the number will end up at the right place with no tests needed. And this method deliberately puts the carry flag to use to get the numbers exactly where they're wanted.

Here's the method. First, the program sets decimal mode. We'll discuss the effects of this in a moment. The



MACHINE LANGUAGE



not serious for normal interrupt routines, but there's an anomaly with Commodore computers prior to the VIC-20. On such computers (PET, CBM), the keyboard-reading routine uses the ADC instruction; as a result, false keyboard values are seen if a decimal-mode interrupt takes place. You may eliminate this effect by locking out the IRQ during the time you're in decimal mode; issue the command SEI just before SED and the command CLI right after CLD. Even with a newer machine, I recommend that you try your hand at adding this coding. It's good practice.

2000 LDX #00

The loop that counts the 12 bytes will be controlled from the X register. The program will be at hex 2000, so that's where we will read the bytes from.

2002 LDA \$2000,X

The value to be printed in now is in the A register. To split it into two parts, we'll save (push) it on the stack and then extract the first nybble.

2005 PHA

Get the high nybble by shifting the contents of A to the right four times. Zero bits slide into the right side, and the high bits move to the low end of the byte. The low bits are lost. We'll bring them back when we pop the stack.

Your assembler might prefer that you type LSR A rather than the LSR shown. Give it whatever it wants.

2006 LSR
2007 LSR
2008 LSR
2009 LSR

The high nybble is converted to a binary value from 0 to 15. We're ready to do the conversion. The following code could be made into a sub-routine, since we'll use it again for the low nybble.

200A SED
200B CLC
200C ADC #90
200E ADC #40
2010 CLD

Conversion complete. Let's print the character we've created.

2011 JSR \$FFD2

Pull the original value from the stack with PLA and use AND to isolate the low nybble. Convert to ASCII and print.

2014 PLA
2015 AND #0F
2017 SED
2018 CLC
2019 ADC #90
201B ADC #40
201D CLD
201E JSR \$FFD2

For neatness, print a space so that the next byte will be separated from this one.

2021 LDA #20
2023 JSR \$FFD2

On to the next byte, unless we have done 12 (hex 0C), in which case we quit.

2026 INX
2027 CPX #0C
2029 BNE \$2002
202B RTS

It's a neat method, and it illustrates how a little thought can produce elegant number handling. And it's not too clever—the code is sound.

Rolling a number around by adding or subtracting 0? It can be quite handy.

```

100 DATA 162,0,189,0,32
110 DATA 72,74,74,74,74
120 DATA 248,24,105,144
130 DATA 105,64,216,32
140 DATA 210,255,104,41
150 DATA 15,248,24,105,144
160 DATA 105,64,216,32
170 DATA 210,255,169,32
180 DATA 32,210,255,232
190 DATA 224,12,208,215,96
200 FOR J=8192 TO 8235
210 READ X
220 T=T+X
230 POKE J,X
240 NEXT J
250 IF T<>5402 THEN STOP
300 PRINT "HEX CONVERSION"
310 PRINT "DEMO"
320 SYS 8192

```

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 PowerPak!* Look at all your 64/128 *PowerPak* 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. What could be easier?

Financial Planner—Answers all of those questions concerning interest, investments, and money management that financial analysts charge big bucks for! 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!**



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

___ Subtotal
___ Sales Tax (Residents of NC and NY please add appropriate sales tax for your area.)
___ 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 _____
Daytime Telephone No. _____
Name _____
Address _____
City _____
State/Province _____ ZIP/Postal Code _____

Send your order to Gazette 1991 PowerPak, 324 W. Wendover Ave., Suite 200, Greensboro, NC 27408.



PROGRAMMER'S PAGE

R A N D Y T H O M P S O N

You stare at it all the time. BASIC's PRINT statement depends on it. All of your software would be useless without it. I am, of course, talking about your computer screen.

This month I've selected a couple of tips designed to manipulate your computer's most visual component. Both were sent in by readers, as was a correction to November's column.

Cursor Control

This short 64 program gives BASIC programmers a cursor-locate command and a box-clear command.

```

KH 10 FOR I=679TO748:READ D:PO
    KE I,D:NEXT
CK 20 DATA 32,182,2,134,176,32
    ,182,2
PS 30 DATA 164,176,24,32,240,2
    55,96,32
XC 40 DATA 253,174,32,158,183,
    96,32,167
GE 50 DATA 2,134,177,32,182,2,
    232,134
DF 60 DATA 178,32,182,2,134,17
    9,169,32
JB 70 DATA 166,176,164,177,32,
    210,255,232
AB 80 DATA 228,178,208,248,196
    ,179,208,1
HB 90 DATA 96,230,177,166,177,
    164,176,24
SD 100 DATA 32,240,255,24,144,
    224

```

This program stores two machine language routines in memory starting at location 679.

To position the cursor on the screen after running the program above, all you have to do is enter SYS 679, X, Y where X is the desired horizontal position (0-39) and Y is the desired vertical position (0-24).

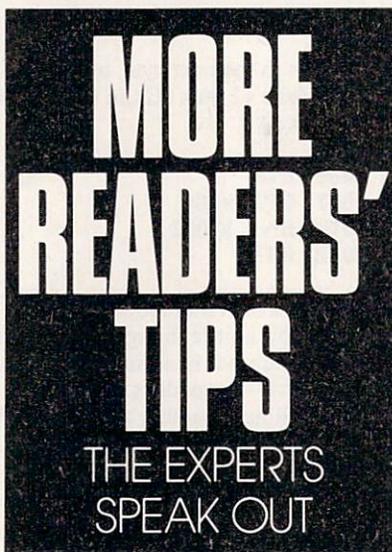
The syntax for the second routine, which clears any rectangular area on the computer screen, is SYS 701, X1, Y1, X2, Y2. Coordinates X1, Y1 and X2, Y2 specify the upper-left and lower-right corners of the area to clear, respectively. So to clear a 10 x 10 character area in the middle of the screen, you'd use the command SYS 701, 14, 7, 23, 16.

ERIK MARTIN
DENTON, TX

Scrolling Down

Scrolling your computer's text screen up a line is easy: Simply move the cursor to the bottom of the screen and execute a PRINT statement.

Scrolling the screen down is not as simple. The November 1989 "Programmer's Page" shows you how you can use a PRINT instruction to make the 64's screen scroll down, but there's another way to accomplish this feat. Move the cursor to any spot on the screen and execute the command SYS 59749. Anything below the cursor will scroll downward. Lines located above the cursor remain in place.



Calling this ROM routine repeatedly can cause a strange side effect, however. For example, clear your 64's screen by pressing SHIFT-CLR/HOME, type SYS 59749, and press Return. Now, cursor up until your cursor is back on top of the SYS command and press Return again. Repeat this last step four more times. On the fourth try, your cursor takes a strange detour before reaching the top of the screen.

The cause of this misdirection has to do with how the 64 manages its screen. Using a screen line link table, found at locations 217-242, your

computer keeps track of lines that have a logical length of 40 or more characters (BASIC program lines that take up two screen lines, for example). The ROM routine located at 59749 moves lines down by adding 40 spaces to the beginning of the current line. This creates a line with a logical length of 80 characters, or two screen lines. Repeated calls to 59749 can wreak havoc on the screen line link table, however. With direct calls to this ROM routine, it's possible to create logical lines that are longer than the system is prepared to handle. With a little preparation you can keep this table in check and keep your scroll-down routine from confusing your cursor.

To safely scroll the screen down, position the cursor on the desired line and then type in and execute the following instructions:

```
L=PEEK(214)+218:POKE
L,PEEK(L) OR 128:SYS 59749
```

The POKE command updates the screen line link table before SYS 59749 takes effect. This ensures that no logical lines exceed the size of two screen lines, and scrolling down works as expected.

ADAM D. KROPELIN
JEFFERSONVILLE, VT

Oops

In your November column, there's an error in the program that copies BASIC and Kernal ROM. In line 20 the first value in the FOR-NEXT loop should be 57344, not 7344. It doesn't change anything, but it does take an unnecessarily long time to run. Also, the location for the INPUT prompt character is 43846, not 53846. HUBERT CHAN
ST. ALBERT, AB, CANADA

We're interested in seeing your best programming tips and tricks. Send your submissions to Programmer's Page, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. We'll pay \$25-\$50 for each tip that we publish. □



PROGRAMS

L Y S L E E . S H I E L D S I I I

How many times have you been stuck in a crossword puzzle, trying to find a three-letter word that ends in *u* for a large, flightless bird? Many people enjoy spending time solving as well as making crossword puzzles, but finding the appropriate word is not always easy. A computer with a program such as *Cross Aid* can help.

Cross Aid searches a database by length of word and the known letters in that word. It also lets crossword fans edit and compile their own crossword databases. In the above case, it would search for all three-letter words that end in *u*. If the word has been entered in the database, any crossword puzzle fan would expect the program to find the word *emu*.

Entering the Program

Cross Aid is written entirely in machine language. To enter this program, you'll need *MLX*, our machine language entry program (see "Typing Aids" elsewhere in this section). When *MLX* prompts you, respond with the values given below.

Starting address: 0801

Ending address: 1168

When you've finished typing, be sure to save a copy of the program before exiting *MLX*.

Although *Cross Aid* is written in machine language, it loads and runs like a BASIC program. Upon entering the program, you'll see the title and a word-entry box. At this point you may type in a word to search for or add a word to the database. Other operations include correcting or deleting words already in the database.

To add a word and to search for a word are almost the same operation. Type in the word to add or search for and press Return. If the word is already in the database, then it will be shown, and the bottom line will report that one word has been found. However, if the word is not found, the program will ask if you wish to add the word to the database. Answer yes by

pressing Y or no by pressing N.

In addition to searching for whole words, you can search for words with missing letters. This is where the program comes in handy in helping you solve crossword puzzles. When you enter a period, number, or any character other than a letter in the unknown character positions, the computer will turn these illegal characters into question marks. You'll then be asked if you accept the word.

**CROSS
AID**

USE THIS HANDY
DATABASE FOR THE
64 TO HELP SOLVE
CROSSWORD
PUZZLES

The computer will then search for all the words in the database that match this combination. They will be reported and totaled at the bottom of the screen. If more words are found than the screen can hold, you will be prompted with a question either to stop or to continue. Press S to end the listing or any other key to continue.

If It Quacks

For example, suppose you need a four-letter word for *water fowl* that starts with the letters *du*. Simply type in the first two letters and then two periods for the missing letters. Depending on what words are in your database, you may get *duck*, *dude*, *duel*, and *duke*. If you knew only that

the word ended in *k*, you could type three periods and the final letter. All four-letter words ending in *k* in your database would then appear.

In addition to creating the database, you may at times need to perform maintenance on it. *Cross Aid* gives you two ways to edit: correct a word or delete one. To enter maintenance mode, type in a word that will bring up the misspelled word and then press Shift-Return. As with normal searches, a list will appear that matches the word pattern. A cursor will appear in the list. Move the cursor over the mistake and retype the letters to correct the spelling error or errors. Be careful not to edit a word into one that already exists or a duplicate will result in the database.

To delete a word, move the cursor over a word and press Shift-D. The word will disappear. When you've finished making changes to the database, press Return.

It's very important to end the program correctly. Otherwise, you may find that many of the words you thought you entered will be missing from the database. To end, simultaneously press the Commodore key and the S key. This will cause the computer to save vital information needed for the database.

Create a Directory

The first time you run the program, it will search for the directory of words in your database. Since you haven't created one yet, the light on your disk drive will flash. You may ignore it and continue the program. As soon as you've entered some words, the program will save them automatically in a file called *CROSS.DIR* when you end the program.

It will take a little effort for you to build up a useful database, but it won't be long before you have a good selection of words commonly found in crossword puzzles. Use the program a few times, and its value should soon become apparent. As an additional piece of advice, using a fast loader will help the speed of the program.



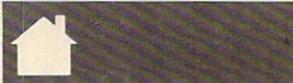
PROGRAMS

CROSS AID

0801:0D 08 0A 00 9E 28 32 30 05
 0809:38 30 29 00 00 00 7A E0
 0811:28 A9 80 20 90 FF 4C 90 5F
 0819:09 AA AA AA AA AA 4C F9
 0821:38 08 4C 68 10 4C DE 0F DD
 0829:4C FE 10 4C 8E 10 4C 9D D0
 0831:10 4C B6 10 60 EA EA A9 62
 0839:00 20 90 FF 20 68 10 20 46
 0841:EE 0A 20 4E 0B B0 3B 38 FD
 0849:20 3A 0A C9 00 F0 1C C9 9B
 0851:01 D0 09 20 E8 0A C9 00 3C
 0859:F0 11 D0 F3 A9 01 20 85 96
 0861:0C C9 53 F0 06 20 BA 0C 95
 0869:18 90 DD A5 6B D0 08 20 8E
 0871:4C 0C B0 03 4C 02 0C 20 93
 0879:5B 0C A9 00 20 85 0C 4C EA
 0881:40 08 20 BA 0C 38 20 3A 1F
 0889:0A 48 18 90 08 20 BA 0C FE
 0891:18 20 3A 0A 48 20 C0 08 E9
 0899:68 C9 00 F0 17 C9 01 D0 12
 08A1:EC 20 B2 09 20 A8 10 20 FA
 08A9:49 0A C9 00 F0 06 48 D0 1B
 08B1:E4 18 90 D9 20 5B 0C A9 1A
 08B9:00 20 85 0C 4C 40 08 A9 60
 08C1:07 85 6A A9 00 85 69 A9 31
 08C9:F0 85 65 A9 04 85 66 A4 A2
 08D1:69 B1 65 09 80 91 65 20 75
 08D9:E4 FF F0 FB 48 A4 69 B1 93
 08E1:65 29 7F 91 65 68 C9 0D 65
 08E9:D0 03 4C 68 09 C9 04 D0 7B
 08F1:03 4C 5F 09 A2 03 DD 26 16
 08F9:0E F0 05 CA 10 F8 30 31 90
 0901:18 BD 2A E0 65 69 C9 FF 19
 0909:F0 C5 C9 28 F0 C1 85 69 C3
 0911:18 BD 2E E0 65 6A C9 18 C5
 0919:F0 B5 C9 06 F0 B1 85 6A 6E
 0921:18 BD 32 0E 65 65 85 65 07
 0929:BD 36 E0 65 66 85 66 D0 A6
 0931:9E 29 3F F0 9A C9 1B 10 16
 0939:96 85 50 A4 69 20 13 0A 48
 0941:A5 61 F0 8B A5 62 F0 87 75
 0949:A9 07 20 E0 09 A5 50 A4 28
 0951:69 91 65 C8 C0 28 F0 02 40
 0959:84 69 18 4C D0 08 A9 0B D4
 0961:20 E0 09 18 4C D0 08 A9 BD
 0969:F0 85 FB A9 D8 85 FC A0 E6
 0971:00 B1 FB 29 F0 C9 07 F0 A0
 0979:14 C9 0B D0 1C 20 06 0A ED
 0981:A9 FF A0 00 91 61 A9 00 E1
 0989:8D 0D F0 0C 20 06 0A AB
 0991:A0 00 B1 65 91 61 8C 0D B8
 0999:00 E6 FB D0 02 E6 FC A5 3D
 09A1:FC C9 DB D0 CC A5 FB C9 EB
 09A9:C0 D0 C6 20 15 0D 4C BA 50
 09B1:0C 20 5A 10 A9 00 85 FB 72
 09B9:85 FD A9 A0 85 FC 85 FE 77
 09C1:A0 00 B1 FD C9 FF F0 08 72
 09C9:91 FB E6 FB D0 02 E6 FC 99
 09D1:E6 FD D0 02 E6 FE B1 FD A5
 09D9:D0 E8 91 FB 4C 63 10 85 16
 09E1:51 20 13 0A A4 69 C0 00 F3
 09E9:F0 0B B1 65 88 F0 06 C9 A1
 09F1:20 D0 F7 C8 C8 A5 51 91 E4
 09F9:FB C8 B1 65 C0 28 F0 04 55
 0A01:C9 20 D0 F1 60 A5 FB 85 52
 0A09:65 A5 FC 29 03 18 69 04 BA
 0A11:85 66 A5 66 29 03 AA 18 5F
 0A19:69 D8 85 FC 8A 18 69 80 A0
 0A21:85 64 8A 18 69 84 85 62 AE
 0A29:A5 65 85 FB 85 61 85 63 F9
 0A31:B1 61 85 61 B1 63 85 62 FC
 0A39:60 90 0A 20 8E 10 20 23 C5
 0A41:0C AA 18 90 03 20 9D 10 F5
 0A49:A9 06 85 66 A9 EF 85 6D 50
 0A51:A9 04 85 6E A9 00 85 67 92

0A59:AD 64 0E C9 FF F0 07 C9 57
 0A61:00 D0 06 A9 00 60 A9 01 DA
 0A69:60 20 2D 0C AD 11 00 85 53
 0A71:FD AD 12 00 85 FE A5 6D 13
 0A79:85 FB A5 6E 85 FC 18 A5 E0
 0A81:67 65 FB 85 FB 85 61 85 B8
 0A89:63 90 02 E6 FC A5 FC 29 C3
 0A91:03 48 18 69 80 85 62 68 1A
 0A99:18 69 84 85 64 A0 00 B9 5C
 0AA1:64 0E C8 91 FB A5 FD 91 A1
 0AA9:63 A5 FE 91 61 E6 FD D0 45
 0AB1:02 E6 FE C4 68 D0 E8 38 3D
 0AB9:A5 67 65 68 85 67 38 A9 91
 0AC1:27 E5 68 C5 67 10 11 A9 93
 0AC9:00 85 67 E6 66 18 A9 28 A9
 0AD1:65 6D 85 6D 90 02 E6 6E 44
 0AD9:A5 66 C9 17 D0 03 A9 02 EC
 0AE1:60 20 9D 10 4C 59 0A 20 DE
 0AE9:A8 10 4C 59 0A A9 93 20 B3
 0AF1:D2 FF A9 0E 20 D2 FF A9 7B
 0AF9:08 20 D2 FF A9 00 8D 20 FC
 0B01:D0 8D 21 D0 A2 00 BD 5E 03
 0B09:0D 9D 00 04 E8 E0 1C D0 21
 0B11:F5 A9 28 85 FB A9 04 85 FD
 0B19:FC A9 1D 85 FD A9 0E 85 4C
 0B21:FE 20 F8 0C A9 50 85 FB 34
 0B29:A9 04 85 FC A9 20 85 FD 6C
 0B31:A9 0E 85 FE 20 F8 0C A9 E6
 0B39:78 85 FB A9 04 85 FC A9 E0
 0B41:23 85 FD A9 0E 85 FE 20 49
 0B49:F8 0C 4C 15 0D 20 38 0D 20
 0B51:A9 01 85 68 A9 00 85 6B 77
 0B59:A6 68 AA A0 9D 50 04 20 72
 0B61:E4 FF AA A5 91 C9 F7 D0 1D
 0B69:03 4C 11 0C E0 00 F0 EF CF
 0B71:E0 5F D0 03 20 35 08 E0 E0
 0B79:AE D0 03 4C 11 0C E0 0D C7
 0B81:D0 04 18 4C BB 0B E0 8D 22
 0B89:D0 04 38 4C BB 0B E0 14 B4
 0B91:D0 11 A6 68 A9 20 9D 50 09
 0B99:04 E0 01 F0 01 CA 86 68 C1
 0BA1:4C 59 08 A6 68 E0 26 FC
 0BA9:D0 03 4C 60 0B 29 3F A6 9A
 0BB1:68 9D 50 04 E8 86 68 4C 2C
 0BB9:59 0B 08 A9 00 85 6C A6 70
 0BC1:68 A9 20 9D 50 04 CA D0 4D
 0BC9:04 28 4C 4E 0B 8E 3B 0E 71
 0BD1:86 68 BD 50 04 C9 00 F0 3A
 0BD9:04 C9 1B 30 09 A9 3F 9D D5
 0BE1:50 04 A0 01 84 6B 9D 3B 8D
 0BE9:0E CA D0 E6 A5 6B D0 02 C0
 0BF1:28 60 A9 02 20 85 0C C9 82
 0BF9:4E D0 04 28 4C 4E 0B 28 48
 0C01:60 A9 03 20 85 0C C9 59 5F
 0C09:D0 03 20 B6 10 4C 40 08 F3
 0C11:A9 00 8D 3B 0E 20 8E 10 81
 0C19:20 FE 10 68 68 A9 04 4C C7
 0C21:85 0C A9 30 A2 05 95 57 E2
 0C29:CA 10 FB 00 A2 05 B5 57 1C
 0C31:A8 C8 C0 3A D0 04 CA 10 C7
 0C39:F5 E8 98 95 57 A0 30 E8 79
 0C41:E0 06 F0 06 98 95 57 18 AB
 0C49:90 F5 60 A2 05 B5 57 C9 D4
 0C51:30 D0 05 CA 10 F7 18 60 F3
 0C59:38 60 A2 05 B5 57 C9 30 C8
 0C61:D0 05 E8 E0 05 D0 F5 A0 46
 0C69:01 B5 57 99 C0 07 C8 E8 90
 0C71:E0 06 D0 F5 C8 A2 00 BD 83
 0C79:50 0D 99 C0 07 C8 E8 E0 4A
 0C81:0E D0 F4 60 0A AA BD 7A 6A
 0C89:0D 85 FB 6D 7B 0D 85 FC FC
 0C91:A0 00 A2 00 B1 FB D0 01 6E
 0C99:E8 E0 00 F0 02 A9 20 09 6D
 0CA1:80 99 A0 04 C8 C0 28 D0 1F
 0CA9:EB 20 43 0D 48 A9 20 A0 C2
 0CB1:27 99 A0 04 88 10 FA 68 FA

0CB9:60 A9 A0 85 FB A9 04 85 EC
 0CC1:FC A2 14 A5 FB 85 61 85 1C
 0CC9:63 A5 FC 29 03 48 18 69 02
 0CD1:80 85 62 68 18 69 84 85 53
 0CD9:64 A0 27 A9 20 91 FB A9 B4
 0CE1:00 91 61 91 63 88 10 F3 F4
 0CE9:18 A9 28 65 FB 85 FB 90 52
 0CF1:02 E6 FC CA 10 CD 60 A0 2A
 0CF9:00 B1 FD 48 A0 02 B1 FD 31
 0D01:48 88 B1 FD 91 FB C8 C0 46
 0D09:27 D0 F9 68 91 FB A0 00 6E
 0D11:68 91 FB 60 A9 00 85 FB 9D
 0D19:A9 D8 85 FC A2 18 BD 04 B3
 0D21:0E A0 27 91 FB 88 10 FB 86
 0D29:18 A9 28 65 FB 85 FB 90 93
 0D31:02 E6 FC CA 10 E8 60 A9 E0
 0D39:20 A2 26 9D 50 04 CA D0 A3
 0D41:FA 60 20 E4 FF F0 FB 48 47
 0D49:20 E4 FF D0 FB 68 60 17 13
 0D51:0F 12 04 28 13 29 20 06 FD
 0D59:0F 15 0E 04 2E 20 20 20 94
 0D61:20 20 20 20 20 20 20 20 7B
 0D69:20 43 12 0F 13 13 20 41 FD
 0D71:09 04 20 16 31 2E 30 20 39
 0D79:20 84 0D A3 0D B6 0C CA C8
 0D81:0D E7 0D 20 50 12 05 13 A7
 0D89:13 20 01 0E 19 20 0B 05 9A
 0D91:19 20 14 0F 20 03 0F 0E EC
 0D99:14 09 0E 15 05 20 2E 2E 46
 0DA1:2E 20 20 4D 0F 12 05 20 96
 0DA9:2E 2E 2E 20 28 13 30 53 89
 0DB1:14 0F 10 29 00 20 41 03 34
 0DB9:03 0F 10 14 20 20 57 12 68
 0DC1:04 3F 20 28 59 2F 4E 29 81
 0DC9:00 20 4E 0F 14 20 46 0F 63
 0DD1:15 0E 04 2E 20 20 41 04 65
 0DD9:04 20 57 0F 12 04 3F 20 19
 0DE1:28 59 2F 4E 29 00 20 45 FF
 0DE9:0E 04 20 0F 06 20 50 12 64
 0DF1:0F 07 01 08 0D 2E 20 20 77
 0DF9:54 08 01 0E 0B 20 19 0F 5B
 0E01:15 2E 00 02 06 06 06 06 AD
 0E09:06 06 06 06 06 06 06 06 25
 0E11:06 06 06 06 06 06 06 06 29
 0E19:05 05 05 07 70 40 6E 5D C8
 0E21:20 5D 6D 40 7D 1D 9D 11 03
 0E29:91 01 FF 00 00 00 00 01 4F
 0E31:FF 00 00 28 D8 00 00 00 96
 0E39:FF 08 00 00 00 00 00 00 57
 0E41:00 00 00 00 00 00 00 00 5D
 0E49:00 00 00 00 00 00 00 00 65
 0E51:00 00 00 00 00 00 00 00 6D
 0E59:00 00 00 00 00 00 00 00 75
 0E61:00 00 00 00 00 00 00 00 7D
 0E69:00 00 00 00 00 00 00 00 85
 0E71:00 00 00 00 00 00 00 00 8D
 0E79:00 00 00 00 00 00 00 00 95
 0E81:00 00 00 00 00 00 00 00 9D
 0E89:00 00 00 40 30 3A 43 52 EC
 0E91:4F 53 53 2E 44 49 52 80 E3
 0E99:40 20 10 08 04 02 01 40 CA
 0EA1:30 3A 43 52 4F 53 53 2E 8E
 0EA9:23 23 00 00 A9 00 85 FB 74
 0EB1:A9 A0 85 FC A9 00 A8 91 7B
 0EB9:FB C8 D0 FB E6 FC A5 FC 53
 0EC1:C9 BF D0 F0 60 A9 00 AA 30
 0EC9:9D 00 C8 E8 D0 FA 60 A5 35
 0ED1:0C C5 0B D0 07 AD 3B 0E 47
 0ED9:C5 09 F0 2F 20 10 0F A9 35
 0EE1:00 85 07 A9 A0 85 08 A9 AF
 0EE9:FF 85 0D A5 0C 85 0B AD 9D
 0EF1:3B 0E 85 09 20 04 11 90 34
 0EF9:13 20 40 11 A9 20 0E 3A 26
 0F01:0E A0 FF 20 BA FF A9 00 79
 0F09:20 D5 FF 60 4C AD 0E A5 8D
 0F11:09 D0 01 60 A5 0D C9 00 03



PROGRAMS

0F19:D0 34 20 5A 10 20 8B 0F 7D	0FE1:8C A0 0E 20 BD FF A9 20 93	10A9:1A 10 90 F0 A9 00 8D 64 C8
0F21:E6 FB D0 02 E6 FC 20 40 97	0FE9:AE 3A 0E A0 FF 20 BA FF AF	10B1:0E 60 4C 28 10 A9 00 85 A9
0F29:11 A9 20 AE 3A 0E A0 FF 74	0FF1:A9 00 4C D5 FF A9 0C A2 2D	10B9:0C 20 04 11 90 04 E6 0C E7
0F31:20 BA FF A9 00 85 FD A9 64	0FF9:8C A0 0E 20 BD FF A9 20 AB	10C1:D0 F7 A6 0C E0 00 F0 01 C7
0F39:A0 85 FE A9 FD A6 FB A4 AA	1001:AE 3A 0E A0 FF 20 BA FF C8	10C9:CA 86 0C 20 D0 0E 20 5A CD
0F41:FC 20 D8 FF A9 FF 85 0D 66	1009:A9 00 85 FD A9 C8 85 FE 09	10D1:10 20 8B 0F 20 63 10 A5 B8
0F49:20 63 10 20 35 11 60 20 23	1011:A9 FD A2 C0 A0 C8 4C D8 7F	10D9:FB 18 6D 3B 0E 85 FB 90 6E
0F51:5A 10 A5 07 85 FB A5 08 35	1019:FF E6 0C 20 04 11 90 05 01	10E1:02 E6 FC A5 FC C9 BF D0 16
0F59:85 FC A0 00 B1 FB F0 25 12	1021:20 D0 0E 18 60 38 60 20 8D	10E9:0D 20 10 0F E6 0C E6 0B CB
0F61:B9 3C 0E C9 3F F0 04 D1 61	1029:5A 10 A0 00 A5 07 85 FB DE	10F1:20 AD 0E 20 35 11 A9 00 92
0F69:FB D0 0B C8 CC 3B 0E D0 E7	1031:A5 08 85 FC B1 FB 99 64 BB	10F9:85 0D 4C A3 0F 20 10 0F 0C
0F71:EB 20 63 10 18 60 18 AD 1B	1039:0E C8 CC 3B 0E D0 F5 20 9F	1101:4C F6 0F A9 00 85 FC A5 39
0F79:3B 0E 65 07 85 07 90 02 41	1041:63 10 18 AD 3B 0E 65 07 D8	1109:09 0A 26 FC 0A 26 FC 85 2F
0F81:E6 08 18 90 CD 20 63 10 E6	1049:85 07 90 02 E6 08 A5 FB BE	1111:FB 18 A9 00 65 FB 85 FB 8E
0F89:38 60 A9 00 85 FB A9 A0 21	1051:85 11 A5 FC 85 12 A9 00 C4	1119:A9 C8 65 FC 85 FC A5 0C 36
0F91:85 FC A0 00 B1 FB F0 07 2C	1059:60 A5 01 85 0E 29 FE 85 24	1121:48 4A 4A 4A A8 68 29 07 28
0F99:C8 D0 F9 E6 FC D0 F5 84 99	1061:01 60 A5 0E 85 01 60 20 C0	1129:AA B1 FB 3D 98 0E D0 02 01
0FA1:FB 60 20 5A 10 20 8B 0F A6	1069:AD 0E 20 C6 0E A9 00 85 F0	1131:18 60 38 60 20 04 11 B1 69
0FA9:A6 FC 18 A5 FB F0 3B 0E D1	1071:07 A9 A0 85 08 A9 00 8D 60	1139:FB 1D 98 0E 91 FB 60 A5 77
0FB1:90 01 E8 E0 BF F0 21 A0 28	1079:3B 0E 85 09 8D 3C 0E 8D 03	1141:09 A2 30 A8 38 E9 0A 90 2F
0FB9:00 B9 3C 0E 91 FB C8 C4 81	1081:64 0E 85 0B 85 0C A9 FF 68	1149:03 E8 D0 F7 98 09 30 8D 97
0FC1:09 D0 F6 A9 00 91 FB A9 F9	1089:85 0D 4C DE 0F A9 00 85 CB	1151:AA 0E 8E A9 0E A5 0B 18 ED
0FC9:00 85 0D A9 00 85 07 A9 53	1091:07 A9 A0 85 08 A9 00 85 78	1159:69 41 8D AB 0E A9 0C A2 BE
0FD1:A0 85 08 20 63 10 18 60 90	1099:0C 20 D0 0E 20 50 0F 90 B3	1161:A0 A0 0E 4C BD FF 00 00 70
0FD9:20 63 10 38 60 A9 0C A2 CA	10A1:11 A9 FF 8D 64 0E 60 20 C9	

V I C T O R B A R B E E

On reconnaissance to a bleak and hazardous planet, you fall prey to the vile and loathsome Toiloots.

You attempt to flee in your hovercraft, hoping to make a timely escape. You discover to your horror, however, that the fiends have sabotaged your ship's wiring. The positive and negative terminals on all the circuits are clearly marked, but the connecting cables now resemble an upturned pot of spaghetti.

You've managed to drive them off, but you can expect another attack at any time. Keep cool. You must use cunning and logic to reassemble the tangled array of cables, repair the damage, and blast off to safety. You'll also have to hurry before the cretins break through your hatch and grill you for lunch.

Wired is a puzzle that offers many variations and options. You must assemble a jigsaw-type picture using the joystick and onscreen pointer. A series of circuit lines comprise the picture, which looks like an electrical schematic diagram. The design is randomly created, so you never play the same game twice. Four sizes are available, and clues are provided to make the larger puzzles easier if you get in over your head. There's also a two-player option in which players race to solve identical puzzles.

Wired is written entirely in machine language. To enter the program, you'll need to use *MLX*, our machine language entry program (see "Typing

Aids" elsewhere in this section). When *MLX* prompts you, respond with the values given below.

Starting address: 0801

Ending address: 1BB8

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

Plug in and Turn On

When you run the program, a menu will appear at the bottom of the screen. Plug a joystick into port 1 and press the fire button to begin. Use the joystick to highlight right or left to select the desired item. Use the Game option to choose the puzzle size.

There are four sizes for the one-player option and two sizes for two players.

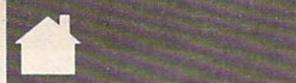
Select the smallest size for a demonstration.

Highlight Make and press the fire button. A nine-square puzzle will appear. Click on Play, and the menu will disappear. You can now maneuver the white cursor arrow with the joystick. To exchange two pieces, click on one and then on the other. To rotate a piece to the right, click on a piece and then click again. You may continue to click and rotate until you've achieved the desired orientation.

The object of the game is to complete the circuits, joining wires to connect the positive and negative nodes. To see a completed picture, move the arrow to the bottom of the screen. The menu will reappear. Highlight Show at the far right of the menu and click the fire button. The puzzle will solve itself.

Each circuit forms a continuous line from one side of the board to another. Notice that each wire begins with a positive (+) node and ends with a negative (-) one. Knowing this is the key to solving the puzzles. Click on Make again to create another puzzle. The designs are created in a random fashion, so if one seems too difficult, just make another.

You may need some help with the larger grids. There are three hints to make the game easier and more colorful. After you've made a puzzle, click on Tint. Half the circuit wires and their appropriate nodes turn red. This added color will make the puzzle



PROGRAMS

easier to solve. Try clicking on Chex. The background for half the squares will change from dark to light blue. Click on Show to see the finished product. Notice that the dark and light squares alternate to form a checkerboard pattern. Chex and Tint can be used together or alternately.

Clicking on Test at any time will turn all the correctly placed pieces purple. Resuming Play will change them back. When a puzzle is correctly assembled, the circuit lines will flash, announcing a victory. The Win detector may not always report a solved puzzle due to the possibility of duplicate or symmetrical pieces. If a puzzle looks right to you, use the Test function to locate the offending pieces. If any of the hints are used during a game, the menu turns blue to keep you honest. After you've won, hit the fire button for the menu.

Double Your Fun

When you're ready to challenge a friend, click on Game to select the two-player option. Click on Make, and two puzzles will appear. They're identical, but one is flipped upside down. Click on Play. Now the orange arrow can be controlled by a joystick in port 2.

The rules for a two-player game are the same. Players can decide whether to allow hints or not. The circuit lines flash for the first completed puzzle. Either player can call up the menu, but the white arrow must be used to make selections.

The difficulty level ranges from fairly easy to almost impossible. A large puzzle played without hints can take hours to solve. On the other hand, a nine-square puzzle can be won in less than a minute.

WIRED

```
0801:0B 08 70 17 9E 32 34 30 6E
0809:37 00 00 00 20 20 20 96
0811:20 20 20 20 20 A0 C4 B9 06
0819:3C 08 99 F8 00 B9 FD 08 F6
0821:99 33 03 88 D0 F1 A0 09 4C
0829:B9 0C 08 99 FF 03 88 D0 A1
0831:F7 A9 86 85 2D A9 28 85 B6
0839:2E 4C 00 01 14 F0 04 86 76
0841:28 2F 1A B9 6E 09 99 E8 C3
0849:07 C8 D0 F7 EE 02 01 EE 19
0851:05 01 C6 F9 D0 ED A2 03 23
0859:20 34 03 F0 33 C9 07 D0 95
0861:16 A2 01 20 34 03 D0 0A A0
0869:A2 04 20 34 03 18 69 07 65
0871:10 05 A2 0A 20 34 03 85 1D
0879:A8 A5 A7 85 A9 A5 FE 85 FB
0881:F7 A5 FF 85 F8 20 6C 03 73
0889:A5 F8 85 FF A5 F7 85 FE 72
```

```
0891:E8 20 34 03 D0 1E A2 08 21
0899:20 34 03 A0 02 84 A8 85 2A
08A1:A6 18 A5 FC 65 A6 85 F7 58
08A9:A5 FD 65 A7 85 F8 20 6C EF
08B1:03 4C 13 01 E8 20 34 03 FB
08B9:D0 1C A0 03 84 A8 E8 20 36
08C1:34 03 F0 08 A2 08 20 34 F4
08C9:03 4C 5C 01 A2 0C 20 34 C3
08D1:03 E6 A7 4C 5C 01 E8 20 AF
08D9:34 03 D0 0A E8 20 34 03 B2
08E1:18 69 04 A8 D0 D6 E8 20 37
08E9:34 03 D0 0A A2 02 20 34 21
08F1:03 18 69 06 D0 ED A2 08 A2
08F9:20 34 03 D0 E6 A9 00 85 F7
0901:A7 A4 FB F0 0C 06 FA 2A 37
0909:26 A7 C6 FB CA D0 F2 A8 D8
0911:60 48 B1 FE 85 FA A9 08 FE
0919:85 FB 68 A4 FE D0 02 06 4A
0921:FF C6 FE C0 E7 D0 DE A4 B5
0929:FF C0 07 D0 D8 A9 37 85 BA
0931:01 58 4C 0D 08 A4 A8 F0 49
0939:22 A5 F7 38 E5 A8 B0 03 7E
0941:C6 F8 38 85 F7 A5 FC E5 8A
0949:A8 B0 02 C6 FD 85 FC B1 3A
0951:F7 88 91 FC 98 D0 F8 C4 42
0959:A9 F0 0A B1 F7 C6 FD C6 76
0961:F8 C6 A9 10 EC 60 78 E6 98
0969:01 4C 16 08 60 00 0B 08 73
0971:0A 00 9E 32 30 36 31 E3 20
0979:80 8D 54 85 FB A9 08 1B C3
0981:A4 FD A9 78 85 FE A2 28 B7
0989:A0 86 20 29 08 4C 00 80 16
0991:00 00 8E 7A BD 8C 41 22 E1
0999:A0 56 91 FD A5 FC CD 28 88
09A1:B1 0D 08 A5 FB CD 27 08 98
09A9:D0 01 60 E6 FB D0 94 8B B6
09B1:27 E6 FD D0 E3 E6 FE A9 40
09B9:00 F0 DD 00 FF 90 CD FF A1
09C1:41 E3 64 E3 3D 65 A6 55 5A
09C9:EF FD 8E 97 8D 8B 3A 4E FB
09D1:E6 38 E6 E6 E6 B6 93 22 0C
09D9:A1 F8 8A 23 1B 0E 36 04 FF
09E1:5A E4 76 56 6A EB 04 8E 28
09E9:8B A7 0A 8F 07 20 80 83 23
09F1:02 A9 38 DA 48 59 92 97 88
09F9:8C A7 A2 AE 78 CA F0 38 84
0A01:2B 9E 36 8E 8A 8F 0C 40 EC
0A09:96 E1 83 8B 56 26 00 4E A3
0A11:E2 08 E9 90 11 78 C8 A9 84
0A19:79 D8 10 59 99 99 B0 8F DB
0A21:6A A9 AD 8F 0C 01 6A 9A 57
0A29:9A 3B E9 69 02 EA EA E8 A7
0A31:A4 59 09 69 90 02 38 A9 4C
0A39:69 A8 06 8A 03 59 29 9A FF
0A41:5A A0 8B 5A 26 6A 6A 80 F1
0A49:1E 60 E6 40 02 E5 EA E8 CB
0A51:A1 A6 29 28 0E 65 9A 83 46
0A59:39 02 E0 65 40 0E AA A6 33
0A61:A6 66 66 56 AA 80 CB 2D B0
0A69:71 B6 C0 03 7A 98 55 90
0A71:F0 BF FA C3 9F E1 00 F3 05
0A79:5F E4 7A 72 75 50 04 08 E9
0A81:C8 7F 8B 32 08 D7 7F 9F AC
0A89:EE CF 7F 9C 2B 0F 20 2B C3
0A91:E0 2B 09 5E B9 34 07 19 AD
0A99:29 71 8C F9 C8 51 1D 03 98
0AA1:F9 F2 20 7B 7B 5B FB D1 3E
0AA9:FE 03 7B 6E C5 C4 10 FB B1
0AB1:D5 B0 7F 33 00 05 20 FF 54
0AB9:80 71 F8 70 E1 31 90 71 F6
0AC1:50 C7 5B 85 7B 73 D7 41 4E
0AC9:48 13 00 7D 21 1E 63 B3 9A
0AD1:F1 0C 10 C8 44 1C 03 50 59
0AD9:FD 02 FD 60 17 19 02 3E 92
0AE1:0B 58 3B 05 19 17 75 64 BD
0AE9:D4 11 FE 01 40 05 01 EF A4
0AF1:D5 C1 BF 3C 1F 1F 1E 11 DF
```

```
0AF9:17 40 3E 05 F7 39 07 73 E7
0B01:0C 64 04 40 76 23 A0 F3 30
0B09:20 23 E0 A3 FF 02 71 96 CF
0B11:2D 0F 96 16 0F CD 94 F2 81
0B19:60 D9 C8 DF C8 AA F5 60 2A
0B21:D9 F2 00 47 23 0F 98 8C 68
0B29:81 8C 42 C1 F0 88 13 3A 91
0B31:D6 4E 3C A6 E2 20 AF 83 B2
0B39:E5 C2 43 A0 08 06 06 20 E9
0B41:96 0A 8F 8A B0 E3 68 0E B3
0B49:96 12 8F 88 0A 8F 60 80 79
0B51:83 E5 8E 83 39 58 4E 3C B0
0B59:22 03 72 CA E6 60 89 A3 AB
0B61:B2 08 1E 96 21 8F 51 10 F9
0B69:F1 B0 19 F1 60 A9 F0 08 7A
0B71:8A 83 65 0E F3 38 CA 00 51
0B79:C4 03 67 0B EC 78 02 0A A7
0B81:0F 87 38 64 32 04 01 01 F2
0B89:2A 96 39 8A E7 38 BD F0 B6
0B91:98 8C 09 27 6B C4 A3 AD 0E
0B99:C2 63 21 C3 83 65 C3 A3 27
0BA1:37 01 9E 00 03 61 D9 F0 A9
0BA9:10 07 90 B0 38 38 EA C8 E7
0BB1:DA F0 58 C8 98 A8 83 65 DC
0BB9:8E AC 8D 81 0C 96 3B 0E 4B
0BC1:36 30 A0 20 8E 85 05 78 22
0BC9:02 00 01 44 A0 60 01 27 1D
0BD1:02 02 02 C0 B2 4A 3C 0A F6
0BD9:32 12 80 65 C4 03 26 C3 36
0BE1:43 A0 50 2B 58 32 8A 45 64
0BE9:03 03 8B E5 C3 E3 A9 30 43
0BF1:0C 4F 3C DA 56 63 77 C3 A9
0BF9:63 B5 8E AC 3B 04 04 04 C1
0C01:04 3A 96 8D 8E 3B 0E 32 05
0C09:26 07 67 B2 58 EA 68 AA EB
0C11:F0 60 09 F1 78 BA F0 68 FE
0C19:E9 F0 60 39 F1 C8 56 0D 6E
0C21:6A C5 20 09 09 A8 58 3E 4E
0C29:3C BE 8A 84 0A 8F 85 3B 7D
0C31:2C 80 03 58 66 3C 12 95 43
0C39:00 19 C8 08 08 08 08 00 A1
0C41:06 50 97 62 F1 01 00 07 24
0C49:1B 28 60 1B 05 72 AF 01 09
0C51:9C 77 27 AB 22 6B 67 A0 63
0C59:20 59 83 CE BA 7B A7 79 91
0C61:30 92 40 21 80 E1 01 C9 A7
0C69:29 49 D0 C1 2D 70 A1 41 4E
0C71:FF A4 31 A1 F1 3B 4C 0C D3
0C79:91 20 08 8C A1 C1 1B 10 86
0C81:F0 72 E4 75 64 58 17 49 9E
0C89:47 F0 EA 85 10 CE CF 07 5A
0C91:85 AD 01 DC 29 08 D0 D1 A2
0C99:07 97 2A EA 8F CA 41 88 C1
0CA1:EE F1 0B 92 80 20 5D 80 F7
0CA9:C9 A5 AE 26 07 06 21 37 12
0CB1:07 98 AD CA 4C 50 80 A8 23
0CB9:60 B9 27 78 04 90 18 2A 99
0CC1:69 00 61 19 1C F7 C9 53 F3
0CC9:99 C2 96 C3 80 08 C4 88 A4
0CD1:C5 5F 99 C6 5F 60 00 FF C0
0CD9:2F B9 80 AD F1 8B AE 46 44
0CE1:BA 97 C5 13 44 FA 8C 02 50
0CE9:25 06 EA E4 2D 94 8D 95 6D
0CF1:8C 84 29 4C 08 92 E2 19 C4
0CF9:32 61 6F 95 C9 04 80 1E 48
0D01:7A 95 4C 80 89 A9 61 42 47
0D09:F0 82 A9 01 20 6F 80 DC 1E
0D11:12 A9 10 9D CC 5F 60 6D 8C
0D19:19 05 D0 08 82 21 D0 2A 87
0D21:2C 20 98 03 20 09 20 8D 8F
0D29:11 C0 03 20 09 10 8D 16 18
0D31:C0 05 40 09 08 29 0F 09 91
0D39:70 8D 18 D0 AD 30 4E 09 D2
0D41:03 8D 02 DD AD C0 06 29 04
0D49:FC 09 02 8D 0D DD C0 A3 D9
0D51:9F DA DB 8D DB 54 35 82 63
0D59:11 09 01 60 11 61 10 01 93
```



PROGRAMS

0D61:62	11	63	10	01	64	11	65	7F	0FC1:C9	0F	F0	2E	00	70	C7	00	DA	1221:C6	07	85	02	14	14	07	85	BF	
0D69:10	01	66	11	67	10	01	68	8F	0FC9:64	18	12	03	CF	FB	B1	FB	60	1229:43	31	BE	88	56	89	06	E4	65	
0D71:11	69	10	01	6A	11	6B	10	FE	0FD1:CD	AB	82	D0	04	18	6E	67	E3	1231:88	EE	88	AD	80	40	CD	E2	C4	
0D79:01	6C	11	6D	10	01	6E	11	9A	0FD9:1A	CD	F0	E6	FC	E8	E0	06	58	1239:85	D0	DB	60	A9	55	08	DF	68	
0D81:6F	10	01	70	11	71	10	01	ED	0FE1:D0	E9	C4	70	C2	AF	82	8D	E9	1241:28	90	AE	E0	AA	8A	D0	08	AA	
0D89:72	11	73	10	01	74	11	75	02	0FE9:AE	82	4C	47	83	60	B8	D2	DF	1249:18	A5	00	69	08	85	00	60	30	
0D91:10	01	76	11	77	10	01	78	4A	0FF1:4C	34	83	A0	78	78	D1	01	08	1251:3C	0E	8C	05	A9	AA	8D	64	70	
0D99:11	79	10	01	7A	B9	7B	11	30	0FF9:50	F0	50	36	90	66	66	61	36	1259:BD	87	04	82	29	04	D0	02	E3	
0DA1:31	7B	C8	D0	A6	44	67	00	6E	1001:61	47	41	06	00	53	53	18	38	1261:A2	10	16	6B	16	24	8A	18	C2	
0DA9:B9	08	BC	02	10	7E	B9	98	E0	1009:18	CB	DF	EA	40	15	6A	02	FF	1269:6D	E3	85	9A	25	18	0A	A0	D5	
0DB1:C0	4D	C9	28	08	D0	0A	B5	88	1011:20	E0	48	28	20	90	30	90	39	1271:08	E8	BD	A0	85	2D	E1	85	BF	
0DB9:D2	FF	99	CF	6E	5F	7D	82	DB	1019:76	76	7B	77	76	76	7C	7B	43	1279:91	F3	F1	2D	C1	90	8C	C8	A6	
0DC1:84	E0	A9	C0	8D	EF	7D	EA	A9	1021:71	6B	A6	A0	7D	7D	B8	B8	BF	1281:3B	03	01	AD	E4	85	C9	08	D7	
0DC9:96	C0	78	5A	60	7D	28	7E	DB	1029:00	FB	47	D0	3D	29	10	80	6D	1289:D0	DA	60	E1	C3	D0	F1	0C	39	
0DD1:99	A0	7E	02	2F	A0	E4	A2	39	1031:20	80	67	67	62	62	68	67	B9	1291:09	37	4F	0A	C3	3C	0D	06	C1	
0DD9:77	AD	B2	81	9C	99	00	20	F4	1039:63	62	45	3F	4D	46	61	51	B7	1299:63	B7	60	00	58	21	F0	84	17	
0DE1:01	FA	5C	99	F4	5D	99	9E	4F	1041:5F	5F	80	7D	20	C7	C7	C8	49	12A1:59	21	1B	08	10	92	81	99	06	
0DE9:5E	E1	0F	FA	D0	EF	A6	45	16	1049:C8	73	20	09	09	0F	0F	58	3A	12A9:F2	85	60	21	07	39	21	73	99	
0DF1:D0	7C	99	70	7D	F0	42	90	92	1051:80	80	A8	87	07	A8	08	D0	1B	12B1:D8	35	BD	38	85	A8	88	A2	4D	
0DF9:D0	F3	D8	12	04	99	9A	DB	4D	1059:40	68	68	63	63	87	8D	7F	CA	12B9:00	B9	C3	11	8D	04	BD	41	0F	
0E01:A9	10	99	98	5F	C8	C0	4C	9E	1061:86	93	93	86	6E	2E	1F	C8	B7	12C1:10	99	1C	86	AD	34	89	9D	2F	
0E09:D0	F1	F1	BC	26	00	78	AB	E1	1069:C4	C4	C3	C3	7C	B8	E3	0B	6B	12C9:2B	86	E8	88	C0	FF	D0	E8	5B	
0E11:C0	40	0A	79	A4	C1	40	0A	2D	1071:0E	3C	30	F0	AC	0F	40	0E	EC	12D1:A0	7F	4C	0D	88	77	EC	02	7E	
0E19:7A	A4	C2	40	0A	7B	A4	C3	43	1079:0F	E4	05	0A	FC	0C	0C	FC	C8	12D9:22	5E	C8	95	3E	F8	C4	2C	A4	
0E21:40	0A	7C	A4	C4	40	0A	7D	72	1081:F0	F0	3F	33	F3	88	1B	F3	5D	12E1:86	5D	87	28	8F	69	61	D7	D0	
0E29:A4	C5	40	0A	7E	A4	C6	BD	83	1089:33	D0	C3	1D	05	FF	62	FF	AE	12E9:E1	16	4C	D6	97	96	31	8A	7F	
0E31:00	7F	9D	00	C7	E8	D0	CD	32	1091:3F	3F	60	05	10	C0	20	3F	80	12F1:D6	E0	DD	21	0B	78	73	8C	35	
0E39:60	00	F9	D7	3B	82	9D	A0	02	1099:71	3C	CF	C8	C3	CF	CE	43	46	12F9:E0	34	78	AA	A2	23	18	63	8A	
0E41:7A	B2	0B	70	D0	F5	F6	16	12	10A1:1C	09	50	00	01	03	03	03	39	1301:8A	5E	3A	42	E1	D1	23	24	30	
0E49:07	9D	54	DB	E8	E0	0E	D0	50	10A9:FF	00	FC	FC	10	47	01	3C	15	1309:44	3E	0A	4B	23	8F	AE	D2	5E	
0E51:F8	60	1C	87	D8	F8	C8	08	42	10B1:3C	E4	3C	CC	91	00	05	10	24	1311:1A	C3	5B	2A	38	0A	0B	87	CA	
0E59:80	26	60	82	87	CF	79	0E	EF	10B9:30	30	3F	F0	0F	C0	C0	2D	1F	1319:44	81	AB	1A	0A	F0	18	4C	69	
0E61:20	4A	C3	74	0E	0E	62	CF	68	10C1:5D	1E	94	2A	E4	21	AC	1C	6E	1321:4F	8A	1A	21	18	05	60	28	A4	
0E69:1E	81	CC	CC	CC	0E	14	44	66	10C9:1E	8E	47	1E	7D	1B	F0	44	D1	1329:CD	7F	89	D0	0A	6C	82	10	6B	
0E71:F0	64	43	30	DC	83	A8	0C	DC	10D1:14	83	CF	1C	8A	73	F8	7C	29	1331:FD	03	C3	F4	28	86	A4	4F	D2	
0E79:0F	A0	83	F3	00	B9	04	F3	D7	10D9:24	F8	F8	BC	80	F8	68	05	F2	1339:A2	68	F0	91	4C	03	80	F8	6A	
0E81:33	33	33	00	5A	F7	20	1E	7B	10E1:1C	40	F2	3B	4A	19	F7	B0	91	1341:DA	64	08	C3	88	C4	80	08	8B	
0E89:30	00	FF	3A	01	CF	C3	C3	F3	10E9:BA	51	A9	D3	14	04	06	4C	34	1349:05	88	C6	80	C8	C0	C7	99	00	E7
0E91:FF	3C	A8	00	3F	6B	44	08	0A	10F1:F1	F0	26	50	05	01	44	C8	8E	1351:C8	A0	22	E9	E0	54	00	09	48	
0E99:18	21	66	04	0A	9E	1F	84	A4	10F9:61	BD	F2	85	A2	85	0E	21	59	1359:80	8D	18	01	12	81	8D	12	F9	
0EAL:83	10	24	80	26	A3	A4	A0	B9	1101:BD	60	85	FD	46	11	FB	91	C8	1361:D4	A9	FF	8D	0E	D4	8D	0F	23	
0EA9:D9	28	29	B8	96	A8	CA	F0	4B	1109:70	11	C0	10	D0	F0	EE	C9	B2	1369:D4	60	30	37	21	22	68	30	1E	
0EB1:EE	09	29	D4	8C	60	C9	F0	64	1111:82	01	0E	85	EC	F7	F0	0E	60	1371:2A	42	29	3F	BC	96	76	3C	BF	
0EB9:EE	D1	60	3A	00	0E	E9	99	FB	1119:18	64	AF	10	C4	DC	A2	3A	70	1379:32	E6	B8	B9	43	A6	C2	03	62	
0ECL:29	0E	88	FC	CE	0A	01	1A	91	1121:86	60	00	AA	BC	A6	41	34	80	1381:23	C3	63	E2	0E	8C	A9	00	BA	
0EC9:00	05	AE	79	9C	A0	A2	8E	CF	1129:BD	08	F0	0A	DE	81	25	02	34	1389:2C	85	3A	0A	E8	84	A0	C0	6A	
0ED1:79	95	A3	0A	83	AE	C2	82	04	1131:34	09	FE	3B	0D	A9	04	18	72	1391:1D	76	8B	99	A7	D0	6D	C1	0C	
0ED9:E0	04	91	09	23	C1	01	31	7D	1139:6D	05	87	5C	73	A9	00	99	E5	1399:23	D0	80	60	4C	DE	08	05	8E	
0EE1:12	CA	4C	20	83	60	78	8F	63	1141:E6	85	C8	C0	54	D0	F8	1C	51	13A1:05	05	B0	00	0A	0A	0A	0F	3D	
0EE9:98	00	83	FB	82	0D	E8	0B	A7	1149:9F	C9	E0	21	80	19	E8	B1	C7	13A9:0F	0F	B0	00	14	14	0A	19	4F	
0EF1:12	80	AD	AF	AB	1F	5F	48	C8	1151:06	B8	8D	99	02	7A	66	2E	E4	13B1:19	19	B0	00	1E	1E	9A	4A	A9	
0EF9:95	08	5A	84	AD	34	9A	42	2C	1159:F2	85	C8	C8	3C	79	2A	E6	FE	13B9:F5	E0	16	46	0F	67	F1	F0	25	
0F01:30	0E	8D	E2	6F	03	A5	70	DD	1161:7C	78	50	72	78	58	72	DA	F5	13C1:01	61	16	00	AD	F5	8B	38	18	
0F09:2F	22	0F	18	69	03	32	21	87	1169:E6	38	9D	63	6D	C3	2B	86	4E	13C9:A9	86	EE	11	28	04	AD	F4	F6	
0F11:40	AD	B3	39	DB	F0	07	69	DE	1171:18	6F	69	4D	D6	8A	0C	FE	75	13D1:8B	CC	43	A2	28	A8	0C	C8	48	
0F19:04	0A	28	67	8D	B2	2B	A8	6D	1179:62	34	80	C2	D0	07	26	08	75	13D9:C0	22	FB	CA	A0	1D	F6	60	DC	
0F21:8C	D9	E2	6D	D4	A7	69	C3	0B	1181:07	26	10	07	26	43	AD	80	3D	13E1:A2	64	CA	D0	FD	25	78	00	4E	
0F29:20	01	F0	20	0F	64	8D	75	52	1189:D9	0A	A8	82	B9	F0	07	86	7E	13E9:A8	84	6C	A8	C0	D3	8C	A9	B5	
0F31:0A	C4	C3	83	AD	D0	C9	02	5E	1191:88	88	CC	B9	E7	27	27	28	A1	13F1:02	85	1F	09	9C	40	48	A6	0C	
0F39:90	07	00	05	CE	1A	83	42	D9	1199:87	FD	BD	30	C0	A8	FE	A4	05	13F9:53	25	8B	AA	A0	00	BD	A7	57	
0F41:A0	EE	AC	82	60	BC	A9	F0	63	11A1:2F	43	00	38	A0	00	B1	FD	16	1401:8B	20	FC	E8	41	4A	87	38	9F	
0F49:E0	CE	0E	76	84	A5	7C	22	E4	11A9:F9																		



PROGRAMS

1481:42	6D 77 70	AA 06 0E	DA 80	16E9:60	20 D2 E0	F5 35 6B	8A 9C	1951:71	45 59 11	F7 E1 A1	19 6D
1489:84	C2 8F AD	93 8D D0	06 EB	16F1:20	EB 14 00	29 E0 CA	90 9E	1959:07	6B F1 B3	09 65 73	80 A8
1491:83	E7 0B 34	83 16 5E	86 D1	16F9:C2	91 AF 72	CA 72 66	87 7D	1961:14	35 1B 1A	05 42 B1	50 D4
1499:33	0F DE 85	20 25 87	9F 97	1701:8A	28 A1 00	02 6A 66	0B 44	1969:80	64 98 CE	48 1B 74	64 F0
14A1:5E	89 21 CF	94 C1 11	6D B7	1709:43	14 0E FA	1A 90 C1	93 79	1971:A4	14 11 B0	93 E1 B0	81 2F
14A9:20	81 3E 74	20 5F 87	DB BA	1711:59	A8 F0 20	9A 80 53	23 DA	1979:90	F1 02 5B	90 4D AE	D3
14B1:C7	3D 74 08	0B 4F CE	07 56	1719:3B	30 86 20	21 82 3E	31 84	1981:04	99 54 8E	F8 24 C1	48 B3
14B9:31	91 03 60	CF 4B 59	36 D9	1721:82	F9 87 AB	A9 FF 8D	B8 D8	1989:8C	AE 4F 0C	C0 B0 8F	8E 03
14C1:8D	00 F8 29	0F 86 ED	8D 5E	1729:B4	22 1C 84	A8 04 46	C0 A8	1991:E6	A9 06 31	0B 16 E0	93 7B
14C9:97	30 51 78	08 0A 31	04 4A	1731:CC	5D 80 4C	BA 97 75	C8 D9	1999:20	A9 8E 20	12 8F CD	13 97
14D1:36	49 E2 15	13 75 84	4F DB	1739:10	28 04 FE	44 A0 90	FF AF	19A1:20	8C 69 68	9C EE 34	1C DF
14D9:8E	87 34 51	78 44 05	51 F6	1741:10	07 FF 41	CF 10 01	87 95	19A9:50	05 B2 8C	F2 91 8D	EF 4D
14E1:8D	20 36 D0	92 31 0F	15 39	1749:E0	00 03 C0	00 01 80	E1 3B	19B1:91	60 A9 72	8D 0C F1	2F D0
14E9:F6	5C 14 22	41 58 16	11 F1	1751:48	27 1E 35	1D 1E C1	81 EA	19B9:B3	81 A0 14	32 C6 40	28 D0
14F1:73	20 4F 0C	D0 99 D3	60 7B	1759:91	99 80 5B	C8 C0 80	C4 8B	19C1:08	0C 88 03	42 2C 34	E0 48
14F9:5D	BB 81 E1	CD 4A 8E	D0 93	1761:70	59 A9 6E	8D F8 5F	8D D6	19C9:82	EE B1 0B	F3 60 BA	22 98
1501:01	A0 F7 60	05 05 44	E4 82	1769:F9	5F E1 72	27 0D 0A	8D DE	19D1:0A	E2 05 78	88 01 60	CE C1
1509:15	4C 3E 8E	77 56 70	88 FF	1771:28	81 79 C1	46 60 21	0E 63	19D9:BB	02 20 85	95 4B 02	60 05
1511:17	4B 8E 4C	23 8E 00	F6 7A	1779:14	26 C2 1D	04 1B 01	00 F3	19E1:A6	75 06 F0	50 4F 06	08 68
1519:76	91 60 22	21 20 78	1A A5	1781:00	00 96 3D	74 C4 09	91 B0	19E9:5F	58 BA F0	36 BD 42	1E 93
1521:1B	1A 19 EA	19 14 13	12 22	1789:56	1C 06 9C	81 96 42	C1 21	19F1:68	9E EA 15	79 CA 23	8A 76
1529:E4	19 0D 0C	0B E4 19	06 92	1791:20	98 95 A9	21 DB 59	24 92	19F9:8A	EA F0 13	89 8A 8A	67 6E
1531:05	64 81 1B	00 B3 00	BD 65	1799:14	83 E0 50	70 03 41	D1 B7	1A01:EA	00 9E A9	BA 20 60	F8 29
1539:4A	9A C9 03	D0 12 E8	1A 53	17A1:0D	1D 4C 1B	10 4A EC	C3 20	1A09:A6	A2 00 88	1C 28 3E	7C 3C
1541:F4	D8 30 D4	01 C3 90	AC 54	17A9:5C	E0 8D 13	8D 03 17	11 D8	1A11:2C	0A 84 20	9D 8A A8	B9 92
1549:ED	8B A7 0B	A9 A8 A9	00 99 78	17B1:04	8D 50 A9	64 8D AA	D9 72	1A19:CA	8B D2 AD	C1 91 F0	27 28
1551:CA	8B 60 A9	2E 1A E7	06 02	17B9:C1	43 91 03	25 8A 72	B2 E6	1A21:47	2F 8A 03	78 C8 48	29 E6
1559:C3	86 1B BD	8F A8 6E	15 57	17C1:0F	D0 F8 F7	11 84 04	D0 BD	1A29:01	A0 86 F0	15 BD 99	8F 48
1561:60	BA 01 43	01 28 0E	72 F5	17C9:C7	07 43 5F	78 C1 A9	03 1D	1A31:8D	BA BD 5E	8E CD B1	95 1D
1569:28	EA BA 8E	3A F0 11	A8 42	17D1:3D	A5 D0 6F	8B D6 72	E1 97	1A39:D0	0F BD 76	8F C9	02 D0 31
1571:88	42 97 06	1C 63 A0	CD 41	17D9:0C	D1 F5 F3	04 0D C1	1E 76	1A41:08	E8 E0 23	C0 3A 20	8F C0
1579:8E	6B 0E 00	B1 F8 38	61 D6	17E1:87	0A B0 CF	F1 05 EC	71 58	1A49:96	60 04 00	00 3E 70	C4 FF
1581:03	4C F7 E2	80 8C E0	06 6B	17E9:98	14 EC 19	1F CE 92	12 04	1A51:05	F0 17 C9	07 F0 13	0C F1
1589:02	A9 02 9D	72 C8 E8	C0 82	17F1:07	7B 1C 1D	C0 0E 04	C0 DE	1A59:3E	12 28 0F	C4 86 47	05 FA
1591:07	D0 E6 84	31 E0 12	2D F6	17F9:5E	A4 64 B0	25 AD 53	02 A0	1A61:40	80 44 86	C7 51 01	A9 F5
1599:70	2E 01 E0	1E 0A D5	60 DA	1801:B0	17 29 60	5F DC EE	8A 51	1A69:14	8D 62 18	C0 50 3C	4C E2
15A1:AD	EE 8B 35	2F 0E 06	35 16	1809:AD	80 20 80	FD E8 3C	F6 3F	1A71:A2	54 2E CD	39 06 D0	02 34
15A9:88	89 38 D4	0E C3 01	D0 21	1811:05	01 D8 17	28 60 9F	29 BB	1A79:A9	44 8D 5D	96 C0 37	E2 24
15B1:1B	C3 5E BD	72 3C 00	EA F2	1819:C3	90 61 9F	D1 CE 22	2D B0	1A81:F0	28 0A E2	20 99 01	DC ED
15B9:30	5E 42 C9	02 D0 11	3C 2A	1821:1B	0C 03 CE	D5 7E B1	12 4D	1A89:29	10 D0 D7	AE 5F 96	AC BA
15C1:21	30 1A 88	CA 79 6C	8E F7	1829:C7	7E 06 0C	EC 17 1C	B0 0B	1A91:5E	96 AD B2	81 20 04	AB BB
15C9:F4	60 32 A2	2A B9 45	8B 45	1831:9F	27 C3 50	EC 41 93	EE FA	1A99:43	00 15 D0	20 72 81	6E 5B
15D1:9D	76 8B C8	8A 33 EE	02 67	1839:EF	09 C0 11	EC 03 EE	13 31	1AA1:68	68 00 09	20 08 8C	AD 9C
15D9:AA	B0 F2 18	69 32 AA	C9 98	1841:00	10 02 AD	82 00 00	20 C4	1AA9:94	0D C9 04	F0 07 C9	06 22
15E1:31	14 AF 04	42 E4 C8	03 1A	1849:E9	0F E7 A1	00 80 F3	91 C4	1AB1:F0	03 C2 19	8A E9 AD	66 C6
15E9:62	C4 03 E1	8E 81 8C	00 88	1851:BD	7C FD 9D	72 0F FA	EF CE	1AB9:0A	40 CC 0B	10 99 00	A0 D4
15F1:EA	EA EA FB	07 3A 34	99 8C	1859:39	46 01 0A	8F 51 06	20 66	1ACL:10	70 44 98	40 76 28	44 9C
15F9:76	8F 98 99	76 C9 23	D0 E1	1861:17	8C 90 F6	CE 0D D4	4A 60	1AC9:50	40 04 78	44 A0 40	04 67
1601:EF	F2 30 80	F8 D8 40	80 1C	1869:0E	54 AD 00	DC A8 39	25 8C	1AD1:C8	44 F0 5C	99 18 00	05 91
1609:8F	39 04 8D	C4 05 3E	32 8D	1871:0C	8C 4A 8D	13 20 5C	94 53	1AD9:40	44 68 40	04 90 44	B8 F3
1611:3C	0E 1F 72	16 AD 1B	D4 5C	1879:6E	69 85 01	D0 22 89	99 B7	1AE1:40	04 0E 5D	99 08 50	30 D6
1619:29	03 18 6D	0A 2E 8D	20 B8	1881:50	F0 1B CE	64 7E CE	C8 E9	1AE9:40	04 A0 99	80 8C 04	A8 D3
1621:17	AA 22 4B	14 E0 3E	0E 2B	1889:4C	1C 5A 30	1F 23 33	38 59	1AF1:44	D0 40 04	F8 5E 99	20 59
1629:85	E0 60 44	C0 42 B1	3B 4E	1891:CD	4C E9 33	13 C7 2F	AD EF	1AF9:5F	99 48 5F	CA C8 8C	37 D0
1631:BC	38 08 AE	C1 8F AD	BE 1C	1899:0D	4D C9 E6	D0 0D 20	E6 2D	1B01:D0	B2 60 5A	CA 1C 04	1B E7
1639:B9	2A C0 14	D0 9D AD	BB 3A	18A1:85	FD CF 03	9E A4 81	AD 76	1B09:0C	71 2C 64	78 2C C4	01 6C
1641:06	F0 06 C4	5F F0 60	48 81	18A9:80	20 C9 20	D0 0E 60	5A 37	1B11:01	45 B0 01	13 03 03	03 EC
1649:15	61 78 6C	04 E1 00	9C 72	18B1:EB	91 18 AD	49 69 07	8D A5	1B19:A0	00 B9 53	97 99 76	8B A7
1651:A0	04 B9 26	9D 20 84	60 3F	18B9:60	2D 20 03	C9 2E C2	90 B6	1B21:C8	C0 31 D0	F5 20 A0	8A 1B
1659:EC	29 0D D0	F3 18 8A	28 32	18C1:32	23 B3 CE	23 B3 11	91 D2	1B29:60	FF 00 E0	50 7D 63	0E 83
1661:AA	69 04 60	2A AD 42	00 50	18C9:01	29 FD 53	C1 CE 34	30 9B	1B31:39	0C E6 58	0E 5E 0F	AF A7
1669:6E	BF 8F C9	26 D0 DE	41 BE	18D1:FF	F1 78 CE	48 A9 27	0D BE	1B39:AE	A8 48 4C	4C 0C 8C	8C F6
1671:27	C0 8F 4C	D5 8F B5	76 E6	18D9:B5	98 29 08	D0 2C B4	0C 5D	1B41:88	20 C5 80	EA 2A C1	91 99
1679:52	C0 58 A9	8D 85 FC	AD 29	18E1:C9	30 D0 03	4C 42 94	EE D0	1B49:20	84 97 20	13 81 EE	15 37
1681:28	A8 C9 07	90 13 38	E9 C0	18E9:0D	17 AD 02	D0 B0 08	AD 43	1B51:87	EE 12 01	F8 C9 08	D0 29
1689:07	A8 18 94	71 09 69	A0 D2	18F1:21	09 02 8D	10 D0 EE	60 10	1B59:05	A2 00 8E	B6 A9 01	90 E2
1691:9A	88 98 4C	92 AF 00	4B A3	18F9:01	AD 41 C9	28 D0 08	40 AF	1B61:00	F0 05 0A	CA 4C DC	07 ED
1699:62	88 A5 FB	AC 05 85	FB 0E	1901:A2	EC 86 EA	91 88 F4	80 58	1B69:8D	51 DE A9	00 8D 60	02 2A
16A1:90	02 E6 FC	4C A9 90	A9 17	1909:80	9D F8 E1	E8 E0 05	D0 C0	1B71:AE	62 BD 97	97 2D 81	02 3F
16A9:06	49 79 42	F0 14 5C	63 72	1911:F5	11 7E 1A	16 72 92	5E F1	1B79:CD	96 97 00	09 20 86	90 A2
16B1:C5	AD F0 91	C9 02 5A	1C 8A	1919:7F	19 5F 40	C7 0E EC	30 C1	1B81:C2	41 8C 20	1D 8C EE	54 4A
16B9:48	1B 10 16	4C EE 90	AD 21	1921:1E	F0 2D AD	06 01 37	AD 6F	1B89:AD	ED EB C9	23 D0 DF	EA EA
16C1:DB	3F 0F AE	94 D8 10	00 1F	1929:62	D0 59 40	52 05 1D	74 45	1B91:95	97 0E 04	F0 B6 E0	06 FE
16C9:84	F0 05 A9	0E 8D 4B	00 EC	1931:17	4D EE B2	00 93 19	48 14	1B99:F0	B2 CE F5	8B 20 4B	80 22
16D1:D3	30 51 38	91 FB C8	18 C7	1939:80	CE F0 50	39 6F 40	16 A0	1BA1:20	BF 80 4C	03 80 29	7C 8F
16D9:21	F8 98 18	69 23 A8	A2 35	1941:2D	60 72 17	FE 8F 00	48 60	1BA9:39	5A 39 DE	08 5A 21	58 85
16E1:00	AD 85 90	C0 A0 D0	EA 48	1949:01	04 D0 05	DE 2B 58	15 D0	1BB1:33	50 00 C0	0A 00 00	00 F1



PROGRAMS

G U S V A K A L I S

Termites have infested Kelvin's four-story walkup, and the building is starting to collapse. Kelvin can escape this crushing fate if you help him jump over holes that appear in his path.

Termites is in three parts: a BASIC loader, a machine language sprite file that contains 13 sprite definitions, and the main program, which is written entirely in machine language. To avoid typing mistakes, enter the boot program with *The Automatic Proofreader* (see "Typing Aids" elsewhere in this section). When you've finished typing, save a copy of the program to disk.

To enter the sprite data and the main program, you'll need to use *MLX*, our machine language entry program (see "Typing Aids"). When *MLX* prompts you, respond with the values given below.

Starting address: 3000

Ending address: 3337

Before exiting *MLX*, save a copy of the sprite data with the name T.SPR.

The second machine language program is the main *Termite* program. Again, use *MLX* to type it in. When *MLX* prompts you, respond with the following values.

Starting address: C000

Ending address: CC47

When you've finished typing, be sure to save a copy of the program as T.PRG. Be certain you've saved the two programs with the names T.SPR and T.PRG, as these are the names the boot program looks for when it runs.

Playing the Game

When the game first begins, Kelvin is standing in the doorway of his fourth-floor apartment. Press the space bar to start him on his dash to safety. As he runs along, holes open up before him. To jump the holes, press the space bar. If you jump too soon, he won't clear the hole; wait too long, and it

will be too late. Since the space bar controls this game, young children especially should find it easy to play.

The game is divided into four skill levels, with four frames per level. As you progress from frame to frame within each level, you'll find more holes opening, and opening closer together. You'll have to make some quick successive jumps to clear them. As you progress through the four skill levels, you'll find the holes opening up closer to Kelvin's feet. This means you'll have less time to react.

You'll receive 100 points for each hole that you jump, and you'll get bonus points when you successfully

complete a frame. The bonus will be equal to the frame number multiplied by the skill level times 100. For example, if you complete frame 1 of level 1, you'll receive 100 bonus points. If you complete frame 4 of level 2, you'll receive an 800-point bonus.

Begin at any skill level; you'll progress automatically as you complete each level. Should Kelvin fall into a hole, the game ends, and the high score and your score will be displayed. You'll also be prompted to play another game or exit to BASIC.

One neat trick: The program monitors the sprite's x-position and triggers the sprite-to-background priority register to make Kelvin appear in front of apartment doors but disappear into stairways.

TERMITES

```

SF 10 POKE53280,0:POKE53281,0
MB 20 PRINT"{CLR}{5 DOWN}{YEL}
"
XJ 30 PRINT"{3 SPACES}UCCCCCCC
CCCCCCCCCCCCCCCCCCCC
CCI"
DQ 40 PRINT"{3 SPACES}_{RED}
{8 SPACES}T E R M I T E
{SPACE}S !{7 SPACES}
{YEL} _"
BX 50 PRINT"{3 SPACES}_=
{33 SPACES}_="
EK 60 PRINT"{3 SPACES}_{BLU}
{9 SPACES}COPYRIGHT 1991
{10 SPACES}{YEL}_="
DG 70 PRINT"{3 SPACES}_{BLU}
{2 SPACES}COMPUTE PUBLIC
ATIONS INTL LTD
{2 SPACES}{YEL}_="
SP 80 PRINT"{3 SPACES}JCCCCCCC
CCCCCCCCCCCCCCCCCCCC
CCK"
FM 90 PRINT"{2 DOWN}{5 RIGHT}
{RED}({WHT} LOADING GAME
- PLEASE WAIT{RED} )"
SR 100 IF A=0THENA=1:LOAD"T.PR
G",8,1
FH 110 IF A=1THENA=2:LOAD"T.SP
R",8,1
CP 120 SYS49152

```

T.SPR

```

3000:00 00 00 00 14 00 00 5C 5D
3008:00 00 53 00 00 7C 00 00 C4
3010:30 00 00 20 00 00 28 00 DA
3018:00 28 00 00 28 00 00 28 EB
3020:00 00 2B 00 00 2C 00 00 96
3028:14 00 00 14 00 00 14 00 FB
3030:00 14 00 00 14 00 00 14 4A
3038:00 00 3F 00 00 30 00 00 41
3040:00 00 00 00 14 00 00 5C 9D
3048:00 00 53 00 00 7C 00 00 05
3050:30 00 00 20 00 00 28 00 1B
3058:00 A8 00 00 80 00 00 AB 92
3060:00 00 20 00 00 20 00 00 45
3068:14 00 00 14 00 00 11 00 36
3070:00 11 00 00 51 00 03 41 E6
3078:00 03 03 00 03 03 C0 00 9F
3080:00 14 00 00 5C 00 00 53 1C
3088:00 00 7C 00 00 30 00 00 39
3090:20 00 00 28 00 00 28 00 D3
3098:00 28 00 00 20 00 00 2A 2E
30A0:00 00 2B 00 00 14 00 00 B6
30A8:14 00 00 14 00 00 05 00 5E
30B0:00 01 00 00 35 00 00 34 2F
30B8:00 00 3C 00 00 0F 00 00 DC
30C0:00 00 00 00 14 00 00 5C 1E
30C8:00 00 53 00 00 7C 00 00 85
30D0:30 00 00 20 00 00 28 00 9B
30D8:00 28 00 00 28 00 00 2A AE
30E0:C0 00 3A 00 00 28 00 00 89
30E8:14 00 00 14 00 00 05 00 9E
30F0:00 11 00 00 53 00 00 C3 F3
30F8:00 00 F3 00 00 00 00 D7
3100:00 14 00 00 5C 00 00 53 9D

```



PROGRAMS

```

3108:00 00 7C 00 00 30 00 00 BA
3110:20 00 00 28 00 00 A8 00 56
3118:00 A8 B0 00 8A 80 00 EA FB
3120:00 00 28 00 00 14 00 00 D7
3128:14 00 00 05 00 00 51 40 C7
3130:01 40 40 01 00 40 00 00 56
3138:C0 0C 00 F0 03 00 00 00 25
3140:00 14 00 00 5C 00 00 53 DD
3148:00 00 7C 00 00 30 00 00 FA
3150:20 00 00 28 B0 00 AA 80 A0
3158:02 AA 00 02 28 00 03 28 F5
3160:00 00 28 00 00 15 00 00 1C
3168:05 40 3D 10 50 0D 50 30 8D
3170:00 00 3C 00 00 00 00 00 5A
3178:00 00 00 00 00 00 00 00 DA
3180:00 00 00 00 14 00 00 35 B8
3188:00 00 C5 00 00 3D 00 00 98
3190:0C 00 00 08 00 00 28 00 C9
3198:00 2A 00 00 02 00 00 EA 80
31A0:00 00 08 00 00 08 00 00 24
31A8:14 00 00 14 00 00 44 00 DE
31B0:00 44 00 00 45 00 00 41 8F
31B8:C0 00 C0 C0 03 C0 C0 00 3C
31C0:00 14 00 00 35 00 00 C5 97
31C8:00 00 3D 00 00 0C 00 00 03
31D0:08 00 00 28 00 00 28 00 0A
31D8:00 28 00 00 08 00 00 A8 2E
31E0:00 00 E8 00 00 14 00 00 B0
31E8:14 00 00 14 00 00 50 00 37
31F0:00 40 00 00 5C 00 00 1C 62
31F8:00 00 3C 00 00 F0 00 00 A6
3200:00 00 00 00 14 00 00 35 3A
3208:00 00 C5 00 00 3D 00 00 1A
3210:0C 00 00 08 00 00 28 00 4B
3218:00 28 00 00 28 00 03 A8 76
3220:00 00 AC 00 00 28 00 00 BA
3228:14 00 00 14 00 00 50 00 78
3230:00 44 00 00 C5 00 00 C3 97
3238:00 00 CF 00 00 00 00 00 96
3240:00 14 00 00 35 00 00 C5 19
3248:00 00 3D 00 00 0C 00 00 84
3250:08 00 00 28 00 00 2A 00 8F
3258:0E 2A 00 02 A2 00 00 AB 2F
3260:00 00 28 00 00 14 00 00 1A
3268:14 00 00 50 00 01 45 00 6A
3270:01 01 40 01 00 40 03 00 B4
3278:70 0F 00 30 00 00 C0 00 5D
3280:00 14 00 00 35 00 00 C5 59
3288:00 00 3D 00 00 0C 00 00 C4
3290:08 00 0E 28 00 02 AA 00 9A
3298:00 AA 80 00 28 00 00 28 23
32A0:C0 00 28 00 00 54 00 01 BC
32A8:50 00 05 04 7C 0C 05 70 A4
32B0:3C 00 00 00 00 00 00 00 33
32B8:00 00 00 00 00 00 00 00 1D
32C0:00 50 00 01 70 00 01 4C 1B
32C8:00 01 F0 00 00 C0 00 00 8E
32D0:80 00 00 A0 00 02 A0 00 C8
32D8:02 21 30 00 E5 70 00 54 D1
32E0:70 00 50 00 00 00 00 00 87
32E8:00 00 00 00 00 00 00 00 4D
32F0:00 00 00 00 00 00 00 00 55
32F8:00 00 00 00 00 00 00 00 5D
3300:00 05 00 00 0D 40 00 31 42
3308:40 00 0F 40 00 03 00 00 80
3310:02 00 00 0A 00 00 0A 80 AC
3318:0C 48 80 0D 5B 00 0D 15 81
3320:00 00 05 00 00 00 00 00 27
3328:00 00 00 00 00 00 00 00 8E
3330:00 00 00 00 00 00 00 00 96
3338:00 00 00 00 00 00 00 00 9E

```

T.PRG

```

C000:A9 80 8D 91 02 AD 14 03 33
C008:8D 07 CC AD 15 03 8D 08 5E
C010:CC AD 28 03 8D 09 CC AD 70
C018:29 03 8D 0A CC 78 A9 EF CC

```

```

C020:8D 14 03 A9 C8 8D 15 03 12
C028:A9 FA 8D 28 03 A9 F6 8D AB
C030:29 03 58 A9 00 8D 2D CC 0A
C038:8D 2C CC 8D 20 D0 8D 21 7E
C040:D0 A9 AB 85 BC A9 D9 85 28
C048:BD A9 05 8D 1A CC A9 06 E9
C050:8D 1B CC A9 31 8D 23 CC 66
C058:A9 93 20 D2 FF A9 30 8D 59
C060:1C CC 8D 1D CC 8D 1E CC 4C
C068:A9 31 8D 22 CC A9 04 8D 81
C070:28 CC A9 50 8D 30 CC A9 E3
C078:FF 8D 0E CC A9 B4 8D 32 59
C080:CC A9 00 8D 0C CC 8D 16 70
C088:CC 8D 15 CC 8D 18 CC 8D 37
C090:0D CC 8D 0F CC 8D 24 CC 20
C098:8D 27 CC 8D 2E CC 8D 2F 0C
C0A0:CC 8D 31 CC 8D 10 D0 8D BA
C0A8:1B D0 A9 50 8D 17 CC 8D 16
C0B0:00 D0 A9 C1 8D 0B CC 8D 77
C0B8:10 CC A9 C6 8D 11 CC A9 0B
C0C0:40 8D 14 CC A9 C0 8D F8 79
C0C8:07 A9 06 8D 27 D0 A9 09 AA
C0D0:8D 25 D0 A9 07 8D 26 D0 A2
C0D8:A9 54 8D 01 D0 A9 01 8D C2
C0E0:12 CC 8D 13 CC 8D 1C D0 27
C0E8:20 E3 C8 A9 50 8D 00 D4 B4
C0F0:A9 21 8D 01 D4 A9 44 8D B4
C0F8:05 D4 A9 20 8D 06 D4 A9 41
C100:68 8D 16 D4 A9 01 8D 17 AE
C108:D4 A9 4A 8D 18 D4 A9 C8 B2
C110:8D 08 D4 A9 FF 8D 0E D4 B8
C118:8D 0F D4 A9 80 8D 12 D4 8E
C120:A2 00 BD 27 C9 9D 02 04 EB
C128:A9 06 9D 02 D8 E8 0E 24 26
C130:D0 F0 AD 1E CC 8D 09 04 A2
C138:AD 1D CC 8D 0A 04 AD 1C 24
C140:CC 8D 0B 04 AD 23 CC 8D 50
C148:19 04 AD 22 CC 8D 25 04 1C
C150:18 A0 00 A2 01 20 F0 FF 9C
C158:A2 00 BD E1 C9 2D D2 FF 77
C160:E8 E0 56 D0 F5 18 A0 00 B9
C168:A2 03 20 F0 FF A2 00 BD 59
C170:37 CA 20 D2 FF E8 E0 DA B3
C178:D0 F5 AD 32 CC 8D D0 04 FC
C180:8D E6 04 18 A0 00 A2 07 D7
C188:20 F0 FF A2 00 BD 37 CA B2
C190:20 D2 FF E8 E0 DA D0 F5 71
C198:CE 32 CC AD 32 CC 8D 70 D4
C1A0:05 8D 86 05 18 A0 00 A2 11
C1A8:0B 20 F0 FF A2 00 BD 37 9F
C1B0:CA 20 D2 FF E8 E0 DA D0 4D
C1B8:F5 CE 32 CC AD 32 CC 8D 5B
C1C0:10 06 8D 26 06 18 A0 00 B3
C1C8:A2 0F 20 F0 FF A2 00 BD BC
C1D0:37 CA 20 D2 FF E8 E0 DA 14
C1D8:D0 F5 CE 32 CC AD 32 CC 8D
C1E0:8D B0 06 8D C6 06 18 A0 10
C1E8:00 A2 13 20 F0 FF A2 00 46
C1F0:BD 11 CB 20 D2 FF E8 E0 5C
C1F8:F6 D0 F5 A9 EF 8D BF 07 C1
C200:A9 0B 8D BF AD 2C CC 85
C208:D0 03 4C E8 C6 A9 01 8D 3B
C210:15 D0 A5 C5 C9 3C D0 FA 41
C218:8D 14 CC A9 00 8D 0E CC BC
C220:AD 29 CC F0 06 CE 29 CC F9
C228:4C 30 C2 A9 80 8D 04 D4 E9
C230:AD 10 D0 29 01 F0 0F AD D4
C238:00 D0 4A 4A 4A 18 69 1E 83
C240:8D 19 CC 4C 68 C2 AD 12 EC
C248:CC 09 FF D0 F7 38 AD 00 68
C250:D0 E9 0C 4A 4A 4A 8D 19 8E
C258:CC 4C 68 C2 38 AD 00 D0 D9
C260:E9 10 4A 4A 4A 8D 19 CC 54
C268:AE 13 CC 18 AD 17 CC 69 F1
C270:A0 8D 17 CC AD 18 CC 69 2A
C278:00 8D 18 CC CA D0 EC 18 BC
C280:AD 17 CC 6D 19 CC 8D 17 41
C288:CC AD 18 CC 69 00 8D 18 2E

```

```

C290:CC 18 A9 04 6D 18 CC 8D EA
C298:18 CC AD 17 CC 85 B8 AD 20
C2A0:18 CC 85 B9 A9 50 8D 17 72
C2A8:CC A9 00 8D 18 CC A0 28 35
C2B0:B1 B8 C9 20 D0 28 A9 FF F2
C2B8:8D 0F CC AD 0D CC D0 26 A0
C2C0:EE 16 CC AD 12 CC C9 FF 0F
C2C8:F0 0A AD 16 CC C9 04 D0 C6
C2D0:15 4C 4F C5 AD 16 CC C9 63
C2D8:08 D0 0B 4C 4F C5 AD 0F B8
C2E0:CC F0 03 20 AF CA A0 00 3D
C2E8:AD 1B D4 D9 33 CC F0 09 FB
C2F0:CC CC 28 CC D0 F2 4C 7F 4A
C2F8:C3 AD 2F CC CD 30 CC 10 57
C300:03 4C 7F C3 AD 12 CC C9 61
C308:FF F0 11 18 A5 B8 6D 1A 74
C310:CC 85 BA A5 B9 69 00 85 0A
C318:BB 4C 2A C3 38 A5 B8 ED C9
C320:1B CC 85 BA A5 B9 E9 00 AC
C328:85 BB A0 28 B1 BA C9 66 6A
C330:D0 4D C8 B1 BA C9 66 D0 42
C338:46 AD 12 CC C9 FF F0 08 95
C340:A0 27 B1 BA C9 20 F0 37 AB
C348:A0 2A B1 BA C9 20 F0 2F 6C
C350:A0 28 A9 20 91 BA C8 91 04
C358:BA A0 00 B1 BA C9 64 D0 17
C360:04 A9 20 91 BA C8 B1 BA 88
C368:C9 64 D0 04 A9 20 91 BA F3
C370:A9 81 8D 04 D4 A9 00 8D F9
C378:2F CC A9 02 8D 29 CC AD 78
C380:12 CC C9 FF F0 2A AD 10 19
C388:D0 F0 0B AD 00 D0 C9 2D F4
C390:F0 16 C9 3D F0 3C AD 00 F6
C398:D0 C9 2A F0 03 4C 08 C4 6D
C3A0:A9 00 8D 1B D0 4C 08 C4 EC
C3A8:A9 01 8D 1B D0 4C 08 C4 35
C3B0:AD 10 D0 D0 0B AD 00 D0 1A
C3B8:C9 2A F0 EC C9 1A F0 12 47
C3C0:AD 00 D0 C9 2D F0 03 4C 55
C3C8:08 C4 A9 00 8D 1B D0 4C 81
C3D0:08 C4 AD 0D CC F0 03 4C 90
C3D8:36 C5 18 AD 01 D0 69 20 09
C3E0:8D 01 D0 EE 13 CC AD 10 AF
C3E8:D0 D0 10 A9 C1 8D 0B CC D0
C3F0:8D 10 CC A9 C6 8D 11 CC D2
C3F8:4C 08 C4 A9 C6 8D 0B CC 2B
C400:8D 10 CC A9 CB 8D 11 CC 0C
C408:AD 13 CC 29 01 F0 08 A9 DE
C410:01 8D 12 CC 4C 1C C4 A9 92
C418:FF 8D 12 CC A5 C5 C9 3C 28
C420:D0 1A 4C F0 C4 AD 12 CC CF
C428:C9 FF F0 08 A9 01 8D 10 B1
C430:D0 4C 45 C4 A9 00 8D 10 A2
C438:D0 4C 45 C4 AD 00 D0 F0 32
C440:E4 C9 FF F0 E0 18 AD 00 80
C448:D0 6D 12 CC 8D 00 D0 EE A1
C450:2F CC AD 0D CC F0 1E EE 80
C458:15 CC AD 15 CC C9 14 D0 2D
C460:30 A9 00 8D 15 CC 8D 0D 49
C468:CC 18 AD 01 D0 69 08 8D ED
C470:01 D0 4C 91 C4 A9 80 8D AC
C478:0B D4 EE 2E CC AD 2E CC C3
C480:C9 0A F0 03 4C 91 C4 A9 9B
C488:00 8D 2E CC C9 A9 81 8D 0B 81
C490:D4 AD 13 CC C9 05 F0 0D 70
C498:A2 0A 00 FF 88 D0 FD CA 58
C4A0:D0 F8 4C 20 C2 AD 00 D0 F9
C4A8:C9 A8 D0 EC 4C DF C5 AD 45
C4B0:1C CC C9 39 F0 06 EE 1C E1
C4B8:CC 4C E5 C4 A9 30 8D 1C 0A
C4C0:CC EE 1D CC AD 1D CC C9 22
C4C8:3A F0 03 4C E5 C4 A9 30 96
C4D0:8D 1D CC EE 1E CC AD 1E 8E
C4D8:CC C9 3A F0 03 4C E5 C4 6B
C4E0:A9 30 8D 1E CC AD 1E CC 05
C4E8:8D 09 04 AD 1D CC 8D 0A 18
C4F0:04 AD 1C CC 8D 0B 04 A9 82
C4F8:00 8D 0F CC 60 AD 14 CC 43

```



PROGRAMS

C500:C9	40	D0	27	AD	15	CC	D0	39	C770:A9	07	8D	F5	D8	8D	12	D9	A2	C9E0:20	92	97	20	12	A9	CF	D0	C5	
C508:22	A9	FF	8D	0D	CC	8D	14	B2	C778:8D	35	DA	8D	52	DA	A2	00	93	C9E8:CF	D0	CF	D0	CF	D0	CF	D0	D1	
C510:CC	A9	00	8D	16	CC	AD	12	96	C780:A9	20	9D	1E	05	9D	46	05	B2	C9F0:CF	D0	CF	D0	CF	D0	CF	D0	D9	
C518:CC	C9	01	F0	11	A9	CC	8D	02	C788:9D	6E	05	9D	96	05	9D	BE	BF	C9F8:CF	D0	CF	D0	CF	D0	CF	D0	E1	
C520:F8	07	38	AD	01	D0	E9	08	F2	C790:05	9D	E6	05	9D	0E	06	A9	12	CA00:CF	D0	CF	D0	CF	D0	CF	D0	EA	
C528:8D	01	D0	4C	3C	C4	A9	CB	AD	C798:06	9D	1E	D9	9D	46	9D	4B		CA08:CF	D0	DF	92	20	97	12	A9	0C	
C530:8D	F8	07	4C	22	C5	18	AD	6C	C7A0:6E	D9	9D	96	D9	9D	BE	D9	97	CA10:AF	AF	A5							
C538:01	D0	69	08	8D	01	D0	A9	E1	C7A8:9D	E6	D9	9D	0E	DA	E8	E0	64	CA18:AF	AF	AD							
C540:00	8D	0D	CC	8D	15	CC	A9	A1	C7B0:1C	D0	CD	AD	2C	CC	D0	1D	6A	CA20:AF	AF	B5							
C548:40	8D	14	CC	4C	DA	C3	A9	A5	C7B8:A2	00	BD	B6	C9	9D	24	05	CE	CA28:AF	AF	BD							
C550:FF	8D	0D	CC	A9	00	8D	16	2C	C7C0:E8	E0	11	D0	F5	A2	00	BD	24	CA30:AF	AF	AF	AF	AF	AF	DF	1C	92	
C558:CC	EE	01	D0	EE	16	CC	A2	3F	C7C8:C7	C9	9D	47	05	E8	E0	1A	7E	CA38:12	AF	AF	BA	1F	92	A6	A6	9B	
C560:05	A0	FF	88	D0	FD	CA	D0	04	C7D0:D0	F5	4C	EF	C7	A2	00	BD	55	CA40:A6	A6	D5							
C568:F8	AD	16	CC	C9	20	D0	E9	C5	C7D8:4B	C9	9D	1F	05	E8	E0	15	C8	CA48:A6	A6	DD							
C570:AD	12	CC	C9	FF	F0	08	A9	0B	C7E0:D0	F5	A2	00	BD	C9	9D	4B		CA50:A6	A6	E5							
C578:CB	8D	F8	07	4C	84	C5	A9	86	C7E8:47	05	E8	E0	15	D0	F5	A2	03	CA58:A6	A6	ED							
C580:CC	8D	F8	07	18	AD	01	D0	AF	C7F0:00	BD	75	C9	9D	97	05	E8	79	CA60:1C	12	CC	AF	AF	12	1C	BA	D5	
C588:69	0A	8D	01	D0	A2	90	A0	DE	C7F8:E0	1B	D0	F5	A2	00	BD	90	5A	CA68:9A	20	20	92	20	20	20	95	D7	
C590:FF	88	D0	FD	CA	D0	F8	20	E3	C800:C9	9D	E7	05	E8	E0	11	D0	E8	CA70:A7	12	1E	CF	B7	B7	D0	92	EF	
C598:E3	C8	A9	B0	8D	01	D4	A9	4C	C808:F5	A2	00	BD	A1	C9	9D	0F	97	CA78:95	B4	20	20	20	20	20	20	E2	
C5A0:50	8D	0F	D4	A9	0F	8D	18	A3	C810:06	E8	E0	15	D0	F5	A9	02	FF	CA80:20	20	20	20	20	20	20	20	16	
C5A8:D4	A9	20	8D	04	D4	A9	29	D5	C818:8D	98	D9	8D	E8	D9	8D	10	84	CA88:20	20	A7	12	1E	CF	B7	B7	A3	
C5B0:8D	04	D4	A2	0D	AF	FF	88	3C	C820:DA	AC	2D	CC	A9	07	91	BC	06	CA90:D0	92	95	B4	20	20	20	12	05	
C5B8:D0	FD	CA	D0	F8	EE	31	CC	45	C828:AD	2C	CC	D0	08	A9	FF	8D	B6	CA98:9A	20	20	1C	CC	12	1C	BA	EA	
C5C0:AD	31	CC	C9	16	D0	E2	20	7F	C830:2C	CC	4C	8B	C8	AD	1E	CC	53	CAA0:9A	20	20	92	20	20	20	95	10	
C5C8:E3	C8	A9	00	8D	24	CC	8D	D1	C838:CD	21	CC	30	2A	F0	02	10	BE	CAA8:A7	12	1E	B4	30	41	A7	92	0E	
C5D0:25	CC	EE	24	CC	D0	FB	EE	D2	C840:14	AD	1D	CC	CD	20	CC	30	70	CAB0:95	B4	20	20	20	20	20	20	26	
C5D8:25	CC	D0	F6	4C	E8	C6	AD	F4	C848:1E	F0	02	10	08	AD	1C	CC	62	CAB8:20	20	A7	20	20	20	20	20	4E	
C5E0:0D	CC	F0	09	18	AD	01	D0	1F	C850:CD	1F	CC	30	12	AD	1E	CC	7D	CAC0:20	20	20	12	1E	B4	30	42	EA	
C5E8:69	08	8D	01	D0	A9	FF	8D	A7	C858:8D	21	CC	AD	1D	CC	8D	20	C4	CAC8:A7	92	95	B4	20	20	20	12	A8	
C5F0:0D	CC	A9	C0	8D	F8	07	A9	7F	C860:CC	AD	1C	CC	8D	1F	CC	AD	44	CAD0:9A	20	20	1C	CC	12	1C	BA	23	
C5F8:00	8D	2A	CC	AD	22	CC	29	B2	C868:21	CC	8D	2F	05	AD	20	CC	4E	CAD8:9A	AF	AF	92	9E	A4	A4	A4	3C	
C600:0F	AA	AD	23	CC	29	0F	8D	5E	C870:8D	30	05	AD	1F	CC	8D	31	C8	CAE0:95	BA	12	1E	CC	AF	AF	BA	53	
C608:2B	CC	F8	18	AD	2A	CC	6D	1C	C878:05	AD	1E	CC	8D	57	05	AD	0A	CAE8:92	95	CC	9E	A4	A4	A4	A4	56	
C610:2B	CC	2A	CC	CA	D0	F3	E1		C880:1D	CC	8D	58	05	AD	1C	CC	EE	CAF0:A4	A4	86							
C618:D8	AD	2A	CC	4A	4A	4A	4A	E9	C888:8D	59	05	A5	C5	C9	D0	F0	92	CAF8:A4	A4	A4	A4	95	BA	12	1E	C2	
C620:F0	05	09	30	8D	60	07	AD	35	C890:0B	C9	29	F0	48	C9	17	F0	D6	CB00:CC	AF	AF	BA	92	95	CC	9E	AE	
C628:2A	CC	29	0F	09	30	8D	61	99	C898:47	4C	8B	C8	AC	2D	CC	A9	3C	CB08:A4	A4	A4	12	9A	AF	AF	1C	DF	
C630:07	A9	30	8D	62	07	8D	63	38	C8A0:06	91	BC	CE	1A	CC	CE	1B	DA	CB10:CC	1C	12	AF	AF	BA	1F	92	8B	
C638:07	A9	01	8D	60	DB	8D	61	9B	C8A8:CC	EE	23	CC	EE	2D	CC	EE	42	CB18:A6	A6	AF							
C640:DB	8D	62	DB	8D	63	DB	A9	84	C8B0:2D	CC	AD	2D	CC	C9	08	90	C2	CB20:A6	A6	B7							
C648:78	8D	08	D4	A9	09	8D	0C	5C	C8B8:14	A9	00	8D	2D	CC	A9	05	8C	CB28:A6	A6	BF							
C650:D4	A9	04	8D	0D	D4	A9	21	3C	C8C0:8D	1A	CC	A9	06	8D	1B	CC	3D	CB30:A6	A6	C7							
C658:8D	0F	D4	A9	15	8D	0B	D4	6F	C8C8:A9	31	8D	23	CC	AC	2D	CC	9F	CB38:A6	A6	A6	1C	12	CC	AF	AF	12	08
C660:A9	00	8D	24	CC	8D	25	CC	6A	C8D0:A9	07	91	BC	A5	C5	C9	40	0F	CB40:1C	BA	9A	20	20	92	20	20	95	
C668:8D	26	CC	EE	24	CC	D0	FB	C0	C8D8:D0	FA	4C	8B	C8	C4	58	C0	BC	CB48:20	20	20	20	20	20	20	20	DF	
C670:EE	25	CC	D0	F6	EE	26	CC	F1	C8E0:20	E2	FC	A9	00	AA	9D	00	5B	CB50:20	20	20	95	A7	12	9F	CF	F1	
C678:AD	26	CC	C9	02	D0	EC	F8	C2	C8E8:D4	E8	E0	19	D0	F8	60	AD	A5	CB58:B7	D0	B7	B7	D0	92	95	B4	23	
C680:38	AD	2A	CC	E9	01	8D	2A	40	C8F0:0E	CE	00	22	AD	0D	CC	D0	05	CB60:20	20	20	20	20	20	20	20	F7	
C688:CC	D8	AD	2F	C4	AD	2A	CC	AF	C8F8:1D	EE	0C	CC	AD	0C	CC	C9	24	CB68:20	20	20	20	20	12	9A	20	BC	
C690:D0	ED	AD	22	CC	C9	34	D0	AF	C900:33	D0	13	EE	0B	CC	AD	0B	8C	CB70:20	1C	CC	12	1C	BA	9A	20	FA	
C698:2B	AD	23	CC	C9	34	D0	03	1C	C908:CC	CD	11	CC	F0	10	8D	F8	40	CB78:20	92	20	20	20	20	20	20	AC	
C6A0:4C	D9	C6	CE	1A	CC	CE	1B	4D	C910:07	A9	00	8D	0C	CC	A5	C5	0F	CB80:20	20	20	20	20	20	20	95	8D	
C6A8:CC	A9	04	8D	28	CC	A9	50	78	C918:8D	14	CC	4C	31	EA	AD	10	7E	CB88:A7	12	9F	B4	4C	A7	B4	4C	6E	
C6B0:8D	30	CC	A9	31	8D	22	CC	16	C920:CC	8D	0B	CC	4C	0E	C9	13	EC	CB90:A7	92	95	B4	20	20	20	20	80	
C6B8:EE	23	CC	EE	2D	CC	EE	2D	B6	C928:03	0F	12	05	3A	20	30	30	76	CB98:20	20	20	20	20	20	20	20	30	
C6C0:CC	4C	D9	C6	18	AD	28	CC	04	C930:30	30	30	20	20	20	20	0C	BD	CBA0:20	12	9A	20	20	1C	CC	12	3F	
C6C8:69	04	8D	28	CC	38	AD	30	13	C938:05	16	05	0C	3A	20	30	20	08	CBA8:1C	BA	9A	AF	AF	92	9E	A4	F4	
C6D0:CC	E9	18	8D	30	CC	EE	2D	CF	C940:20	20	20	06	12	01	0D	05	04	CBB0:A4	A4	48							
C6D8:CC	AD	23	CC	8D	19	04	AD	EF	C948:3A	20	30	08	09	07	08	20	1C	CBB8:A4	A4	A4	A4	95	BA	12	9F	06	
C6E0:22	CC	8D	25	04	4C	77	C0	B7	C950:13	03	0F	12	05	20	09	13	FE	CBC0:CC	AF	BA	AF	AF	BA	92	95	20	
C6E8:A9	00	8D	15	D0	A2	00	A9	09	C958:20	3A	20	30	30	30	30	30	64	CBC8:CC	9E	A4	A4	A4	A4	A4	A4	F2	
C6F0:43	9D	F6	04	9D	36	06	A9	22	C960:19	0F	15	12	20	13	03	0F	6A	CBD0:A4	A4	D5							
C6F8:07	9D	F6	D8	9D	36	DA	E8	42	C968:12	05	20	09	13	20	3A	20	88	C									



PROGRAMS

G U S T A V O F E L I X H E R R E R A

Have you ever created graphics with *Print Master* and then wanted to use them with GEOS? Maybe a certain graphic from *The Print Shop* has caught your eye, and you'd like to incorporate it into a GeoWrite file. If you've ever wished for these capabilities, then *Graphics Converter* is the program for you.

Graphics Converter converts *Print Master* or *Print Shop* graphics to GEOS format, saving them as photo scraps. This way you can include your artwork on Photo Manager, GeoWrite, GeoPaint, or any other application that supports graphics.

Typing It In

Graphics Converter is written entirely in machine language. To enter it, you'll need to use *MLX*, our machine language entry program (see "Typing Aids" elsewhere in this section). When *MLX* prompts you, respond with the values given below.

Starting address: 0247

Ending address: 09BE

When you've finished typing, be sure to save two copies of the program to a GEOS work disk before exiting *MLX*. One copy will be converted by *GeoConverter 2.0* ("The GEOS Column," *COMPUTE!'s Gazette*, March 1990) into a GEOS desk accessory. The other is a backup copy in case you have a problem with the conversion.

If you don't already have a copy of *GeoConverter*, we have included the program listing here. Be sure to use *The Automatic Proofreader* (again, see "Typing Aids") to prevent typing mistakes when you enter the program. Save a copy of *GeoConverter* to the disk that contains *Graphics Converter*.

To prepare *Graphics Converter* for use with GEOS, load and run *GeoConverter*. When prompted for a filename, enter the name you used to save *Graphics Converter*. *GeoConverter* then converts the file into a GEOS desk accessory.

Using the Program

To use *Graphics Converter* from GEOS, just double-click on its icon. Since *Graphics Converter* is an application, the screen will change, and a menu will appear. From the GEOS menu you can select several options, as explained below.

Graphics Info

Graphics Info contains a dialog box with information about the author and the program's version number. This dialog box also contains a copyright message.

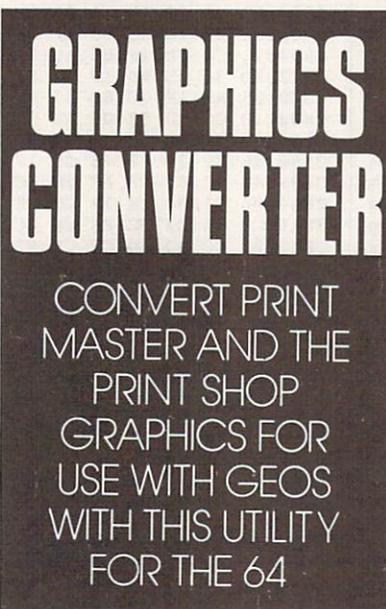


Photo Manager

After you have converted a graphic to the GEOS format, paste it in the Photo Manager and continue converting graphics until you've finished with all of them. If the Photo Manager is not on your disk or if there is insufficient disk space to use the Photo Manager, a dialog box containing an error message will appear onscreen. If you are sure Photo Manager is on disk and the dialog box still appears, you'll have to remove or delete files to make room on your disk before continuing.

File

If you want to convert a *Print Master* graphic, click on that name from the File menu. The program will search on the disk immediately after you select this option, so your data disk with your *Print Master* graphics must be in the drive. *Graphics Converter* will make a list of files that are three blocks long and end with .GRA. A list of these graphics will appear on a dialog box. You can choose the graphic you want by moving a rectangle with the up and down arrows. To load and display the graphic, click on the OK icon. Otherwise, click on the Cancel icon, which will cause the dialog box to disappear without making any changes. After you've clicked on the graphics you want to convert, close the file and move to the Convert menu.

Converting *Print Shop* graphics works in a similar manner. *Graphics Converter* will make a list of *Print Shop* files and display it on the screen. The only difference is that the list will consist of any two-block files, regardless of the filename. Select graphics for conversion in the same manner as explained above.

Quit

Once you have converted all the files you want and have pasted them in an album, select the Quit option to exit to the Desktop.

Convert

Once the graphic has been loaded and displayed on the screen, select the Convert option. *Graphics Converter* will save the graphic to disk as a GEOS photo scrap. The disk in the drive must be a GEOS disk; otherwise an error message will appear. Don't worry if that should happen; just change disks and try again.

Select

If you want to convert more than one graphic, you don't have to click on the File menu and then return to the *Print Shop* or *Print Master* option each time. You need only to click on the



PROGRAMS

Select option, and a list corresponding to your last selection will be displayed on the screen. If the last converted file was from *Print Master* (the default format), the list will contain *Print Master* graphic files. Just be sure your data disk is still in the disk drive before you click on the Select menu.

Error Messages

For all the possible errors that may occur, the onscreen messages are kept simple for maximum clarity. If you should get an error message during an operation, check the following table for more complete information.

Error Message	Possible Cause
Photo Manager	Photo Manager not on disk. Disk nearly full. No disk in drive. Write-protect tab on disk.
<i>Print Master</i>	No disk in drive.
<i>Print Shop</i>	No disk in drive.
Select	No disk in drive.
Convert	Non-GEOS disk. No disk in drive. Write-protect tab on disk. Disk nearly full.

GRAPHICS CONVERTER

0247:5D 03 15 BF 01 FF FF 02 63
 024F:00 01 02 18 71 02 28 09 42
 0257:02 08 31 02 08 09 7E 1D 23
 025F:71 80 00 01 80 06 01 80 EA
 0267:0F 15 85 46 29 82 89 15 C8
 026F:85 56 A9 9F E9 F9 84 00 3B
 0277:21 84 00 21 87 FF E1 84 C3
 027F:00 21 84 00 21 80 00 01 68
 0287:FF FF FF 83 06 00 00 04 F7
 028F:A6 0B 00 04 47 45 4F 43 1B
 0297:4F 4E 56 45 52 54 45 52 B6
 029F:56 31 2E 30 00 00 00 00 E3
 02A7:46 43 4F 2E 20 46 45 4C 5D
 02AF:49 58 20 48 45 52 52 45 54
 02B7:52 41 5D 8D 00 00 A9 14 21
 02BF:20 39 C1 20 9F C1 00 C7 28
 02C7:00 00 3F 01 20 4B C1 A9 1F
 02CF:1F 85 02 A9 04 85 03 A9 85
 02D7:00 20 51 C1 60 00 0E 00 49
 02DF:00 84 00 04 02 09 80 3B B5
 02E7:04 07 09 80 4D 04 0C 09 74
 02EF:00 BC 04 13 09 00 2A 08 79
 02F7:00 0E 2A 00 00 55 00 82 9C
 02FF:1B 09 00 67 04 28 09 00 1D
 0307:78 04 00 0E 38 1D 00 66 C7
 030F:00 83 36 09 00 C8 04 43 BB
 0317:09 00 CC 04 4E 09 00 64 76
 031F:04 00 4C 2C 20 90 C1 EC
 0327:A9 53 85 02 A9 09 85 03 27
 032F:20 56 C2 4C 0E 04 20 90 49
 0337:C1 20 A1 C2 20 E1 C1 A9 3C

033F:71 85 0E A9 09 85 0F 20 58
 0347:0B C2 8A D0 1F A9 00 85 07
 034F:14 A9 84 85 15 20 17 C2 CC
 0357:8A D0 11 20 9F C1 18 9B CA
 035F:14 00 18 01 A9 00 8D 56 41
 0367:0A 4C 0E 04 A9 61 85 02 67
 036F:A9 09 85 03 20 56 C2 4C 99
 0377:0E 04 20 93 C1 20 A1 C2 57
 037F:8A D0 E9 4C E2 04 A9 00 7B
 0387:F0 02 A9 01 8D 4B 0A 20 99
 038F:90 C1 20 A1 C2 8A D0 D4 23
 0397:AD 52 0A CD 4B 0A D0 13 5E
 039F:A0 90 B9 00 3F D9 00 82 35
 03A7:D0 09 C8 98 C9 AB D0 F2 8C
 03AF:4C E5 05 AD 4B 0A 8D 52 C0
 03B7:0A 09 80 85 05 85 0A A9 81
 03BF:3F 85 0B A9 12 85 04 20 91
 03C7:E4 C1 8A D0 9F A9 00 8D 40
 03CF:4C 0A 8D 4D 0A A9 A1 85 C4
 03D7:FD A9 0B 85 FE A9 12 A2 66
 03DF:01 8E 51 0A 85 04 86 05 23
 03E7:A9 00 85 FB 85 0A A9 80 5B
 03EF:85 FC 85 0B 20 E4 C1 8A FB
 03F7:F0 03 4C AE 04 20 5E 05 0E
 03FF:18 A5 FB 69 20 85 FB 90 31
 0407:F4 AE 01 80 AD 00 80 D0 9C
 040F:D3 A9 A6 85 FB A9 0B 85 BA
 0417:FC 4C E5 05 AD 4B 0A D0 3D
 041F:47 A0 02 B1 FB F0 31 C8 1D
 0427:B1 FB F0 2C A0 1F B1 FB C8
 042F:D0 26 88 B1 FB C9 03 D0 33
 0437:1F 20 9B 05 88 B1 FB C9 67
 043F:41 D0 15 88 B1 FB C9 52 AA
 0447:D0 0E 88 B1 FB C9 47 D0 CD
 044F:07 88 B1 FB C9 2E F0 2B 07
 0457:60 A0 15 88 B1 FB C9 A0 94
 045F:F0 F9 C8 A9 00 91 FB 60 B0
 0467:A0 02 B1 FB F0 34 C8 B1 D1
 046F:FB F0 2F A0 1F B1 FB D0 2A
 0477:29 88 B1 FB C9 02 D0 22 46
 047F:20 9B 05 EE 4C A0 05 DE
 0487:B1 FB 91 FD C8 C0 14 D0 BB
 048F:F7 A9 00 91 FD 18 A5 FD B0
 0497:69 10 85 FD A5 FE 69 00 E4
 049F:85 FE 60 A9 36 85 02 A9 46
 04A7:F0 8A 85 03 20 56 C2 C6 02 C5
 04AF:F0 03 4C 0E 04 AD 4C 0A D4
 04B7:F0 F8 AD 4D 5D 05 00 0A 0A
 04BF:18 65 FB 85 FD A5 FC 69 EE
 04C7:00 85 FE A5 FD 85 0E A5 33
 04CF:FE 85 0F 20 0B C2 8A D0 E5
 04D7:54 A9 00 85 06 AD 01 84 3A
 04DF:85 04 A9 80 85 10 A9 40 E8
 04E7:85 11 AD 02 84 85 05 A9 BA
 04EF:03 85 07 20 FF C1 8A D0 AA
 04F7:34 AE 4B 0A CA 8A F0 30 62
 04FF:20 A2 C1 2A 60 2F 00 88 E3
 3507:00 FF A9 0B 85 06 A9 34 C2
 050F:85 07 A9 87 85 02 A9 06 D8
 0517:85 04 A9 2B 85 05 A9 40 A0
 051F:85 03 20 42 C1 A9 01 8D 19
 0527:56 0A 4C 0E 04 4C AE 04 FB
 052F:A5 FB 8D 53 0A A5 FC 8D 60
 0537:54 0A A9 00 85 FD A9 44 DE
 053F:85 FE A9 82 85 FB A9 40 D8
 0547:85 FC A2 2D A0 00 A9 86 59
 054F:91 FD 20 E7 06 A9 00 8D 88
 0557:55 0A B1 FB 91 FD 20 E1 2B
 055F:06 EE 55 0A AD 55 0A C9 14
 0567:06 D0 EF CA D0 E0 20 EE 8C
 056F:06 A9 06 85 06 A9 2D 85 B6
 0577:07 A9 00 85 02 A9 44 85 8C
 057F:03 AD 53 0A 85 FB AD 54 4D
 0587:0A 85 FC A9 06 85 04 A9 2A
 058F:2B 85 05 20 42 C1 A9 01 A0
 0597:8D 56 0A 4C 0E 04 E6 FB 4E

059F:D0 02 E6 FC E6 FD D0 02 12
 05A7:E6 FE 60 A9 14 20 39 C1 E0
 05AF:20 9F C1 28 64 2D 00 89 CD
 05B7:00 20 A2 C1 2A 58 2F 00 4B
 05BF:60 00 FF 60 20 A2 C1 23 32
 05C7:7D 37 00 96 00 FF 20 AB B3
 05CF:C1 63 0A 14 46 02 10 A9 1A
 05D7:00 85 19 A9 A7 85 18 A0 25
 05DF:52 38 20 4E C1 4C A4 07 99
 05E7:AD 05 85 29 80 D0 4D A5 D4
 05EF:3A C9 A0 90 47 C9 AF B0 18
 05F7:43 A5 3C C9 46 90 3D C9 E9
 05FF:56 B0 39 C9 4E 90 36 AD F3
 0607:4D 0A C9 05 F0 13 AE 4C 43
 060F:0A CA 8A CD 4D 0A F0 24 99
 0617:EE 4D 0A EE 51 0A 4C A4 0E
 061F:07 AD 4C 0A CD 51 0A F0 FC
 0627:13 18 A5 FB 69 10 85 FB C9
 062F:A5 FC 69 00 85 FC EE 51 C9
 0637:0A 4C A4 07 60 AD 4D 0A BE
 063F:F0 09 CE 4D 0A CE 51 0A EC
 0647:4C A4 07 AE 51 0A CA F0 A7
 064F:EB 38 A5 FB E9 10 85 FB 6A
 0657:A5 FC E9 00 85 FC CE 51 C1
 065F:0A AD 4C 0A F0 D6 A9 00 3C
 0667:8D 4F 0A 20 39 C1 20 9F 02
 066F:C1 24 7C 38 00 95 00 A9 78
 0677:2E 8D 50 0A A5 FB 85 FD CE
 067F:A5 FC 85 FE A5 FD 85 02 70
 0687:A5 FE 85 03 A9 00 85 19 78
 068F:85 04 A9 38 85 18 AD 50 50
 0697:0A 85 05 20 48 C1 18 AD D3
 069F:50 0A 69 0F 8D 50 0A 18 4E
 06A7:A5 FD 69 10 85 FD A5 FE A2
 06AF:69 00 85 FE EE 4F 0A AD 87
 06B7:4F 0A CD 4C 0A F0 07 C9 58
 06BF:06 F0 03 4C F0 07 AD 4D 33
 06C7:0A 0A A8 B9 57 0A 85 06 FF
 06CF:B9 58 0A 85 07 A9 00 85 CC
 06D7:09 85 0B A9 38 85 08 A9 57
 06DF:95 85 0A 20 2A C1 60 20 94
 06E7:93 C1 20 5B 08 20 A1 C2 AE
 06EF:AD 8B 84 D0 03 4C AE 04 FD
 06F7:A9 7F 85 02 A9 09 85 03 09
 06FF:20 38 C2 A9 9A 85 14 A9 D9
 0707:0A 85 15 A9 00 85 16 20 1B
 070F:ED C1 8A D0 E0 4C 0E 04 3B
 0717:AD 56 0A D0 05 68 68 4C C6
 071F:0E 04 AD 4B 0A D0 56 A9 89
 0727:00 8D 86 40 A9 38 8D 85 3C
 072F:40 A9 0B 8D 84 40 A9 84 FE
 0737:8D E1 0A A9 40 8D E2 0A 68
 073F:A5 FB 8D 53 0A A5 FC 8D 74
 0747:54 0A A9 0D 8D E3 0A A9 C1
 074F:43 8D E4 0A A9 F7 85 FD D5
 0757:A9 42 85 FE A9 84 85 FB D1
 075F:A9 0A 85 FC A2 16 A0 00 F3
 0767:B1 FB 91 FD 20 E1 0E CA 9E
 076F:D0 F6 AD 53 0A 85 FB AD BA
 0777:54 0A 85 FC 60 A9 00 8D E9
 077F:FF 43 A9 2D 8D FE 43 A9 FE
 0787:06 8D FD 4D A9 FD 8D E1 32
 078F:0A A9 43 8D E2 0A A0 00 CE
 0797:A9 06 91 FD 20 E7 06 A9 64
 079F:00 91 FD 20 E7 06 A9 24 A2
 07A7:91 FD 20 E7 06 A9 BF 91 68
 07AF:FD 20 E7 06 A5 FD 8D E3 46
 07B7:0A A5 FE 8D E4 0A 60 47 44
 07BF:45 4F 53 00 46 49 4C 45 E3
 07C7:00 53 45 4C 45 43 54 00 F7
 07CF:43 4F 4E 56 45 52 54 00 9E
 07D7:43 4F 4E 56 45 52 54 20 C6
 07DF:49 4E 46 4F 00 50 48 4F 05
 07E7:54 4F 20 4D 41 4E 41 47 D9
 07EF:45 52 00 50 52 49 4E 54 E2
 07F7:20 4D 41 53 54 45 52 00 23



PROGRAMS

07FF:50 52 49 4E 54 20 53 48 EA	JK 65 ICATIONS INTL LTD{DOWN}"	PD 350 DT\$=T\$:SS\$=S\$:T\$=HT\$:S\$
0807:4F 50 00 51 55 49 54 00 60	PRINTTAB(11)"ALL RIGHTS	=HSS\$:GOSUB410:GET#2,MT\$
080F:01 1E 82 32 00 FF 00 0B A5	{SPACE}RESERVED{2 DOWN}"	,MSS\$:IFMSS\$=""THENMSS\$=CH
0817:17 12 8B 09 0E 00 01 1E C9	MK 70 N=8:PRINT"DRIVE NUMBER "	R\$(0)
081F:82 32 00 FF 00 0B 14 12 63	N"{4 LEFT}";:INPUTN:IFN<	GF 360 FORI=0TO65:GET#2,B\$:NEX
0827:09 0A 01 13 4C 00 70 68 3B	8ORN>11THEN70	TI:GET#2,CT\$,GT\$:GOSUB4
082F:6F 74 6F 20 6D 16 5F 61 33	QE 80 K\$="N":PRINT"IS DRIVE"N"	10:PRINT#2,HD\$;:GOSUB42
0837:67 65 72 00 50 68 6F 74 1A	A 1581? "K\$"{3 LEFT}";:I	0
083F:6F 20 53 63 72 61 70 00 A9	NPOTKS:IFK\$<"N"ANDK\$<"	RX 370 T\$=DT\$:S\$=SS\$:GOSUB410:
0847:1A 47 52 41 50 48 49 43 0E	Y"THEN80	FORI=1TO32*E+2:GET#2,B\$
084F:53 20 43 4F 4E 56 45 52 17	SB 90 T\$=CHR\$(18):S\$=CHR\$(1):I	:NEXTI:PRINT#2,CT\$,MT\$;
0857:54 45 52 20 D6 31 2E 33 3A	FK\$="Y"THENT\$=CHR\$(40):S	MSS\$;
085F:1B 18 16 8E 00 3E 42 59 85	\$=CHR\$(3)	MB 380 FORI=0TO15:GET#2,B\$:NEX
0867:16 6B 00 4D 1B 18 C6 D2 CB	RS 100 INPUT"FILE TO CONVERT";	TI:PRINT#2,HT\$;HSS\$:CHR\$
086F:C1 CE C3 C9 D3 C3 CF A0 17	NM\$:OPEN15,N,15:OPEN1,N	(0);GT\$;ID\$;:GOSUB420
0877:C6 C5 CC C9 D8 16 5F 00 70	,8,"0:"+NM\$+"",P,R"	GR 390 PRINTNM\$" CONVERTED!"
087F:67 1B 43 4F 50 59 52 49 3D	BX 110 GOSUB440:IFEN<>0THENPRI	HB 400 CLOSE1:CLOSE2:CLOSE15:E
0887:47 48 54 20 31 39 39 30 EA	NT"{RVS}"EN\$" "EM\$ET\$EE	ND
088F:20 43 4F 4D 50 55 54 45 05	\$:GOTO400	DQ 410 U\$="U1":GOTO430
0897:21 16 41 00 71 1B 50 55 D3	FF 120 GET#1,K\$,V\$:IFK\$<>CHR\$(CS 420 U\$="U2"
089F:42 4C 49 43 41 54 49 4F 7E	71)ORV\$<>CHR\$(2)THENCLO	PA 430 PRINT#15,U\$;2;0;ASC(T\$+
08A7:4E 53 2C 20 49 4E 43 2E 73	SEL:CLOSE15:GOTO220	"0");ASC(S\$+"0"):RETURN
08AF:20 41 4C 4C 20 52 49 47 92	BR 130 PRINT"{DOWN}DECOMPRESI	JJ 440 INPUT#15,EN,EM\$,ET,EE:E
08B7:48 54 53 20 52 45 53 45 01	NG...":Z\$=CHR\$(0):GET#1	N\$=STR\$(EN):ET\$=STR\$(ET
08BF:52 56 45 44 2E 00 18 43 60	,ESC\$:ESC=ASC(ESC\$+Z\$):)EE\$=STR\$(EE):RETURN
08C7:41 4E 20 4E 4F 54 20 43 44	AD=SA	EH 450 DATA 0,255,3,21,87,10,1
08CF:4F 4E 54 49 4E 55 45 2C B8	RQ 140 GOSUB170:IFV<>ESCTHENPO	,0,0
08D7:20 41 4E 20 45 52 52 4F 7B	KEAD,V:AD=AD+1:GOTO140	
08DF:52 16 6F 00 3C 48 41 53 65	PP 150 GOSUB170:CT=V:GOSUB170:	
08E7:20 4F 43 55 52 52 45 44 44	CT=CT+V*256:GOSUB170:GO	
08EF:2E 1B 00 01 1E 82 32 00 4D	SUB160:GOTO140	
08F7:F0 00 01 11 0F 02 11 41 95	DH 160 FORI=1TOCT:POKEAD,V:AD=	
08FF:13 07 07 11 2B 07 5D 07 84	AD+1:NEXTI:CT=0:RETURN	
0907:00 00 24 5D 06 00 00 24 C7	PK 170 GET#1,V\$:S=ST:V=ASC(V\$+	
090F:31 32 40 41 4F 50 5E 5F 3A	Z\$):IFST=0THENRETURN	
0917:6D 6E 7C A0 FF FF 00 01 17	SJ 180 IFS<>64THENGOSUB440:PRI	
091F:81 81 83 C1 87 E1 9F 09 DB	NT"{DOWN}LOAD ERROR -	
0927:BF FD 83 C1 83 C1 BF FD C5	{RVS}"EN\$" "EM\$ET\$EE\$:G	
092F:9F F9 87 E1 83 C1 81 81 46	OTO400	
0937:80 01 FF EF 0B 00 0B 00 38	AF 190 IFCT<>0THENGOSUB160:AD=	
093F:0B 00 0B 00 0B BF 0B BF 65	AD-1	
0947:0B BF 0B BF 0B BF 0B BF 59	DG 200 PRINT"{DOWN}WRITING..."	
094F:0B BF 7F 09 03 15 BF FF 43	:CLOSE1:PRINT#15,"S0:"+	
0957:FF FF 80 40 01 80 60 01 49	NM\$:CLOSE15	
095F:80 60 01 80 60 0D 80 50 7A	EF 210 OPEN1,N,8,"0:"+NM\$+"",P,	
0967:35 80 50 D9 80 53 21 80 EF	W":FORI=SATOAD:PRINT#1,	
096F:5C C1 80 59 01 87 CE 01 8A	CHR\$(PEEK(I));:NEXTI:CL	
0977:9F C8 01 B8 F8 01 B1 FC 63	OSE1	
097F:01 BF 6E 01 9C 66 01 80 E0	GP 220 PRINT"{DOWN}CONVERTING.	
0987:66 01 80 6C 01 80 38 01 5F	..":HD\$=""":FORI=1TO4:RE	
098F:80 00 01 FF FF FF 83 04 0D	ADHE:HD\$=HD\$+CHR\$(HE):N	
0997:5D 07 00 60 50 68 6F 74 91	EXTI	
099F:6F 20 53 63 72 61 70 20 2C	CF 230 FORI=1TO5:READIE:ID\$=ID	
09A7:56 31 2E 31 00 00 00 00 0A	\$+CHR\$(IE):NEXTI	
09AF:50 68 6F 74 6F 20 53 63 3F	DR 240 NL\$=""":OPEN15,N,15,"I0:	
09B7:72 61 70 5D A1 00 00 00 4C	"":OPEN2,N,2,"#"	
	MM 250 GOSUB410:GET #2,NT\$,NS\$	
	:FORE=0TO7:D\$=NL\$:GET#2	
	,B\$:I=1:IFB\$=NL\$THEN310	
	PE 260 IF ASC(B\$)<>130 THEN310	
	AE 270 GET#2,HT\$,HSS\$:I=3:IFH\$	
	="":THENH\$=CHR\$(0)	
	DJ 280 GET#2,B\$:I=I+1:IFB\$=""T	
	HENB\$=CHR\$(0)	
	BM 290 IF(ASC(B\$)=160)OR(I=19)	
	THEN310	
	SF 300 D\$=D\$+B\$:GOTO280	
	EB 310 FORI=1TO31:GET#2,B\$:NEX	
	TI:IFD\$=NM\$THEN340	
	JX 320 NEXTE:IFNT\$=NL\$THEN340	
	CH 330 T\$=NT\$:S\$=NS\$:GOTO250	
	GA 340 IFD\$=NL\$THENPRINT"	
	{DOWN}DISK ERROR!":GOTO	
	400	

TYPING AIDS

MLX, the 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. These labor-saving utilities are on each *Gazette Disk* and printed in issues of *Gazette* through June 1990.

If you don't have access to a back issue or to one of our disks, write and we'll send you free copies of both of these handy utilities. 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 Wenderover Avenue, Greensboro, North Carolina 27408.

GEOCONVERTER

DB 10 REM COPYRIGHT 1991 COMPUTE PUBLICATIONS INTL LTD
- ALL RIGHTS RESERVED
SE 20 IF(PEEK(772)+PEEK(773)*256)=42364THEN40
PD 30 LIST0,1:LIST4,1:LIST6,1:
SA=PEEK(4625)*256+PEEK(4624):GOTO50
SX 40 POKE56,PEEK(46)+40:CLR:P
OKE53280,0:POKE53281,0:S
A=PEEK(56)*256+PEEK(55)
FA 50 PRINT"{CLR}{8}{N}"
TAB(12)"{RVS}GEOCONVERTE
R 2.0{OFF}{GRN}"{3 DOWN}"
:PRINTTAB(13)"COPYRIGHT
{SPACE}1991{DOWN}"
JR 60 PRINTTAB(4)"COMPUTE PUBL



PROGRAMS

R I C H A R D P E N N

With computers, often the more colors you can use, the better your graphics look. Unfortunately, you can only have three colors per character with the 64's multicolor mode, which consequently limits many special effects.

Raster interrupts can soup up text with a vertical four-color fading effect. While this is an improvement, it still leaves much to be desired. Characters are seven lines high, and ordinary interrupts are only fast enough to change colors every two lines.

Metallix provides a new graphics mode that displays seven colors per character—an independent hue on each raster line. This is the best vertical color resolution possible on the 64. The extra colors make metallic shading possible, giving your text a metallic luster. These enhanced metallic screens can be faded in and out for more eye-catching effects. Even sprites can be displayed with them. Through an innovative raster programming approach, *Metallix* truly gives 64 graphics an exciting new look. A self-running demo is included. (Note that a good, properly adjusted color monitor is required to clearly display *Metallix* colors.)

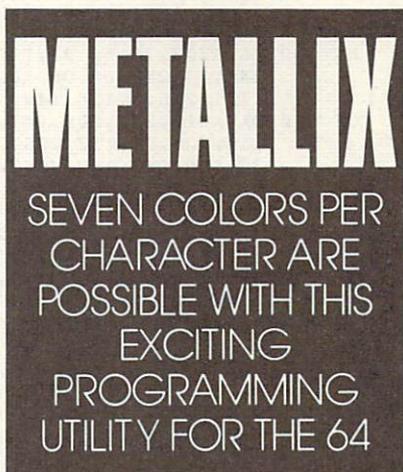
Getting Started

Metallix consists of two programs, both written in BASIC. Enter them using *The Automatic Proofreader* (see "Typing Aids" elsewhere in this section). The first program generates the actual machine language routine and saves it to disk as METALLIX.OBJ. Type it in and save it as METALLIX ML MAKE and then run it. You only need to run this program once to create the METALLIX.OBJ file.

The second program is a demo that shows how to use *Metallix*. After you've typed it in, save it as METALLIX DEMO to the same disk with METALLIX.OBJ. When you run the demo, it will automatically load and run METALLIX.OBJ. To use *Metallix* in your own programs, add line 30 of the demo program to the beginning of your BASIC programs.

Two Commands

Accessing *Metallix's* features is easy, since you only need to learn two SYS commands to use it with your BASIC programs. The first command is SYS 51720, *border, background*. It clears the screen, selects the border and background colors (0-15), and fills the screen with reversed spaces. This command must be called before you print to the screen. It also changes the cursor color to the background color, so anything you print will be invisible. The only thing to remember while designing your displays is to avoid the leftmost three columns and to print everything in reverse field.



When you're ready to display a screen, use the command SYS 51890, *c1, c2, c3, c4, c5, c6, c7, [duration]*. This command selects the seven character-shading colors (0-15) from top to bottom and fades a screen into view. Below are the three metallic shades used in the demo:

SYS 51890,11,15,1,7,10,8,2
SYS 51890,12,15,1,7,10,8,2
SYS 51890,15,1,7,10,8,2,9

The last parameter is optional; it selects the length of time the screen remains on before it is faded off (0-255). If omitted, a screen will remain visible until you press the space

bar. Note that displaying a *Metallix* screen takes all of the computer's attention, so a BASIC program cannot continue until the screen has been turned off. More on this later.

As mentioned earlier, *Metallix* graphics can be combined with sprites if you follow some guidelines. The best way to use sprites and metallic text together is to set up a split screen where sprites and text are separate, as in the demo. Text can be placed beside sprites, but it must be on the rightmost side of the screen because the shading on the left will be distorted. Also, avoid placing sprites too high on the screen and placing too many on a single horizontal line, since doing this could slow *Metallix* down. Displaying sprites and text side by side is best done by trial and error.

When Longer Is Faster

Ordinary raster interrupts involve some overhead time. Of course, we're talking milliseconds here, but at the lightning speeds of a video display, these minuscule times become significant. Consequently, regular interrupts are too slow to interrupt at the beginning of every raster line.

Programmers know how to efficiently use loops to make the computer do more with less code. If you want to fill the screen with spaces, you don't print each space separately. If you did, you would need 1000 print statements. Instead, you write a one-line loop to do it. When writing *Metallix*, however, I did what programmers are never supposed to do. I wrote 1000 print statements—well, more like 200 raster comparisons and color changes.

There's a reason for this unorthodox coding. Even machine language instructions take time to execute. To have the 64 run fast enough to change colors on every raster line, I had to eliminate all unnecessary instructions.

A machine language loop chasing the raster is too slow because it must update a pointer and branch back. With 200 color changes arranged sequentially, there is no time-consuming

PROGRAMS

looping. The program falls through to the next instruction in a straight line, and hence executes at the fastest possible speed (of course, you don't have to type in all 200 color changes, the machine language-maker program generates them for you with a loop).

METALLIX

```
DB 10 REM COPYRIGHT 1991 COMP
TE PUBLICATIONS INTL LTD
- ALL RIGHTS RESERVED
EH 20 PRINT "{CLR}GENERATING ME
TALLIX ML..."
SP 30 POKE49152,120:POKE49153,
162:POKE49154,12:POKE491
55,160:POKE49156,12
MA 40 X=49157
PC 50 FORT=50T0249
QS 60 POKE X,173:POKE X+1,18:POK
EX+2,208
FC 70 POKE X+3,201:POKE X+4,T
MC 80 POKE X+5,208:POKE X+6,249
FH 90 POKE X+7,142:POKE X+8,33:P
OKE X+9,208:T=T+1
GX 100 POKE X+10,173:POKE X+11,1
8:POKE X+12,208
EM 110 POKE X+13,201:POKE X+14,T
CP 120 POKE X+15,208:POKE X+16,2
49
KC 130 POKE X+17,140:POKE X+18,3
3:POKE X+19,208:T=T+1:X=
X+20
AJ 140 FOR L=1 TO 6:POKE X,173:POK
EX+1,18:POKE X+2,208
SR 150 READ C:IF C=-1 THEN RESTORE
:READ C
XJ 160 POKE X+3,201:POKE X+4,T:P
OKE X+5,208:POKE X+6,249
BH 170 POKE X+7,169:POKE X+8,C
BX 180 POKE X+9,141:POKE X+10,33
:POKE X+11,208:T=T+1:X=X
+12:NEXT
HJ 190 T=T-1:NEXT
HH 200 DATA 15,1,7,10,8,2,-1
JS 210 READ X:FOR U=51457 TO 52120
:READ Q:POKE U,Q:CK=CK+Q:
NEXT
XS 220 IF CK <> 91398 THEN PRINT "ER
ROR IN DATA":STOP
ME 230 PRINT "{DOWN}WRITING MET
ALLIX.OBJ FILE TO DISK.
..."
RC 240 SYS57812"METALLIX.OBJ",
8,1:POKE193,0:POKE194,1
92:POKE174,153:POKE175,
203
PJ 250 SYS62957
DR 260 DATA 76,154,201,173,134,
203,201,1,240,56,201,2,
240,107,173,18,208,201
JA 270 DATA 251,208,249,169,6,1
41,33,208,173,18,208,20
1,15,208,249,173,18,208
HG 280 DATA 201,14,208,249,238,
135,203,173,135,203,201
,1,240,3,76,5,192,169
BS 290 DATA 1,141,134,203,169,0
,141,135,203,76,5,192,1
73,18,208,201,251,208
FR 300 DATA 249,173,18,208,201,
```

```
15,208,249,238,135,203,
173,135,203,201,2,240,3
MJ 310 DATA 76,5,192,169,2,141,
134,203,169,0,141,135,2
03,169,21,141,24,208
SF 320 DATA 169,122,141,2,201,1
69,201,141,3,201,76,5,1
92,173,18,208,201,251
QR 330 DATA 208,249,76,110,203,
201,239,240,3,76,5,192,
169,29,141,24,208,169
DE 340 DATA 154,141,2,201,169,2
01,76,147,203,173,134,2
03,201,1,240,44,201,0
CM 350 DATA 240,92,173,18,208,2
01,251,208,249,173,18,2
08,201,15,208,249,238,1
35
HB 360 DATA 203,173,135,203,201
,2,240,3,76,5,192,169,1
,141,134,203,169,0
QG 370 DATA 141,135,203,76,5,19
2,173,18,208,201,251,20
8,249,169,6,141,33,208
BM 380 DATA 173,18,208,201,15,2
08,249,173,18,208,201,1
4,208,249,238,135,203,1
73
RQ 390 DATA 135,203,201,1,240,3
,76,5,192,169,0,141,134
,203,169,0,141,135
BS 400 DATA 203,76,5,192,169,0,
141,33,208,88,96,162,26
,181,216,9,128,149
CF 410 DATA 216,202,208,247,173
,18,208,201,12,208,249,
32,155,183,142,32,208,1
69
GP 420 DATA 27,141,17,208,32,15
5,183,142,33,208,142,13
4,2,138,160,251,153,255
XM 430 DATA 215,153,249,216,153
,243,217,153,237,218,13
6,208,241,169,160,160,2
51,153
PF 440 DATA 255,3,153,249,4,153
,243,5,153,237,6,136,20
8,241,169,18,133,199
DJ 450 DATA 169,0,141,14,220,16
9,51,133,1,162,16,160,2
55,169,0,133,90,169
JX 460 DATA 223,133,91,169,0,13
3,88,169,63,133,89,32,2
36,163,169,55,133,1
FG 470 DATA 169,1,141,14,220,16
2,0,189,0,48,41,170,141
,136,203,169,255,56
KK 480 DATA 237,136,203,157,0,5
2,189,0,49,41,170,141,1
36,203,169,255,56,237
KC 490 DATA 136,203,157,0,53,23
2,208,219,169,29,141,24
,208,169,27,141,17,208
KD 500 DATA 96,160,0,140,137,20
3,32,155,183,138,172,13
7,203,153,138,203,200,1
92
PS 510 DATA 7,208,238,169,4,141
,2,201,169,201,141,3,20
1,169,173,141,129,201
HD 520 DATA 169,1,141,130,201,1
69,220,141,131,201,169,
29,141,24,208,169,0,141
```

```
GB 530 DATA 134,203,141,135,203
,169,5,141,145,203,169,
1,141,48,201,141,238,20
1
RP 540 DATA 169,2,141,88,201,14
1,186,201,169,33,133,25
1,169,192,133,252,173,1
38
FD 550 DATA 203,141,2,192,141,4
,192,162,25,160,0,173,1
39,203,145,251,200,24
SH 560 DATA 165,251,105,12,133,
251,165,252,105,0,133,2
52,185,139,203,140,137,
203
FF 570 DATA 160,0,145,251,172,1
37,203,200,192,6,208,22
5,24,165,251,105,32,133
GK 580 DATA 251,165,252,105,0,1
33,252,202,208,201,169,
44,160,0,209,122,240,3
HK 590 DATA 76,0,192,169,76,141
,129,201,169,110,141,13
0,201,169,203,141,131,2
01
KA 600 DATA 32,155,183,142,146,
203,76,0,192,206,145,20
3,240,3,76,5,192,206
KA 610 DATA 146,203,240,8,169,5
,141,145,203,76,5,192,7
6,139,201,0,0,0
XG 620 DATA 5,11,15,1,7,10,8,2,
0,0,141,3,201,76,5,192
```

METALLIX.DEMO

```
DB 10 REM COPYRIGHT 1991 COMP
TE PUBLICATIONS INTL LTD
- ALL RIGHTS RESERVED
HS 20 POKE53280,0:POKE53281,0:
PRINT "{CLR}{9 DOWN}{RED}
"TAB(9)"LOADING METALLIX
..."
GB 30 POKE147,0:SYS57812"METAL
LIX.OBJ",8,1:SYS62631
FJ 40 FORT=8192T08320:READ X:PO
KET,X:NEXT
GM 50 V=53248:POKE V+23,255:POK
EV+29,0:POKE V+28,255
AP 60 FORT=V+39TOV+46:POKET,15
:NEXT:POKE V+37,12:POKE V+
38,11
AQ 70 X=139:FORT=VTOV+6STEP2:P
OKET,X:X=X+24:NEXT
BH 80 X=139:FORT=V+8TOV+14STEP
2:POKET,X:X=X+24:NEXT
QS 90 FORT=V+1TOV+7STEP2:POKET
,63:NEXT:FORT=V+9TOV+15S
TEP2:POKET,105:NEXT
DJ 100 FORT=2040TO2046STEP2:PO
KET,128:NEXT:FORT=2041T
O2047STEP2:POKET,129:NE
XT
SM 110 C1=11:C2=15:C3=1:C4=7:C
5=10:C6=8:C7=2
MK 120 SYS51720,0,0:POKE53265,
11:FORDL=1TO1000:NEXT:P
OKE V+21,255:FORT=1TO10:
NEXT
QX 130 POKE53265,27:PRINT"
{HOME}{15 DOWN}"TAB(13)
"{RVS}M E T A L L I X"
KD 140 PRINT "{2 DOWN}"
```

GAZETTE D/ISK L\BRARY

VALUE-PACKED SOFTWARE AT AFFORDABLE PRICES

All Gazette disks are menu-driven for ease of use—and they feature complete documentation. Just load and you're ready to go!

SpeedScript

\$11.95

COMPUTE Publications' most popular program ever. Powerful word processing package includes *SpeedScript* for the 64, *SpeedScript 128*, spelling checkers for both 64 and 128 versions, plus an additional dozen support programs, including mail-merge and word-count utilities.

Gazette Index

\$7.95

Every article and department from *Gazette*—July 1983 through December 1989 issues—is indexed: features, games, reviews, programming, "Bug-Swatter," "Feedback," and the other columns. Disk features pull-down menus, help screens, superfast searching/sorting capabilities, and much more.

Best Gazette Games

\$9.95

Best dozen arcade and strategy games ever published in *Gazette* all on one disk. All games for Commodore 64. Titles: *Crossroads II: Pandemonium*, *Basketball Sam & Ed*, *Delta War*, *Heat Seeker*, *Omicron*, *Powerball*, *Q-Bird*, *Trap*, *Arcade Volleyball*, *Mosaic*, *Power Poker*, and *Scorpion II*.

Gazette's Power Tools

\$9.95

Fourteen of the most important utilities for the 64 ever published in *Gazette*. For serious users. Titles: *MetaBASIC*, *Disk Rapid Transit*, *Mob Maker*, *Ultrafont+*, *Quick!*, *Disk Editor*, *Basically Music*, *PrintScreen*, *1526 PrintScreen*, *Fast Assembler*, *Smart Disassembler*, *Comparator*, *Sprint II*, and *Turbo Format*.

The GEOS Collection

\$11.95

Gazette's best 13 programs for GEOS and GEOS 128 users. Selection includes utilities, applications, and games. Titles: *Super Printer Driver*, *Skeet*, *File Saver*, *Help Pad*, *Word Count*, *Directory Printer*, *Quick Clock*, *SlideShow*, *File Retriever*, *Screen Dumper*, *Font Grabber*, *GeoPuzzle*, and *GeoConverter*.

128 Classics

\$11.95

Thirteen of *Gazette's* best 128 programs, including utilities, games, and applications. Titles: *MetaBASIC 128*, *RAMDisk 128*, *80-Column Disk Sector Editor*, *MultiSort*, *Block Out*, *Miami Ice*, *The Animals' Show*, *Cribbage*, *XPressCard*, *Sound Designer*, *Video Slide Show*, *Math Graphics*, and *3-D BarGrapher*.

SPECIAL OFFER!

All 6 DISKS FOR ONLY \$49.95!

A \$13.00 SAVINGS!

All prices include shipping & handling.

- | | | |
|-----------------------|--------------------------|---------|
| SpeedScript | <input type="checkbox"/> | \$11.95 |
| Gazette Index | <input type="checkbox"/> | \$ 7.95 |
| Best Gazette Games | <input type="checkbox"/> | \$ 9.95 |
| Gazette's Power Tools | <input type="checkbox"/> | \$ 9.95 |
| The GEOS Collection | <input type="checkbox"/> | \$11.95 |
| 128 Classics | <input type="checkbox"/> | \$11.95 |
| Special 6-Disk Offer | <input type="checkbox"/> | \$49.95 |

Subtotal _____

State Sales Tax* _____

Outside U.S. or Canada** _____

Total _____

Name _____

Address _____

City _____ State _____ ZIP _____

Amount enclosed \$ _____ Method of payment Check or Money Order

VISA or MasterCard

(for orders over \$20)

Mail to Gazette Disks
324 W. Wendover Ave.
Greensboro, NC 27408

Credit card no. _____ Exp. date _____

Signature (required) _____

Daytime phone number _____

* Residents of North Carolina and New York add appropriate sales tax.

** For delivery outside the U.S. or Canada, add \$1 for surface mail or \$3 for airmail. All orders must be in U.S. funds drawn on a U.S. bank.



PROGRAMS

```

MK 145 A$="{RVS}COPYRIGHT 1991
      ":GOSUB501:A$="{RVS}COM
      PUTE PUBLICATIONS INTL
      {SPACE}LTD":GOSUB501
XP 150 A$="{RVS}ALL RIGHTS RES
      ERVED":GOSUB501
XM 160 SYS51890,C1,C2,C3,C4,C5
      ,C6,C7,20:SYS51720,0,0:
      GOSUB520
CF 170 PRINT"{HOME}"TAB(2)"
      {16 DOWN}{RVS}ADD A MET
      ALLIC LUSTER TO YOUR VI
      DEO"
HA 180 PRINTTAB(2)"{RVS}{DOWN}
      WITH THIS ELITE METAL S
      HADING EFFECT"
JB 190 SYS51890,C1,C2,C3,C4,C5
      ,C6,C7,50:SYS51720,0,0:
      GOSUB520
CG 200 PRINT"{HOME}"TAB(3)"
      {15 DOWN}{RVS}THIS NEW
      {SPACE}GRAPHICS MODE DI
      SPLAYS A"
HX 210 PRINTTAB(3)"{DOWN}{RVS}
      VERTICAL COLOR RESOLUTI
      ON OF SEVEN"
DP 220 PRINTTAB(2)"{DOWN}{RVS}
      COLORS PER CHARACTER, A
      N INDEPENDENT"
MD 230 PRINTTAB(1)"{DOWN}{RVS}
      HUE FOR EACH RASTER LIN
      E ON THE SCREEN!"
DX 240 SYS51890,C1,C2,C3,C4,C5
      ,C6,C7,50:SYS51720,0,0:
      GOSUB520
FS 250 PRINT"{HOME}"TAB(10)"
      {15 DOWN}{RVS}DONE WITH
      INNOVATIVE"
DJ 260 PRINTTAB(7)"{DOWN}{RVS}
      RASTER PROGRAMMING, THI
      S IS"
ME 270 PRINTTAB(4)"{DOWN}{RVS}
      THE BEST VERTICAL COLOR
      RESOLUTION"
PA 280 PRINTTAB(11)"{DOWN}
      {RVS}POSSIBLE ON THE 64
      "
KH 290 SYS51890,C1,C2,C3,C4,C5
      ,C6,C7,50:SYS51720,0,0:
      GOSUB520:POKEV+21,255
BQ 300 PRINT"{HOME}"TAB(8)"
      {14 DOWN}{RVS}COMPLETE
      {SPACE}WITH A VIDEO FAD
      E"
ED 310 PRINTTAB(19)"{2 DOWN}
      {RVS}AND"
QB 320 PRINTTAB(10)"{2 DOWN}
      {RVS}COMBINED WITH SPRI
      TES"
AJ 330 PRINTTAB(5)"{DOWN}{RVS}
      64 GRAPHICS NEVER LOOKE
      D SO GOOD!"
QH 340 SYS51890,C1,C2,C3,C4,C5
      ,C6,C7,50:POKEV+21,0:SY
      S51720,0,0:GOSUB520
MR 350 PRINT"{HOME}"TAB(4)"
      {DOWN}{RVS}THE COMMANDS
      "
AD 360 PRINTTAB(4)"{2 DOWN}
      {RVS}SYS 51720,BORD,BAC
      K"
ED 370 PRINTTAB(6)"{DOWN}{RVS}
      CLEARS THE SCREEN AND S
      ETS THE"

```

```

HX 380 PRINTTAB(6)"{DOWN}{RVS}
      BORDER AND BACKGROUND C
      OLORS."
JX 390 PRINTTAB(4)"{3 DOWN}
      {RVS}SYS 51890,C1,C2,C3
      ,C4,C5,C6,C7,[DUR]"
CF 400 PRINTTAB(6)"{DOWN}{RVS}
      SELECTS THE 7 CHARACTER
      COLORS."
JJ 410 PRINTTAB(6)"{DOWN}{RVS}
      THE LAST PARAMETER IS O
      PTIONAL"
PH 420 PRINTTAB(6)"{DOWN}{RVS}
      AND SELECTS THE DISPLAY
      DURATION."
DJ 430 PRINTTAB(6)"{DOWN}{RVS}
      IF OMITTED THE DISPLAY
      {SPACE}IS"
XM 440 PRINTTAB(6)"{DOWN}{RVS}
      STOPPED WITH THE SPACE
      {SPACE}BAR."
HS 450 SYS51890,C1,C2,C3,C4,C5
      ,C6,C7,50:GOSUB520
MH 460 Z=2+1:IFZ>2THENZ=0
QA 470 IFZ=0THENC1=11:C2=15:C3
      =1:C4=7:C5=10:C6=8:C7=2
BC 480 IFZ=1THENC1=12:C2=15:C3
      =1:C4=7:C5=10:C6=8:C7=2
GE 490 IFZ=2THENC1=15:C2=1:C3=
      7:C4=10:C5=8:C6=2:C7=9
PP 500 SYS51720,0,0:POKEV+21,2
      55:GOTO130
RC 501 FOR XZ=1 TO (20-INT(LEN
      (A$)/2)):PRINT"{RVS} ";
      :NEXT:PRINTA$:RETURN
CF 510 REM DELAY SUB
DX 520 FORDL=1TOS0:NEXT:RETURN
MC 530 REM SPRITE DATA
CP 540 DATA42,170,170,37,85,87
      ,37,85,87,38,170,151,38
      ,170,183,38,170,183
EH 550 DATA38,191,247,38,181,8
      7,38,181,87,38,170,87,3
      8,170,215,38,170,215
JR 560 DATA38,191,215,38,181,8
      7,38,181,87,38,170,151,
      38,170,183,38,170,183
DM 570 DATA37,255,247,37,85,87
      ,47,255,255,0,42,170,17
      0,37,85,87,37,85
JP 580 DATA87,38,170,151,38,17
      0,183,38,170,183,38,170
      ,183,38,190,183,38,182
DG 590 DATA183,38,182,183,38,1
      82,183,38,182,183,38,18
      2,183,38,182,183,38,182
MC 600 DATA183,38,182,183,38,1
      82,183,37,245,247,37,85
      ,87,37,85,87,47,255
DR 610 DATA255,42,64

```

ONLY ON DISK

There's something new on *Gazette Disk*. In addition to the type-in programs found in each issue of the magazine, we offer additional features and programs every month on *Gazette Disk*. Check out the original 64 and 128 artwork on display in "Gazette Gallery," and look for our bonus programs as well. These programs and their instructions appear only on disk. Here's a description of this month's bonus program.

BX BASIC

Daryl "Beaux" Knowles

BX BASIC provides VIC-type graphics functions in 80-column mode. This extension to C-128 BASIC will get both the novice and the experienced programmer doing graphics in full 640 X 200 resolution within minutes. It also comes with extra features that support structured programming techniques, programming aids, and "blitter object" commands.

One outstanding feature of *BX BASIC* is a command that lets you use virtual sprites on an 80-column screen. A simple shape command allows easy formation of simple, regular 3-D polygons on the 80-column bitmap.

Remember that you can still get a one-year's subscription to *Gazette Disk* for only \$49.95. Send check or money order to *Gazette Disk*, COMPUTE, P.O. Box 3244, Harlan, Iowa 51593-2424.

READERSHIP SURVEY

Take a minute to tell us what you like most about *Gazette*. We also want to know what you don't like. We want the magazine to be as useful and interesting as possible and to provide you with the coverage you want. Please take a minute to fill out and mail us the questionnaire that appears elsewhere in this section.



REVIEWS

ANALYZE YOUR COMPANY'S HEALTH • CONQUER THE WORLD • BE A CHAMPION

UP YOUR CASH FLOW 3.0

It's sad but true; many small businesses fail. According to financial experts, two principal causes of failure are insufficient capital and poor management. Careful attention to fiscal matters is essential to good management, and *Up Your Cash Flow* was created to ease this task and help you maintain the health of your small business.

The developers of the program believe that many managers of small businesses make little or no use of computer programs for financial planning because they're confronted with formidable manuals, massive in size and difficult to use. *UYCF* is designed to avoid this barrier; it has no manual and requires no training.

Menu-driven, the program helps you, the manager of a small business, prepare a forecast of the fiscal position of your operation and analyze the results.

The opening screen, or main menu, contains 34 items, and as you scroll down the list, you see an explanation of each item. Most of the items lead you through the input of the data for your forecast. As you proceed through the menu items, you are prompted to forecast the separate components of your bookkeeping. These include such matters as your starting balances, sales, expenses, cost of goods sold, payroll, depreciation, loans/interest, proprietary draws, and taxes.

Many of the main menu items have further menus, and one of the attractive features of the program is the options it offers for level of detail of the forecast. You can make off-the-cuff estimates based upon percentage changes from last year or fixed changes. You can make an estimate of

annual costs and spread them uniformly over the year or adjust by month. If you prefer, you can go into detail, and the program suggests that you consult your accountant in this option.

In the major categories of sales, cost of goods sold, and payroll, you may deal with overall costs, or you may choose to use spreadsheets for sales and costs by product line and for payroll by employee. The spreadsheets accept detail by month if you choose to provide it.

Account	1991 Cash Flow Forecast 1991				
	Total	Jan	Feb	Mar	Apr
Sales	12,645,000	45,000	1,500,000	750,000	1,350,000
Material	2,002,500	225,000	112,500	127,500	157,500
Labor	3,487,500	375,000	187,500	202,500	262,500
Overhead	657,500	75,000	37,500	52,500	52,500
Accounting	194,000	12,000	12,000	12,000	12,000
Advertising	418,500	34,875	34,875	34,875	34,875
Gen'l Insurance	308,531	8,719	17,438	17,438	17,438
Taxes	300,000	25,000	25,000	25,000	25,000
Telephone	2,500	0	200	200	200
Utilities	127,875	0	11,625	11,625	11,625
Total Cashout	7,470,606	752,524	420,638	573,638	573,638
Net Cash Change	5,174,394	-710,524	1,079,362	176,362	776,362
Rev. Balance	125,875	125,875	-574,718	408,642	943,807
Net Cash Flow	5,310,279	-574,718	498,645	663,807	1,120,179

Up Your Cash Flow helps you forecast and analyze the health of your business.

When you've completed your forecast, you can turn to the very valuable program features offering analysis of your data. These include profit and loss, cash flow, balance sheets, and six significant ratios: the ratios of assets to liabilities, debt to equity, net income to equity, inventory turnover, accounts receivable turnover, and net income to sales. Each ratio screen carries an explanation of the significance of the ratio. Finally, you can see and print graphic presentations of sales, net income/loss, gross profit, cash flow, and sales/expenses for each month.

I found the program easy to use (even for someone with little accounting background), prompt in its execution, and illuminating in its analysis. I would fault only its lack of mouse support. A bonus item included in *UYCF* is a 170-page text that dis-

cusses the items of the forecast.

UYCF is marketed by Granville Publications, which maintains a toll-free technical support line. The personnel are most cooperative and competent. The program would be a very valuable addition to the library of any manager of a small business.

CHARLES IDOL

Ease of Use	★★★★
Documentation	★★★★
Features	★★★★
Innovation	★★★

IBM PC and compatibles, 512K RAM, DOS 2.0 or higher, hard disk—\$99.95

GRANVILLE PUBLICATIONS
SOFTWARE
10960 Wilshire Blvd., Ste. 826
Los Angeles, CA 90024
(800) 873-7789
(213) 477-3924

DRAGON STRIKE

Easy to learn, fast-moving, and action intensive, *Dragon Strike* is the perfect game to pick up when you're looking for a few hours—or a few minutes—of diversion at the computer. *Dragon Strike* is a game calculated to please fans of both the fantasy and the flight-simulator genres.

Set in the climactic stages of the War of the Lance, *Dragon Strike* pits the good dragons of Krynn in a desperate counteroffensive against the evil dragon armies that have nearly subjugated the land. You play the part of a lancer, one of the elite knights that ride the good dragons into battle.

Test your mettle in 22 different missions, flying them on an individual basis or in chronological order as part of a campaign. In the latter mode, your continued success and survival bring you honors, new magical equipment, and better mounts. ▶

Predictably, you also face more powerful foes as the campaign progresses. But the missions are cleverly crafted, and their escalating difficulty stems not only from the presence of stronger and more numerous adversaries; the situations you face also become more intricate.

With no electronic gadgetry or crowded instrument panel to worry about, piloting a dragon through the air is a very simple affair. A dragon maneuvers somewhat like a horse, albeit one able to move in the vertical, in addition to the horizontal, plane.

Combat typically takes place up close, waged with tooth and claw, sword and lance. Of course, a dragon's most deadly weapon is its breath, but even this armament loses its effectiveness at anything other than short range. Overall, though, flying a dragon into battle is not as primitive a business as it sounds. Magic replaces technology in the Dragon Lance world. If you think of your crystal ball as a kind of radar and your arrow of enemy detection as a crude weapons guidance system, you should have no trouble making the transition from the jet cockpit to the dragon saddle.

Joystick jockeys burned out on Migs and Messerschmitts should find battling Death Dragons and Draconians a whimsical and welcome departure. And dungeon-crawlers who have lost their enthusiasm for 100+-hour quests should also be satisfied with the game's fast-action thrills and rewards. *Dragon Strike* blends the first-person viewpoint and immediacy of the simulator with a sense of the exotic adventure of the fantasy game, in effect giving players the best of both worlds.

JEFF SEIKEN

Playability	★★★★
Documentation	★★★
Originality	★★★★★
Graphics	★★★

IBM PC and compatibles; 512K RAM; CGA, EGA, MCGA, VGA, and Tandy graphics; supports the Ad Lib sound board—\$49.95

STRATEGIC SIMULATIONS
Distributed by Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(800) 245-4525

HEADROOM 2.0

With today's RAM-hungry programs, effective memory management is essential.

HeadRoom 2.0 from Helix Software overcomes RAM cram, letting you make the most of your computer's memory, even if the computer's an XT.

HeadRoom offers two main services. First, it copes with your collection of memory-resident (TSR) programs, swapping them to disk, extended memory, or expanded memory. When you want to use the TSR program, it pops up at the press of a hot key. *Headroom* saves your valuable memory while it prevents conflicts between these pesky but valuable programs. Second, it lets you swap up to 32 applications to disk or extra memory, returning them to the screen with a keystroke, just as they were before. You might, for example, switch back and forth between a database program and your word processor. Helix even includes a utility that lets you cut and paste text between programs.

The one-step installation program is simple. Configuration, however, is another matter. Even if you're a power user, you'll need to study the manual carefully to make *HeadRoom* do all its tricks.

Once you've mastered the configuration complexities, however, you'll love *Headroom*. Fully configured, it takes over when you boot up, loading all your favorite programs and TSR utilities. From that point on, you can use hot keys you selected when you configured *HeadRoom* to pop up a TSR or run any program.

When *HeadRoom* switches between programs, you'll find them exactly as you left them, ready for you to continue your work. If you've chosen to swap the programs to your hard disk, you can even shut off the computer and then pick up any program as it was when you quit.

If you swap your programs to extended or expanded memory, switching is almost instantaneous. Switching between programs swapped to your hard disk takes just a few seconds.

Keep in mind that each program you swap to disk uses up to 640K of hard disk space. You need to be care-

ful when handling multiple programs with *HeadRoom* to avoid running out of disk space.

You're not limited to hot keys for switching applications. Just press the Alt-Enter key combination to pop up *HeadRoom's* main menu. Using this menu, you can switch programs, reconfigure *HeadRoom*, change hot keys for your TSR programs, or add a new program to the current list. You can also display a clear map of your current memory usage.

The *HeadRoom* program itself takes up about 60K of your valuable RAM, but if you normally use large TSR programs like *PC Tools* or *SideKick*, swapping them out of memory with *HeadRoom* can save enough space to run even memory-hogging programs like *Ventura Publisher*.

If you use many TSR programs or need to switch quickly among multiple applications, *HeadRoom* could be the perfect solution, especially if you haven't upgraded to a 386 machine yet.

GEORGE CAMPBELL

Ease of Use	★★★★
Documentation	★★★★
Features	★★★★
Innovation	★★★★

IBM PC and compatibles, 128K RAM (at least 640K+ RAM recommended for optimum performance), hard drive; supports LANs—\$129.95

HELIX SOFTWARE
8365 Daniels St.
Briarwood, NY 11435
(718) 262-8787

FLIGHT OF THE INTRUDER

Climb into the cockpit of an F4 Phantom or an A6 Intruder and prepare to fly a series of combat missions over North Vietnam. This is *Flight of the Intruder*, a complex aerial combat simulation based on the novel of the same name by Stephen Coonts.

When you open the package, you'll find a copy of Coonts's novel, a quick-reference card illustrating the keyboard command layout and instrument panels in the Phantom and

\$1.99 ea.
10 or More
purchased

THE WORLD'S BEST PROGRAMS

- The World's BEST User-Supported Software for IBM PC Compatibles •
 - Programs run from Gold Hill's Exclusive Menu System - Just type WOW •
 - Same or next day shipping • UPS 2-Day Air available for only \$4 more •
 - Toll-Free Order line • Visa/MasterCard Accepted • FREE Catalog •
- >>> **Unconditional Money-Back Guarantee!!** <<<<

\$2.49 ea.
Less than 10
purchased

ACT NOW!!

3 FREE DISKS!!

LIMITED TIME!!

BUSINESS

- PC Payroll (1608,1609)** - A complete payroll system. (2 disks) **HD**
- FormGen (1630)** - Design and print any business/office form easily.
- FormGen Fill (1631)** - Fill out FormGen-created forms more quickly and accurately. (requires FormGen)
- FormGen Business Forms (1632)** - An excellent collection of pre-designed business forms. (req. FormGen) **HD**
- Doctor Data Label (1717)** - A professional mail list manager. **HD, 512K**
- Checkmate (1102)** - A complete checkbook manager. Handles unlimited accounts and does reconciliation.
- Business Kit (1656)** - Two programs for small businesses: Simple Book-keeper and Billing Statement.
- Solve-It! (1618)** - An excellent financial calculations package.
- Invoice-It (1664)** - Keep track of invoices, merchandise, vendors and customers at the point of sale.
- Names and Dates (1619,1620)** - An address book, calendar system, and mailing list combination. (2 disks) **512K**

EDUCATION

- Computer Tutor (1235)** - Become a more effective computer user.
- School Mom (1251)** - Teaches kids 2-14 the basics of art, music, spelling, English and math. **FANTASTIC!!! CGA**
- World (1221)** - A computer encyclopedia of global information. **CGA**
- Typing Tutor (1224)** - Helps you improve your speed and accuracy. **CGA**
- Total Recall (1245)** - This program helps you quickly memorize words and information on any subject.
- Algebrax (1233)** - A great program that teaches algebra. **CGA**
- Pre-Calculus (1218)** - Excellent pre-calculator. Reviews algebra and trig.
- Play n' Learn (1236)** - A collection of learning games for children. **CGA**
- KinderMath (1262)** - An excellent math tutor for children. Three levels of difficulty. Very entertaining. **CGA**
- WordWhiz (1252)** - A challenging word game that tests your vocabulary.
- Word Gallery (1256)** - Teaches kids to associate written words with objects.
- Our United States (1255)** - Test your knowledge of United States trivia.

UTILITIES

- Auto Menu (1409)** - A professional hard disk menu system. Run any of your programs from a customized menu.
- VirusScan (1440)** - Make sure your computer is virus-free with this valuable utility. Highly recommended!
- Tree View (1418)** - A superior DOS command shell with pull-down menus.
- Telix (1422)** - The best telecommunications program available. **HD**

SPREADSHEET

- On Side (1506)** - Prints your spreadsheets (or any file) sideways.
- As-Easy-As (1805)** - A fantastic Lotus 1-2-3 compatible spreadsheet.
- Lotus Learning Sys. (1810,1811)** A complete package that makes it easy to learn Lotus 1-2-3. (2 disks) **HD**

MS WINDOWS 3.0

These programs require Windows 3.0.

- Almanac (1470)** - An excellent calendar/information utility.
- Icons (1480)** - Customize your Windows operating environment with this collection of over 300 icons.
- Wallpaper (1484)** - A collection of wallpaper to decorate your Windows.
- Active Life (1472)** - A powerful system for managing your active business and personal life.
- Icondraw (1478)** - Create your own icons to use with Windows.
- Command Post (1474)** - Allows you to create custom menus that can execute applications automatically.
- Metz Desktop Applications (1485)** - Create menus and easily access files and directories.
- Screen Peace (1486)** - A FANTASTIC screen saver with many beautiful and interesting variations.

HOME & FAMILY

- Home Budget Manager (1103)** - Tracks all your household expenses and helps you set budgets and goals.
- Home Inventory (1105)** - Keeps track of all your personal property.
- Brother's Keeper (1120,1121)** - A great genealogy program that allows you to trace your family history. (2 disks)
- Edna's Cookbook (1118,1119)** - An electronic cookbook with several great recipes - add your own! (2 disks)
- Will Kit (1343)** - Create your own will valid in all 50 states.
- C.A.R.S. (1126)** - Keeps a complete record of your auto expenses.
- Cash Control (1127)** - Manage your bank accounts the fast and easy way with this great program. **320K**

WORD PROCESSING

- WP 5.0/5.1 Clip Art (1875,1876)** - A large collection of clip art to add spice to your documents. (2 disks)
- PC Write 3.03 (1851-1853)** - A very popular full-featured word processor. (3 disks) **HD, 512K**
- WP 5.1 Learning System (1865-1867)** - Be a more proficient WP user. (3 disks) **HD, 512K**
- Readability Plus (1340)** - A computerized writing style analyzer.

APPLICATIONS

- Trip Planner (1331)** - A computerized road map. Computes best route. Very popular!
- Melody Maker (1918)** - A fun and easy-to-use program for new or experienced music students. Comes with several songs.
- PC Beat (1909)** - Turns your computer into a drum machine. A lot of fun!
- Calendar Mate (1344)** - A full-featured program designed to create personalized calendars.
- Lotto! (1313)** - Win the lottery with the help of your computer!
- By the Numbers (1342)** - Provides you with a complete numerical interpretation. **HD, 340K**
- Stress Management (1334)** - Learn how to assess and regulate your stress.

GRAPHICS

- PrintShop Graphics (1503)** - A large collection of PrintShop clip art.
- Picture Label (1501)** - An excellent label printing program that uses PrintMaster or PrintShop graphics.
- Banner Maker (1502)** - Prints banners in various sizes, styles, and fonts.
- PC Art (1509)** - Color painting & drawing program. **CGA**

GAMES

- Scrabble (1957)** - Test your word power with this always fun game. **CGA**
 - Double Blocks (1970)** - A TERRIFIC Tetris clone for 1 or 2 players. Records top scores. You will love this!!
 - Super Pinball (1941)** - Great sound and action in 5 different games. **CGA**
 - Video Poker/Ultima 21 (1945)** - The BEST poker and blackjack games!
 - Kingdom of Kroz (1952)** - An excellent award-winning adventure game.
 - Miramar Flight Simulator (1967)** - You are in control of all the speed and fire-power an F-18 has to offer! (will not work with Tandys) **CGA**
 - Pharaoh's Tomb (1974)** - Face monsters and traps as you explore the pyramid. Your goal is to survive.
 - SUPER Arcade I (1906)** - A collection of famous arcade hits like Q-Bert, Centipede, Pango, and more. **CGA**
 - SUPER Arcade II (1902)** - More arcade favorites! This disk contains clones of Jump Man, Frogger, and more! **CGA**
 - Insanity (1936)** - Find your way out of this maze before going insane! **CGA**
- ### VGA GAMES
- Shooting Gallery (1990)** - Seven variations of a shooting range on your computer screen. **VGA**, mouse
 - VGA Sharks (1992)** - Recover lost treasure in shark infested waters in this action arcade game. **VGA**
 - Beyond Tetris/Joust (1997)** - Beyond is like Tetris with a twist. Joust is a VGA rendition of the classic. **VGA**

EGA GAMES

- Bass Tour (1925)** - An amazing game with excellent graphics. Fish in your choice of lakes. Very realistic. **EGA**
- EGA Coloring Book (1963)** - A graphically beautiful and easy-to-use coloring program that kids love! **EGA**
- Frac (1991)** - A three-dimensional Tetris-like game. Challenging! **EGA**
- EGA Golf (1929)** - A challenging golf game with beautiful graphics. **EGA**
- Poker Slot (1989)** - Plays just like the video poker machines you see in casinos. Great graphics! **EGA**, mouse

IMPORTANT

CGA = Requires Color Computer
HD = Requires Hard Drive
512K = Requires 512K RAM
BASIC = Requires Basic Interpreter
For multi-disk sets
count all disks in set

* When you order and pay for 5 or more disks, select an additional 3 disks FREE (limit 3 free per order)

Name _____
Address _____
City _____
State _____ Zip _____
Phone () _____ - _____
Visa/MC# _____ - _____
Exp. Date ____ / ____
Signature _____
Disks Ordered _____
x \$2.49 or \$1.99 each ... \$ _____

Need 3 1/2" disks?
If so - add \$1 per disk
(including free disks) ... \$ _____
Packing & Handling ... \$ **3.00**
Foreign Shipping Charge
(Canada \$2 / Other \$4) \$ _____

COD (U.S. Only)
add \$4 if you req. COD \$ _____

UPS 2-Day Air - add \$4
(Continental U.S. only) \$ _____

TOTAL \$ _____

Check/MO Visa/MC C.O.D.

GOLD HILL SOFTWARE



PO Box 663
Gold Hill, OR 97525

ORDER TODAY
1-800-234-6467 **COM3**



REVIEWS

Intruder cockpits, a route map similar to the ones pilots actually carried on their knees while flying in missions over Vietnam, and a hefty player's manual. This thorough volume includes an index and a glossary, as well as two tutorials that guide you through your first Phantom and Intruder missions. For those of you who would rather act as CAG (Commander Air Group), there's a section describing how to plan and create your own missions from scratch.



Animation in Spectrum Holobyte's *Flight of the Intruder* is smooth and quick.

Flight of the Intruder isn't the type of simulation you can boot up and play with only a quick glance at the player's manual. Only by reading through all of this material carefully at least once (preferably twice) will you be able to successfully complete any of the missions.

Another factor that makes *Intruder* particularly difficult to master is the relatively complicated keyboard command layout used to control the weapon and navigation systems of the Phantom and Intruder. Of the 101 keys on a standard AT keyboard, only 16 serve no function at all, while many of the others serve multiple functions when combined with Ctrl, Alt, or Shift.

One of *Intruder's* strong points is its authentic missions. During each mission, you're simply doing your part in a much larger operation, and as the mission unfolds, radio communication with other sections lets you know how the operation is progressing. For example, to wage a massive attack on Hanoi, you must complete two operations—Iron Rain I and Iron Rain II. Each operation comprises four separate missions, allowing you to serve as air cover or escort in a Phantom or to take an Intruder in on

a specific strike mission.

Graphically, the VGA version of *Flight of the Intruder* isn't as impressive as you might expect because only 16 colors are used rather than 256. However, the detailed instrument panels of both planes are quite impressive, and in the F4 you actually have to change your view to see all of the instruments. Throughout the game, the animation is particularly smooth and quick.

Players who like uncomplicated simulations that you can simply boot and play or those who like to see a lot of pretty scenery from the cockpit window should definitely skip *Flight of the Intruder*. On the other hand, serious gamers willing to spend a little more time in flight school should give *Intruder* a shot, particularly because it covers a major period in U.S. military history that has been largely overlooked by other simulations.

BOB GUERRA

Playability	★★★★
Documentation	★★★★
Originality	★★★★
Graphics	★★★★
Sound	★★

IBM PC and compatibles; 640K; CGA, EGA, VGA, or Hercules; supports Ad Lib sound board; joystick or mouse optional—\$59.95

SPECTRUM HOLOBYTE
2061 Challenger Dr.
Alameda, CA 94501
(415) 522-0107

Amiga

POWERMONGER

A warlord's work is never done. Just last week you were the benevolent but firm ruler of the kingdom of Miremer. Then your land was consumed by earthquakes and covered in fiery ash. Now you and your few surviving subjects must move on and find a new homeland—a land where you can once again be PowerMonger.

The creators of *Populous* have outdone themselves with their latest

release, *PowerMonger*. While it may seem that going from being a god to being a king without a kingdom is a demotion, *PowerMonger* is a much richer game than its predecessor. With over 20 different commands within your reach and hundreds of lands to conquer, *PowerMonger* will keep you coming back for more.

You start the game with only a castle and 20 followers to your name. From this meager beginning you must gain power and develop skills to eventually conquer the 195 territories that make up the continent.

With your army in tow, you approach the first town. You can take a passive, neutral, or aggressive stance as you enter the village. Attack isn't the only option—you can also try to establish an alliance or trade with the locals. However, since the inhabitants of this first island are weak and no real challenge to a conqueror of your skill, you attack. You could be aggressive, but slaughtering the entire population would be a waste of valuable resources—better to subjugate the populace. You take a passive stance instead and take control through intimidation, saving swordplay for later. Changing to a neutral stance, you recruit half of the town's residents into your army. You command the others to invent new weapons. Meanwhile, you and your now larger army go off hunting for food—winter is approaching, and if you don't stock up now, hungry soldiers will desert you when food gets scarce. After slaughtering a herd of sheep for food, you come back to the town to find that the villagers have carved an armory full of bows and arrows for your use. With your stock of food and new weapons, you quickly defeat the other village on the island. You reign supreme.

Of course, what great conqueror has ever been satisfied with a single triumph? You move on to extend your empire. As you do, you find that not only do the lands get bigger, but the villagers also get much more resistant to conquest. Not only that, but it also seems you're not the only one with global conquest on your mind—there are other armies roving around the lands you must bring under your reign, trying to capture the same territories. The world won't be conquered in a day.

PowerMonger packs plenty of



INTERNATIONAL COMPUTER

**LOWEST DISCOUNT
PRICES ANYWHERE**

1-800-275-6100

For Info
201-944-5727
Fax in your order
24 hrs. a day
Fax (201) 944-8803

Open 7 Days From 9:00 AM • Corporate Accounts Welcome

American Express, Visa MasterCard • Certified Checks & Money Orders Accepted

TOSHIBA LAPTOPS



T-1000 512K	\$569
T-1000 SE 1 MEG	\$1078
T-1000 XE	\$1499
T-1200 HB Backlite 20M H.D.	\$1599
T-1200 XE	\$1999
T-1600 20/40 MB H.D.	\$2250
T-3100SX 40/80 MB H.D.	\$3650
T-3100C	\$2500
T-3200SX, 16 MHz, 40 H.B.	\$3400
T-5100	CALL
T-5200 40/1000 MB H.D.	CALL

SHARP LAPTOPS

4602 2 Drive B.L. CALL
Mz-100 2 Drive B.L. \$899 4641 CALL
5541 VGS, 40MD H.D. CALL

NEW SHARP PC6620
4 LBS., 286 AT, 1 MB
RAM, VGA GRAPHIC,
20 MB HARD DRIVE
ORDER NOW



SANYO

MBC-16 LT
"Worlds Smallest & Lightest"
640K RAM, two 3 1/2 FDD, 6 hr. BATT . . . CALL
MBC-17 NB
Notebook 16 Bit, 13.5 FDD,
20 MB H.D. CALL

ZENITH LAPTOPS



Mini Sport 1 MEG	\$1199
Mini Sport 2 MEG	\$1599
184-1 2 Floppy	\$1199
184-2 20 MB	\$1599
286 20 MB	\$2199
286 40 MB	\$2399
286e/20 MB	\$2799
286e/40 MB	\$2999
386 SX/40 MB	CALL

NEC

Ultralite 2 MB	\$1499
Pro Speed 286 20 MG	\$2499
Pro Speed 286 40 MG	\$2699
Pro Speed 386 40 MG	\$3699

COMPAQ LAPTOPS

SLT 20/40	\$1995
LTE 20	\$2695
LTE 286-20/40	\$2995

PACKARD BELL

America grew up listening to us. It still does.

FORCE 1 (286) 12 MHz, 1MB, of RAM, optional 40 MEG pr 84 MEG. CALL
FORCE 386 16 MHz, 1MB of RAM, 5 1/4" Floppy +3 1/2 Floppy D.D. VGA Card, 40 MEG H.D. CALL
FORCE 386-33 33 MHz, 2 MB of RAM, 64 K CACHE memory, 5 1/4" Floppy + 3 1/2 Floppy, Optional 124 MEG H.D. CALL

LEADING EDGE



Authorized Dealers **\$487**

D/86 8086 - 640K - 720K FD - VGA D2/LPS 80286 - 1MB RAM - 144MB FD - VGA CALL
D3/SX 80386 - 16M#2 - 1MB RAM - 12MB FD - VGA CALL
D3/20 80386 - 20 MHz - 1MB FD - 1.2MB FD - VGA CALL
D3/25 80386 - 25 MHz - 4MB RAM - 1.2MB FD - VGA CALL

VENDEX

HEADSTART 300

80286 - 12.5 MHz - 1MB RAM
1.2 MB F.D. - 1.44 MB F.D.
4 0MG H.D. VGA System -
Software Bundle



HEADSTART 300CD CALL
80286 - 12.5 MHz - 1MB RAM 1.44 MB F.D. - 680MB CD RAM 40MG H.D. VGA System - Software Bundle CALL
HEADSTART 500 CALL
80386 - 16MHz - 1MB RAM 1.44 MB F.D. - 1.2MB F.D. - 80MB H.D. VGA System - Software Bundle CALL
HEADSTART 500CD CALL
80386 - 16MHz - 2MB RAM 144MB RAM - 680MB CD RAM - 80MB H.D. VGA System - Software Bundle CALL
HEADSTART III \$1299
HEADSTART Turbo 286 \$1499

COMPUTERS

AST		
Bravo 286 w/640K, 5 1/4 F.D.D.	CALL	
Premium 286 w/514K, 5 1/4 F.D.D.	CALL	
Bravo 386 SX w/2MB, F.D.D., VGA	CALL	
Premium 386 SX w/1 MB, F.D.D.	CALL	
Premium 386/20 MHz w/1MB, F.D.D.	CALL	
Premium 386/25 MHz w/4MB, F.D.D.	CALL	
NEC		
Powermate 386SX, 2 MB RAM, 40 MB H.D., VGA	CALL	
Powermate 286+, 1 MB RAM, 20 MB H.D.	CALL	
EPSON		
Equity 1E w/1 MB RAM, F.D.D.	CALL	
Equity 2E w/1 MB RAM, F.D.D., 12 MHz	CALL	
Equity 386SX 16 MHz, w/1 MB RAM, 3 1/4 F.D.D.	CALL	
PANASONIC		
FX 1650 XT 10 MB, w/3 1/4 F.D.D.	CALL	
FX 1800 286 12 MB, w/3 1/4 F.D.D.	CALL	

TOSHIBA LAPTOP'S MEMORY UPGRADE

2 MB T-1000SE	\$429
2 MB T-1600	\$299
2 MB T-3200E	\$299
2 MB T3100SX	\$299
2 MB T-320SX	\$299
2 MB T-5100	\$299
2 MB T-5200	\$299
3 MB T-3200	\$459
2 MB T-1200XE	\$299
2 MB T-100XE	\$429

HP LASERJET UPGRADES

1 MB Kit II, IID	\$199
2 MB Kit II, IID	\$279
4 MB Kit II, IID	\$499
1 MB Kit IID	\$199
2 MB Kit IID	\$299
4 MB Kit IID	\$489
1 MB III/2P	\$199
2 MB III/2P	\$249
4 MB III	\$379

PLEASE CALL FOR
UPGRADES FOR ZENITH,
IBM, AST, APPLE & COMPAQ

DRIVES

HARD DRIVES—SEAGATE

ST-225 (20MB)	\$209
ST-125 (20MB)	\$229
ST-238 (30MB)	\$239

Other Models Available—Call

FLOPPY DRIVES—TOSHIBA

360K (5 1/4")	\$69
1.2MB (5 1/4")	\$79
720K (3 1/2")	\$69
1.44 MB (3 1/2")	\$79

Other Models Available

PRINTERS SPECIALS

STAR NX 1000II	\$148
PANASONIC KXP1124	\$279
HP LASER JET III	\$1528
EPSON	CALL
IBM	CALL

PRINTER & TYPEWRITER RIBBONS

6 PACK		6 PACK	
EPSON LQ500-850	\$32.20	STAR NX1000	\$29.61
EPSON LQ 1000-1050	39.50	STAR NX-10	\$45.99
EPSON FX MX/RX 70-90	\$26.01	SEIKOSHA SL80A, SP800/1000/1200	\$38.34
EPSON LX 80-90 Homewriter	\$22.59	APPLE IMAGEWRITER II Color	\$72.27
PANASONIC KXP-1080-1092	\$46.26	NEC P5200/5300	CALL
PANASONIC KXP-1124-1180	\$46.26	NEC P2200/5300	CALL
PANASONIC KXP-1524/16	CALL	NEC PC8023-8027	\$30.87
OKIDATA 320-391	\$41.40	BROTHER AX/Correctronic	\$19.26
OKIDATA 320-391	CALL	BROTHER EXEC HR/CE/Compactronic	\$19.26
IBM PROPRINTER X24/4207	\$33.25	BROTHER 1409-1709	\$53.55
IBM PROPRINTER XL	\$53.19	BROTHER M1009-1109	CALL
STAR NX2400	\$40.50	SCM H Series	\$47.61
		PANASONIC KXR/RKT	\$19.26

FAX FAX FAX FAX

SHARP	PANASONIC	MURATA	RICOH
FO-215 \$489	KXF-50 CALL	M-900 \$399	RF-810 \$399
FO-230 CALL	KXF-90 CALL	M-1100 CALL	RF-860 \$549
FO-334 CALL	KXF-120 CALL	F-25 CALL	RF-900 \$589
FO-510 CALL	PANAFAX CALL	F-37 CALL	RF-920 CALL

TOSHIBA

4400 CALL	3750 CALL	FAX 15 CALL	FAX 23 CALL
3450 CALL	TF-251 CALL	FAX 20 CALL	FAX 35 CALL

CANON

CANON COPIERS...CALL

INTERNATIONAL TELE-VIDEO MARKETING, INC.

1605 JOHN STREET, FORT LEE, NJ 07024

7 Day Return Policy. All returns must be phoned in for prior authorization. All products must be returned in original factory packaging with blank warranty cards. Shipping, handling & insurance charges are not refundable and returns are subject to a 5 percent restocking fee. All sales final. No Refunds. Credits Only. Quantities are limited. Availability is not guaranteed on all items. Prices are subject to change without notice. Not responsible for typographical errors. 5% shipping & handling charge to all orders.

© 1990 INTERNATIONAL TELE-VIDEO MARKETING, INC.

challenge. While sheer brute force will work early on in the game, in later scenarios you'll need to stop and plan out a detailed strategy or your army will be quickly overwhelmed. You have to plan your attacks, balance your resources, invent weapons, and recruit both soldiers and captains.



Conquer the world in *PowerMonger*.

PowerMonger is played on a 3-D angled board similar to that found in *Populous*. However, this board is much more detailed, and the variety of structures, characters, and items you'll find is increased tenfold. The landscape is populated with peasants, soldiers, villages, sheep, trees, iron mines, lakes, roads, and more. All of these play important roles in the game: Sheep are useful for food, trees and mines are necessary for creating inventions such as boats and swords, and roads speed travel. You can get detailed information about anything in the game world by clicking the Question icon and then the object—you even find out the names, ages, and occupations of individual peasants. The world can be viewed from any angle, and you can zoom in and out on it.

As you conquer lands, you can also win enemy leaders over to your side. Use them as spies, or have them recruit armies of their own and use them to conquer multiple cities simultaneously. Be careful to plan ahead, though—your commands are transmitted to your captains using carrier pigeons, and if you change your mind, your commands may not reach your subordinates in time. When you've defeated a territory, you can move onto any adjacent land on the main map. However, when you move on, you must leave your new recruits, captains, and supplies behind. You have to start out fresh with only basic weapons and a few soldiers.

Graphics are a step up from *Populous*, with better color, more detail, and faster screen updates. The number of sounds that Bullfrog managed to cram on a single disk is nothing short of amazing; sheep bleat, birds' wings rustle, and captains respond to commands with yehs of varying enthusiasm.

PowerMonger is a program with few flaws. Perhaps my biggest complaint about the game is that you must start over with a small army and none of your possessions after each conquest. While this keeps the game from getting out of hand, it would be fun to play the game on an imperial scale, where you would mass giant armies and take on larger and more powerful opponents. Also, the program uses a custom disk format that can't be duplicated without a commercial disk copier program, and it also requires you to look up a number in the manual each time you boot. The two-tiered copy protection is doubly inconvenient.

If you enjoy strategy games, *PowerMonger* is a must-buy. It incorporates the best elements of war games with a simple but powerful user interface. The lands become increasingly hard to conquer, but casual players can always stick to the easier sections of the map. Die-hard war gamers who defeat all the computer-controlled levels can try the two-player modem option that, while a bit quirky, lets you take on both computer-controlled armies and a devious human opponent simultaneously, the ultimate challenge.

Far more than a rehash of *Populous*, *PowerMonger* is the war game for the masses. If you buy one game for your Amiga this year, buy *PowerMonger*.

DENNY ATKIN

Playability	★★★★★
Documentation	★★★
Originality	★★★★
Graphics	★★★★★
Sound	★★★★★

Amiga—\$49.95

ELECTRONIC ARTS
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171

POCOMAN

If you're ready for a game that's completely different from the usual heavily protected, impossibly hard games that have no sense of humor, try *PocoMan*. It's a delightful departure from the moronic, the too easy, and the impossible. *PocoMan* doesn't force you to reboot, it isn't copy protected, it's both a snap to learn and incredibly challenging, and it works with accelerator cards.

The concept of *PocoMan* is simple: He's a little guy who is trapped in a land of mazes. He's cute and quick, but, unfortunately, he's not very smart. You have to help him navigate these mazes, pushing objects into a corral. Only when he's saved every treasure in a maze can he escape to the next level, and there are 50 levels, each one more confounding than the one below it.

"OK, big deal, this is easy," you say to yourself as you look at the first maze. But there's more to this than you first thought. Little *PocoMan* has a bad back, so he can only push objects, not pull them, and he can only push one at a time. If an object gets wedged into a corner or up against a wall where he can't get behind it to push on it, you're both stuck, and you have to start that level over again. Each new level looks impossible, but it really isn't—every level can be solved if you stick with it. *PocoMan* forces you to think logically and think ahead.

If you pause for a while, *PocoMan* might look bored and tap his toes. Sometimes he dons a pair of shades and clenches his fist while his cape blows in the breeze, trying to play the superhero he isn't.

You don't get to see the next level until you've finished the current maze. Your highest level is saved to disk with your name, so many people can play from the same game disk (although each person's high-level save is not password protected—the ONLY flaw I found with the game).

The programmers have made *PocoMan* a joy. It installs easily on a hard drive and multitasks. The graphics are enchanting, as are the speech and sound effects. A press of the Help key brings up a list of keystroke alternatives. You can play *PocoMan* with



REVIEWS

your cursor keys (the best way), mouse, or joystick. Documentation is brief but thorough. There's no level editor, and you can't create your own mazes.

PocoMan is for those of you who spent endless hours frowning your brow and scrunching up your face in frustration when you first got your hands on a Rubik's Cube. This game will eat up unimaginable amounts of your time.

HARV LASER

Playability:	★★★★★
Documentation:	★★★★★
Originality:	★★★★★
Graphics:	★★★★★
Sound:	★★★★★

Amiga—\$39.95

DESIGNING MINDS
3006 N. Main
Logan, UT 84321
(801) 752-2500

64/128

CHAMPIONS OF KRYNN

Isn't there a saying about the third time being a charm? It's true with *Champions of Krynn*, the third Advanced Dungeons & Dragons epic from SSI.

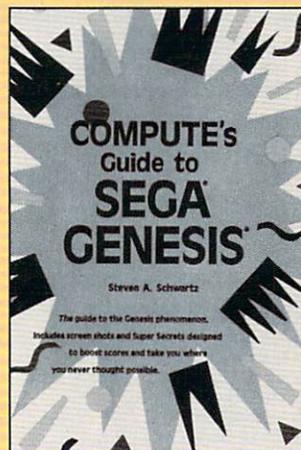
The first two games in the series took place in the world of Forgotten Realms, and although they were solid games, the combat was difficult and the games took too long. Eventually, I became bored with these games and played only for a little while at one sitting. *Champions of Krynn*, the latest role-playing epic in the series, has a lot more to offer than the first two, and it keeps the interest level up.>

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 5¼-inch disks and \$64.95 for 3½-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.

BUY BETTER—SCORE HIGHER with COMPUTE's Guide to Sega Genesis

The author of the best-selling *COMPUTE's Guide to Nintendo Games* rates each game's features, challenge, and playability, and includes actual playing screens so you can find out about the best games before you buy. Also includes strategies and super secrets to boost your scores. Sneak peeks at future games let you see what's under development. Includes 33 reviews and over 60 screen shots.



YES! I want to Conquer Segal

_____ copies of **COMPUTE's Guide to Sega Genesis** at \$9.95 each. (2389)

_____ Subtotal

_____ Sales Tax Residents of NC, NY, and NJ add appropriate sales tax for your area

_____ 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

Please allow four to six weeks for delivery.
Offer good while supplies last.

MAR91CQ

TALK TO YOUR COMPUTER

WITH VOICE MASTER KEY® FOR PCs/COMPATIBLES
VOICE RECOGNITION WITH SPEECH RESPONSE

GIVE A NEW DIMENSION TO PERSONAL COMPUTING The amazing Voice Master Key System adds voice recognition to just about any program or application. Voice command up to 256 keyboard macros from within CAD, DTP, word processing, spread sheet, or game programs. Fully TSR and occupies less than 64K. Instant response time and high recognition accuracy. A real productivity enhancer!



SPEECH RECORDING SOFTWARE Digitally record your own speech, sound, or music to put into your own software programs. Software provides sampling rate variations, graphics-based editing, and data compression utilities. Create software sound files, voice memos, more. Send voice mail through LANs or modem. A superior speech/sound development tool.

INTERACTIVE SPEECH INPUT/OUTPUT Tag your own digitized speech files to voice recognition macros. Provides speech response to your spoken commands -- all from within your application software! Ideal for business, presentation, education, or entertainment programs you currently use.

Augment the system for wireless uses in robotics, factory process controls, home automation, new products, etc. Voice Master Key System does it all!

EVERYTHING INCLUDED Voice Master Key System consists of a plug-in card, durable lightweight microphone headset, software, and manual. Card fits any available slot. External ports consist of mic inputs and volume controlled output sockets. High quality throughout, easy and fun to use.

ONLY \$149.95 COMPLETE

ORDER HOTLINE: (503) 342-1271 Monday-Friday 8 AM to 5 PM Pacific Time, VISA/MasterCard phone or FAX orders accepted. No CODs. Personal checks subject to 3 week shipping delay. Specify computer type and disk format (3 1/2" or 5 1/4") when ordering. Add \$5 shipping charge for delivery in USA and Canada. Foreign inquiries contact Covox for C & F quotes.

30 DAY MONEY BACK GUARANTEE IF NOT COMPLETELY SATISFIED.

CALL OR WRITE FOR FREE PRODUCT CATALOG.



COVOX INC.
675 CONGER ST.
EUGENE, OR 97402

TEL: (503) 342-1271
FAX: (503) 342-1283

First, the amount of combat is greatly reduced in *Champions of Krynn*. Instead of having to fight dozens or hundreds of monsters, you may only have to fight a handful at a time. You confront a variety of enemies in *Champions*, but not at every turn. If you like, you can let the computer handle combat for your characters, but I wouldn't recommend it except in the game's early stages when doing battle with weak monsters.

The other major change introduced in *Champions* concerns mages. Each mage must declare loyalty to a god and receives certain powers as a result of that pledge. Also, a mage's abilities are enhanced depending on the phase of the moon that reflects his or her alignment. There are three moons (white for good, red for neutral, and black for evil) that go through phases along the top of the screen. In some cases, it's worth waiting a few game hours to cast certain spells or perform certain activities.

Champions of Krynn introduces the Kender race and the Solamnic Knight class to gamers. Kenders like to taunt enemies into a frenzy, reducing their ability to injure members of your party. Solamnic Knights are chivalrous and dedicated to their order. There are three orders of Solamnic Knights: Knights of the Crown, Knights of the Sword, and Knights of the Rose.

Your goal in *Champions of Krynn* is to discover the source of evil in Northeast Ansalon and suppress it. The

Advertisers Index

Reader Service Number/Advertiser	Page	Reader Service Number/Advertiser	Page	Reader Service Number/Advertiser	Page
187 Access LA	101	202 Hacker Cat	G-18	123 Soft Group	G-10
224 Access Software	39	160 Heath Company	22	126 Softshoppe Inc.	99
Acoustic Research	60	113 Herne Data Systems	99	241 Software of the Month Club	99
214 Ad Lib	IBC	I. Den Videotronics	A-13	150 Software of the Month Club	A-26
172 Alpha Software	12, 13	256 ICD	A-5	Sogwap Software	G-13
124 Bandit Software	54	International Collectors of Time	81	130 Starware Publishing Corp.	101
240 Blackjack Computer	101	215 International Tele-Video Marketing	93	Strategic Simulations Inc.	11
141 BOBCO	G-17	Jacobsen Software	G-18	259 Tektonics Plus	G-17
Brantford Educational Services	A-17	216 Jason-Ranheim	G-21	118 Tenex	G-9
Brøderbund	3	115 John Dunn Associates	101	132 The Other Guys	A-13
183 Cedar Software	101	213 Konami	55	140 Virgin Mastertronics	44, 45
159 Central Computer Products	99	211 Logitech Software	33	111 Virgin Mastertronics	67
220 Compsult	102	128 LWS Software	100	World of Amiga	88
161 Compsult	G-18	Magalog	86, 87		
103 CompuServe	IFC	153 Maxis	59	1990 Gazette Index	G-19
207 Computer Basics	A-15	139 Maximium Co.	98	Amiga Resource Disk	A-12, A-19
136 Computer Book Club	9	149 Meggido	A-26	COMPUTE Books	
230 Computer Business Services	100	110 MicroProse	5	95, 100, 101, 102, G-12, G-21, A-26	
114 Computer Direct	37	Montgomery Grant	A-9	COMPUTE Math Voyager	83
251 Computer Technologies Online	99	Montgomery Grant	G-5	COMPUTE's PC Disk Subscription	35
137 Covox	98	108 Paradise Software	G-13	COMPUTE PC Games Disk	83
129 Covox	96	180 Parsons Technologies	23	COMPUTE Subscription	73
157 Creative Micro Designs	G-2, G-3	258 P.A.V.Y. Software	G-17	COMPUTE's Best Amiga Utilities	A-25
Damark	79	127 PC Globe	1	COMPUTE's Entertainment Software	
120 DCS Industries	77	200 PFA	G-18	Showcase	57
145 Delphi	30	107 Precision Approach	A-21	COMPUTE's Official Guide Books	71
131 DemoSource	99	212 Professional Cassette Center	62, 63	COMPUTE's SharePak Disk	26
208 DigiTek	A-3	194 Pro-Tronic Systems	A-17	COMPUTE's SharePak Subscription	27
199 Direct Link Software	75	121 Professor Jones	100	Gazette Disk Library	G-39
112 Disks & More	102	168 Psygnosis	51	Gazette Disk Subscription	G-11
116 D&M Software	102	117 Public Domain Software Copying Co.	G-21	Gazette PowerPak	G-23
210 Easy Books Dist.	G-14	163 Radical Eye	A-15	Mean 18	A-29
217 Fin. Serv. Marketing	G-15	104 Radio Shack	20, 21	Omni Subscription	73
173 Future Trends	56	221 Ramco	102	PC Productivity PowerPak	31
152 GEOWorks	17, 18, 19	246 Safeware Ins. Agency	99	The Ultimate Power Disk	85
134 Gladstone Productions	A-11	Schnedler Sys.	G-13		
198 Gold Hill	91	227 Sierra Online	BC		
162 Grapevine Group	A-17	257 Sir Tech	65		
165 Grapevine Group	G-17	109 Smart Luck Computer Systems	102		
166 Grapevine Group	G-12	151 SNK Home Entertainment	7		

game takes place after the War of the Lance in the Dragon Lance game world. You'll come across some of the characters from the Dragon Lance novels in the game, and they'll help you in your quest as nonplaying characters in your party.

As usual, SSI has done an excellent job with the packaging and the instructions. The manuals are well organized, clearly written, and exhaustive in describing the game's options. You get an Adventurer's Journal that includes race and class descriptions, spell tables, journal entries, and bar stories that you must refer to during the game to further develop the plot. A rule booklet explains the options, and a data card gets you started. SSI even threw in a poster of the excellent cover art.

The graphics in *Champions* are very good. Animation and 3-D views spice up the screen and keep your eyes entertained. There are actually four views in *Champions*: combat (an oblique or slanted perspective), outdoor (an overhead perspective), area (an indoor slanted perspective) and 3-D. All of the graphics are colorful and clean, making full use once again of the 64's capabilities.

You'll have no trouble picking up the game system. It's almost entirely joystick-controlled and consists of selecting options from vertical and horizontal menus and lists.

Champions is big enough to keep you occupied for months, but the problems are linear in nature—so you don't need to buy the clue book unless you're really stuck or you hate drawing maps. My hope for the AD & D series is that SSI continues what it has established with *Champions of Krynn*. This is the game SSI really set out to create from the start.

RUSS CECCOLA

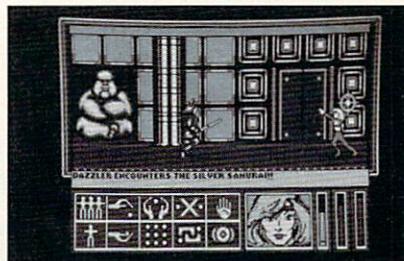
Playability	★★★★
Documentation	★★★★
Originality	★★★
Graphics/Sound	★★★

Commodore 64 or 128—\$39.95

STRATEGIC SIMULATIONS
Distributed by Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171

X-MEN: MADNESS IN MURDERWORLD

One of the most popular titles in the Marvel Comics lineup is *X-Men*. It was only a matter of time before these mighty mutants made their way from the comic pages to home computers. It is only fitting that Paragon Software, the publisher of Amazing Spider Man and Captain America in *Dr. Doom's Revenge*, put together a title revolving around the popular characters. And what a great game it is!



Help the mighty X-Men mutants battle the evil Magneto and Arcade.

In *X-Men: Madness in Murderworld*, you control a group of the more popular X-Men in Marvel Comics' history. X-Men are mutant super-beings who possess different powers. They were discovered by Professor Charles Xavier, a mutant himself who has taken up the job of teaching the X-Men how to use their powers for the good of mankind. In this scenario, Xavier has been captured by the evil Magneto and another dastardly criminal named Arcade. Arcade designed a dangerous amusement park called Murderworld, where the Professor is being held captive. It is up to you to help the team of six X-Men find and defeat the various villains in the Murderworld complex and save the professor.

You control the X-Men with a joystick and select their actions, other than fighting and moving, with a set of icons found at the bottom of the screen. The rest of the screen is taken up with a side view of the currently active mutant in a particular location. The icons are Status, Change to a different mutant, Drop object, Take object, Inventory, Micro-cerebro (check

for nearby evil mutants), Use object, and Use special mutant power.

The game is easy to control but really taxes your exploratory skills. There are over 100 rooms in the game, and many possible paths will lead you to success. The X-Men in the game are Nightcrawler, Storm, Cyclops, Colossus, Dazzler, and the most popular mutant, Wolverine.

There are simple puzzles in *X-Men* that mostly involve using the right object in the right location. Other puzzles require the special power of one of the X-Men. For example, to get through bars, you can become Colossus or Wolverine and use their special power, strength, and adamantine claws, respectively. The best part of the game is being able to assume the role of one of the X-Men. I'm told that in the next Paragon title featuring the X-Men, you'll be able to form a team using any of the many X-Men of past and present. What a game that should be!

X-Men should easily satisfy the many comic book fans who have computers. One problem that should have been corrected is how quickly your power goes down when you're fighting an evil mutant or other creature. There are potions in the game that will restore power, but there are not enough of them throughout the different levels of Murderworld. Other than that, I recommend *X-Men* without hesitation. Now if I could only get to use some of those powers in the real world!

RUSS CECCOLA

Playability	★★★★
Documentation	★★★★
Originality	★★★★
Graphics	★★★

Commodore 64 or 128; joystick—\$34.95

PARAGON SOFTWARE
Distributed by Medalist Software
180 Lakefront Dr.
Hunt Valley, MD 21030
(301) 771-1151

This Publication
is available in Microform.

University Microfilms International
300 North Zeeb Road, Dept. P.R., Ann Arbor, Mi. 48106

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 300,000.

- **Cost Effectiveness**

Ad sizes range from 1/9 (2 1/4 x 3 1/4) to 1/2 page (vertical or horizontal), and you can request frequency rates of up to 12 times per year. Second color is available.

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

East Coast
Caroline Hanlon
(919) 275-9809

Midwest
Barbara Vagedes
(708) 393-1399

West Coast
Lucille Dennis
(707) 451-8209

Call now to reserve your space!

New heights in Realism™.

You're in flight . . . Suddenly out of nowhere, A MIG appears behind you. It's closing fast. Missile alert! You hit



the chaff ejector; break left! Missile launch break right! You shove throttles to Maximum afterburner; jinx left to get into firing position. Now! Gear down! Air brakes! FIRE! Mission accomplished.

Congratulations. You have just entered a new dimension in realism. Whether "threading the needle," or attempting a difficult approach, Maxximum Company products give you the precision you always wanted in computer flying.

Works with your favorite programs. Call the factory for a dealer nearest you.

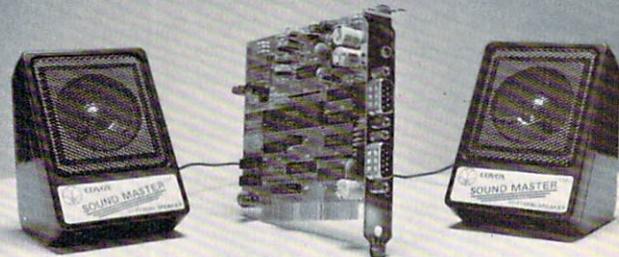


1-800-766-6299

Circle Reader Service Number 139

SOUND MASTER®

THE ONLY SOUND ENHANCEMENT BOARD THAT WORKS WITH ALL PC GAME TITLES



MORE THAN A MUSIC CARD--A LOT MORE!

Sound Master now supports the internal PC sound system! With the support of leading game publishers, Sound Master is compatible with all game titles. Sound Master radically improves your existing PC sound quality! Plus you get an advanced 3-voice music synthesizer and a DMA driven digitizer for real life speech, multi-voice music, and sound effects--just like an Amiga, Apple IIGS, or Tandy 1000 SL/TL/RL. Electronic volume and panning adjustment. True multipart music, speech, sound effects, internal speaker support...all in STEREO! Dual digital input ports (with power and ground) accept Atari, Commodore, and other true game-machine joy-sticks and other "real world" input devices.

A COMPLETE PRODUCT

Speakers included! Or use your own stereo headphones or Hi-Fi system. Comes with demo and utility software. Board installs in minutes into an available slot (not for use with micro-channel bus).

the U.S.A. Covox has been manufacturing audio and voice recognition products for PC's since 1983. Call, write, or FAX for a FREE catalog.

BEST VALUE FOR A PC SOUND CARD--ONLY \$119.95



COVOX INC.
675 Conger St.
Eugene, OR 97402

TEL 503-342-1271
FAX 503-342-1283
BBS 503-342-4135

All Trademarks acknowledged as the properties of their respective owners. Copyright © 1990, Covox Inc. SOUND MASTER is a registered trademark of Covox Inc.

Circle Reader Service Number 137

BLACKJACK COMPUTER



The ultimate card-counting weapon, operated under complete concealment within the casinos. CPU, "magic" shoes, I/O switches, sensors, power supplies. Complete training and support provided. Win consistently with the latest generation of the technology every casino fears the most.

Contact
(714) 865-1191

Circle Reader Service Number 240

VanGo Information Painter

Draw with words, write with colors, make music with pictures. Animate and make it interactive with buttons. No scripting, everything is point and click.

VanGo is a new kind of software that combines many computer functions - word processing and spreadsheet math - animation, paint and drawing - hypertext and virtual reality - even MIDI music!

VanGo uses the character graphics mode of the IBM-PC in an entirely new way to give amazing speed, flexibility and creative potential. You create a world of information landscapes and navigate through it effortlessly, almost like a video game.

Use VanGo to sketch out your ideas, then to effectively present them in an interactive run time package which you can distribute royalty free.

The introductory price of VanGo is \$99. A demo disk is available for \$9. MC/Visa accepted. For all 512K+ IBM-PC compatibles. Mouse required, supports MPU-401 MIDI. EGA or VGA and hard disk recommended.

John Dunn Associates
1960 Kapiolani Blvd. #113-631
Honolulu, Hawaii 96826
(800) 833-6477 or (808) 946-8704

Circle Reader Service Number 115

Mastering Quattro Pro

by Lynn Frantz
ISBN 0-87455-222-2
\$24.95

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 \$24.95 plus \$2.00 shipping and handling (\$5.00 for orders outside the U.S. and Canada) and applicable sales tax (if you live in NC, NJ, or NY) to

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

Please include the ISBN number on your check or money order.

MAR91CP

Circle Reader Service Number 183

Graph-XXX

We've seen the rest... We're the BEST



Actual Graph-XXX Image

SEND CHECK OR MONEY ORDER IN US DOLLARS TO:
STARWARE PUBLISHING CORPORATION
P.O. Box 340203 - DEPT. 12
BOCA RATON, FL 33434
407-479-0588

Must state age over 21

- Requires hard disk to install
- #101 CGA/EGA Combo uses three low capacity floppies
- All VGA disks require high capacity floppies
- Add \$1 per 3.5" disk
- Add \$1 per disk for foreign
- Please include \$3 S&H
- FL residents add 6% sales tax

These HOT graphics are for VGA only

301 -- 23 Heart Stopping GIF Images	14.95
401 -- Brilliant Color - Stunning Resolution	14.95
402 -- Super Photographic Quality	14.95
501 -- "Angel", She's no angel in this movie	14.95
502 -- "Mandy", Sizzling live-action movie	14.95
101 -- CGA/EGA Combo - 3 disks	19.95
102 -- VGA Movie Combo - 501 & 502	24.95
103 -- \$75 Value Pack - all 5 VGA disks	49.95

Circle Reader Service Number 130

Where Adults Come To Play!

ACCESS LA! BBS

- Local Numbers Covering 850 US Cities!
- CB-Style Group and Private Chat!
- 1000's Of Shareware Programs!
- Business and Personal Services!
- National Classified Ads!
- Giant Message Forums!
- 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

Circle Reader Service Number 187

Quick & Easy BOOK SALE

- Q & E Guide to AppleWorks (109-9)
- Q & E Guide to Borland's Quattro (148-X)
- Q & E Guide to dBASE III Plus (107-2)
- Q & E Guide to dBASE IV (206-0)
- Q & E Guide to Desktop Publishing (112-9)
- Q & E Guide to Harvard Graphics (214-1)
- Q & E Guide to Hypercard (187-0)
- Q & E Guide to Learning Lotus 1-2-3 (174-9)
- Q & E Guide to Lotus 1-2-3 Macros (141-2)
- Q & E Guide to Microsoft Excel on the Mac (131-5)
- Q & E Guide to Microsoft Word 3.0 on the Mac (135-8)
- Q & E Guide to Microsoft Word 5 (219-2)
- Q & E Guide to Microsoft Word on the IBM PC (133-1)
- Q & E Guide to OS/2 (137-4)
- Q & E Guide to PC Excel (140-4)
- Q & E Guide to R:BASE System V (132-3)
- Q & E Guide to Using MS-DOS (218-4)
- Q & E Guide to Ventura Publisher (223-0)
- Q & E Guide to WordPerfect Series 5 (181-1)
- Q & E Guide to WordStar 2000 Version 3.0 (168-4)

Total Number of Books _____

X \$8 each equals _____

Sales Tax (NC, NJ, NY residents add appropriate sales tax) _____

Shipping and Handling (\$2.00 each book, \$6.00 foreign) _____

Total Enclosed _____

(Check or Money Order in U.S. funds only, made payable to COMPUTE Publications)

Please Print

Name _____

Street Address _____

City _____

State _____ ZIP _____

Mail this entire coupon to :

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

Offer good only while supplies last.
Please allow four to six weeks for delivery.

MAR91CN8

Mac Books \$10 Each

- ___ C1315 Quick & Easy Guide to Microsoft Excel on the Mac
- ___ C1358 Quick & Easy Guide to Microsoft Word on the Mac
- ___ C1870 Quick & Easy Guide to HyperCard
- ___ C1528 Exploring HyperCard
- ___ C1501 Macintosh WordPerfect Guide
- ___ D0809 Becoming a MacArtist

Total Number of Books (minimum 2 books) _____
 Total Cost of Books Ordered _____
 Sales Tax (NC, NJ, NY residents add sales tax) _____
 Shipping and Handling (\$2 per book) _____
 Total Enclosed _____

(Check or money order, in U.S. funds only, made payable to COMPUTE Publications)

Please Print
 Name _____
 Street Address _____
 City _____
 State _____ ZIP _____

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

Offer good only while supplies last. Please allow four to six weeks for delivery. MAR91CN4

2 Books 10 Bucks

- ___ C0092 Telecomputing on the C-64
- ___ C0610 Machine Language Games for the C-64
- ___ C0947 More Machine Language Games for the C-64
- ___ D0346 First Book of C-64 Games
- ___ D0361 Creating Arcade Games on the C-64
- ___ D037X C-64 Games for Kids
- ___ D040X All About the C-64 Volume 1
- ___ D054X Beginners Guide to C-64 Sound
- ___ D0701 Commodore Collection Volume 2
- ___ D0116 Machine Language for Beginners
- ___ D0531 Second Book of Machine Language
- ___ C0327 Kids and the C-128
- ___ C0335 C-128 Machine Language for Beginners

Total Number of Books (2 book minimum) _____
 × \$5 each equals _____
 Sales Tax (NC, NJ, NY residents add sales tax) _____
 Shipping and handling \$2 per book U.S. only
 \$4 per book outside U.S. _____
 Total Enclosed _____

(Check or money order, in US funds only, made payable to Compute Publications)

Please print
 Name _____
 Street Address _____
 City _____
 State _____ ZIP _____

Mail this entire coupon to:
Compute Books
 c/o CCC
 2500 McClellan Ave.
 Pennsauken, NJ 08109

Offer good while supplies last. Please allow 4 weeks for delivery. MAR91CD2

CLOSEOUTS

For IBM & MS-DOS:

SSI Bargains \$14.50

Phantasie 3, Sons of Liberty, Demon's Winter, Questron 2, Wargame Construction Set, Dragons of Flame, Red Lightning, 1st Over Germany, Heros of the Lance.

More Bargains \$9.50

Apache Strike, Crossbow, GFL Football, Grave Yardage, Leather Goddesses, Mines of Titan, Ocean Ranger, Star Rank Boxing, Take Down, PFS: Access, Honeymooners, President Elect, Tower Toppler, Fortune Investor Library.

TO ORDER, SEND CHECK OR MONEY ORDER TO:

COMPSULT

DRAWER 5160, SAN LUIS OBISPO, CA 93403-5160

Include \$4.00 for shipping charges to U.S. addresses.

CREDIT CARD ORDERS CALL TOLL-FREE

1-800-676-6616

ORDERS ONLY, PLEASE!!!

All other info, including requests for our FREE CATALOG, which includes 100's of additional closeout products Call (805) 544-6616, or write to the above address.

Circle Reader Service Number 220

BEAT THE LOTTERY

28 Lotto Jackpot Winners Have Won \$71 Million Using Gail Howard's Systems!!!

ALL NEW COMPUTER ADVANTAGE™ \$49.50 + \$3 S/H
 The ROLLS ROYCE of Lottery Software!!! Comes loaded with ALL state lottery results. Has 22 Charts and Reports. Incredibly Fast • On Screen Instant Help • Printed Manual.

SMART LUCK COMPUTER WHEEL™ \$39.50 + \$3 S/H
 A MUST for ALL Lotto Players. 252 Valid Lotto Systems.

SMART LUCK COMPUTER WHEEL FIVE™ \$37.50 + \$3 S/H
 220 Systems for pick-5. Has won SIX Fantasy 5 Jackpots!

FULL WHEEL GENERATOR™ \$28.50 + \$3 S/H Use for ALL Lottos. Guarantees a jackpot if you trap the winning numbers in your group. Up to 4 Power #s cuts the cost.

COMPUTER WHEEL AND COMPUTER ADVANTAGE SAVE \$\$\$! With Discount ONLY \$79.50 + \$3 S/H

We ship IBM/comp. 5.25" disk. Add \$1 for EACH 3.5" disk

Smart Luck Software
 Dept. C-6, P.O. Box 1519
 White Plains, NY 10602

1-800-876-G-A-I-L (4245) or 914-761-2333

Circle Reader Service Number 109

COLOR RIBBONS & PAPER

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

Ribbons: price each	Black	Color	T-Shirt Ribbons
Brother 1109	\$4.95	\$5.95	\$ 7.00
Citizen 200/GSX 140	4.50	5.50	7.50
Citizen GSX 140, 4-Color			
Epson MX/FX/RX80/85	3.75	4.50	6.75
Okidata 182/192	5.50	7.50	6.00
Panasonic 1190/1124	5.75	7.75	
Commodore MPS	Call	For	Price
Star NX1000	3.75	4.75	6.75
Star NX1000, 4-Color		6.75	10.00

T-Shirt (Heat Transfer) Ribbons

Colors: Black, Red, Blue, Green, Brown, Purple, Yellow

COLOR PAPER

Color Paper	200 sheets assorted	
Bright Pack:	9 1/2 x 11	\$10.90/pk
Pastel Pack:	9 1/2 x 11	\$ 8.90/pk
Color Certificate Paper:	100 sheets	\$ 9.95/pk
Color Banner Paper:	45 ft. roll	\$ 8.95/pk

Min. orders \$25.00. Minimum S&H \$4.00. Call for other ribbons and supplies. Price and spec. are subject to change w/o notice.

RAMCO COMPUTER SUPPLIES

P.O. Box 475, Manteno, IL 60950 U.S.A.
 (USA) 800-522-6922 or 815-468-8081
 (Canada) 800-621-5444

Circle Reader Service Number 221

DISKS & MORE

2406 W. FRANK #306
 P.O. BOX 3274-DEPT C
 LUFKIN, TX 75903-3274
 (409) 637-6873

DISKETTES:

3.5" DS/DD-25/\$14.95
 3.5" DS/HD-25/\$24.95
 5.25" DS/DD-25/\$ 9.95
 5.25" DS/HD-25/\$14.95

All diskettes include labels.
 5.25" disks include sleeves.

LIFE TIME GUARANTEE

MORE!

Disk Drive Cleaner \$5.95
 Specify 3.5" or 5.25"

Surge & Modem Protector
 Complete 6-Outlet & Single Phone
 line protection. !!

Only \$24.95

FREE SHIPPING

* On Orders \$25.00 or More.
 Under \$25, add \$2.50 S & H
 VISA, MC, CHECKS, & M. O.
 Welcome, CODS add \$3.50.

Circle Reader Service Number 112

\$\$\$ FREE AD \$\$\$

Ask about our FREE* ad offer and how you can stretch your advertising budget with the PRODUCT MART.

* 1/9 page beginners rates your company can afford

* FREE reader service number

* 2nd color availability

* Designated shoppers' section for PC direct marketers—like you!

Call for more information and to reserve your space:

East Coast—919-275-9809

Midwest—708-393-1399

AR, LA, OK, TX—214-521-6116

West Coast—707-451-8209

* Four ads for the price of three—limited-time offer for qualified advertisers.



SeXxy Software

CONNOISSEUR COLLECTION

ALL NEW! In 256 Color VGA!!

SeXxy 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!

SeXxy Disk #CC2 - THE FIRST SOUND MOVIE!
 The first computer erotic movie with SOUND. See the incredible 256 color VGA graphics while hearing the actual dialog. OURS EXCLUSIVELY!

SeXxy Disk #CC3 - THE BEST MOVIE!
 The best computer movie available. Only for the serious collector. 256 stunning VGA colors.

1 Set - \$29, 2 Sets - \$49, 3 Sets - \$65
 All CC Disks Require VGA monitor and hard disk — over 1 MB of action.

ADD \$3 S/H • 3.5" OR FOREIGN ORDERS
 ADD \$2/DISK • IN PA ADD TAX

VISA/MC Orders only
 800-243-1515 Ext. 600FF

24 HOURS/7 DAYS • MUST STATE AGE OVER 21
 Or check/MO to: SeXxy Software,
 2880 Bergey Rd., Dept. 600FF, Hatfield, PA 19440

THE COMPETITION ISN'T EVEN CLOSE!!

Circle Reader Service Number 116

*** POWERFUL PC-BASED VOICE MESSAGING ***

Within your Computer resides the ability to provide unequalled PC-based Voice Messaging! MESSAGE DELIVERY, CALL TRANSFER, AUTO-ATTENDANT, CALL LOGGING, MESSAGE FORWARDING, INBOUND AND OUTBOUND TELEPROCESSING with DATE/TIME STAMP, DTMF INPUT FOR CREDIT CARD ORDERS, CALL DISTRIB., VOICE MAILBOXES, PAGER TRANSFER, DTMF INPUT TO SEARCH FOR VOICE MAIL SUBSCRIBERS AND/OR YOUR PRODUCTS BY NAME...AND MORE! Try it for yourself! Call our 24 Hour Interactive Voice Demonstration Line at (603)-588-7171.

COMPUTER TECHNOLOGIES ONLINE, INC. Route 47, Bennington, NH 03442 (603)-588-3100. MC/VISA/C.O.D.. [24 HR MULTI-NODE BBS WITH COMPLETE ONLINE ORDERING FACILITIES OF OVER 2,000 BRAND NAME PRODUCTS, LIVE GAMES, PRIZES! (603)-588-6678]. 24 HOUR FAX: (603)-588-2434

*** OUR SEVENTH YEAR ***

Circle Reader Service Number 251

VOICE MAIL MONEY-MAKER

Generate hundreds of dollars monthly in your spare time by adding our *BigMouth* voice mail card and menu-driven software to your existing IBM-clone 286/386 computer.

Use it to answer your office telephones, rent voice mail boxes/pagers, or sell inside information using a major credit card, assigned password, or a 900 pay-per-call hotline.

Add the optional Goldmine module and your *BigMouth* will automatically generate outbound phone calls to friends, existing clients, or new business prospects for sales and telemarketing purposes.

You can even develop your own custom software programs in "C", Basic, Pascal, or Clipper. VARS are welcome.

BigMouth arrives complete with software, external speaker, installation manual, and start-up guide. To place an order or to learn more anytime call toll free: 1 800 283-4759.

ID# 1840 Bigmouth \$299.99 • ID# 1841 Goldmine \$99.00
Entrepreneurs Toolkit \$25.00 (credited on future purchases)



24-Hr Demonstration Hotline
1 818 772-7729
Press 5 for Samples



DemoSource 8646 Corbin Avenue • Northridge, CA 91324

Circle Reader Service Number 131

FREE -15 DISKS - FREE FULL OF GREAT SOFTWARE

TRY US!

Get 15/5.25" or 6/3.5" disks of our **VIRUS-FREE** bestselling Games, Business, Graphics, Education,, Programmers' Utilities, Finance, and Desktop publishing software. **PAY ONLY \$5.00 FOR SHIPPING satisfaction guaranteed**

IBM® APPLE® APPLE GS®
MAC® AMIGA® ATARI®

SMC SOFTWARE PUBLISHERS
ORDER TODAY - CALL



619 942-9998



since 1985

Circle Reader Service Number 241

COMPUTERINSURANCE PLUS

- + Replacement with no depreciation
- + Covers computer hardware in home or office
- + Easy to read policy
- + Bonus 20% for software coverage
- + Low \$50 deductible
- + Covers theft, fire, power surges, accidents, natural disasters, even earthquakes and flood
- + Policy backed by an A+ company

THE COMPUTERINSURANCE AGENCY, INC.

6150 Old Millersport Road, NE
Pleasantville, OH 43148
Hours: 10 a.m. to 6 p.m.

1-800-722-0385

Circle Reader Service Number 246



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

s-T-R-E-T-C-H

your floppy disks with
MAXI Disk

Are you tired of running out of space on your MS-DOS floppy disks? **MAXI Disk** is an easy to use software utility that can give you **420k** on a 360k drive, **800k** on a 720k, **1.4 meg** on a 1.2 meg and **1.6 meg** on a 1.44 meg. Of course, **MAXI** also formats normal DOS disks (360/720/1.2/1.44). Requires DOS 3.20 or later.

\$19.95 (US), \$22.95 (CDN), plus \$2.00 postage & handling from:

Herne Data Systems Ltd., Box 250
Tiverton, ON, CANADA, N0G 2T0

Voice or FAX (519) 366-2732

Circle Reader Service Number 113

Learn To Modify ANY Software

Powerful Disassembler

\$49

Snooper takes incomprehensible program code and turns it into assembly language source code. That's not so unique, but **Snooper** is an intelligent disassembler that automatically comments each line of code and labels jump targets. **Snooper** uses multiple passes and algorithms to identify data areas with exceptional accuracy.

Help	File	Disassemble	Search	Print	Quit
Format: All Processor: 8086/87 no patches					
mov	WORD PTR [bp-04]	ax		:00713	
les	bx, DWORD PTR [bp+22h]			:00716	
call	s9: <007b>			:00719	
jb	b00720:0071c			:Jump if c (no sign)	
jmp	short b00724			:0071e	
inc	dx			:00720	
jmp	short b00791			:00721	

db	90			:00723	

push	ax			:00724	
les	bx, DWORD PTR [bp+16h]			:00725	
mov	ax, WORD PTR es:[bx]			:00728	
dec	ax			:0072b	
les	bx, DWORD PTR [bp+12h]			:0072c	
mov	cx, ax			:0072f	
mul	WORD PTR es:[bx]			:00731	
push	ax			:00734	
push	dx			:00735	
mov	ax, cx			:00736	

Snooper comments each line of code

Patcher Included

Snooper also has a patcher, allowing you to make modifications to software without time-consuming reassembly and linking. **Snooper** even disassembles your changes and shows them on screen before writing your patches to disk. For more extensive changes, **Snooper** produces code fully compatible with Microsoft MASM and Borland Turbo Assembler.

Snooper correctly interprets all instructions for the 8086, 8088, 80186, 80286, 80386, 8087, 80287, and 80387 processors. It identifies interrupt calls and port addresses.

So what's this good for? Well it's certainly the best way around to learn assembly language programming. And it's the best way to make changes to software when you don't have the source code.

30 Day Money-Back Guarantee.
Catalog #SNPR, \$49. Order Now.



Serving Computer Users Since 1982

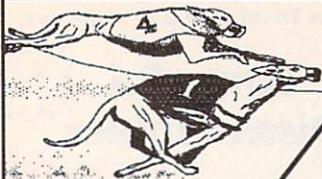
1-800-456-4123

330 Central Avenue • Fillmore, CA 93015
(805) 524-4189 • 24 Hour FAX (805) 524-4026

Add \$5.50 S&H. CA res. add tax. Ad Code: 138-2

Circle Reader Service Number 159

Thoroughbred•Greyhound•Trotter/Pacer



"Highest rated handicapping software since 1983"

PROF. JONES INC.

PROFESSIONAL HANDICAPPING SYSTEMS™

Available at your local software dealer or call for information and a **FREE CATALOG.**

DEMO DISKS
\$5.00
(refundable)

1-800-553-2256

1940 W. State St., Boise, ID 83702

Football•Baseball•Basketball•Lottery

Circle Reader Service Number 121

2 Books 15 Bucks

- 40 Great Flight Simulator Adventures (C022X)
- 40 More Great Flight Simulator Adventures (C0432)
- Flying on Instruments with Flight Simulator (C0912)
- Jet Fighter School (C0920)
- Learning to Fly with Flight Simulator (C1153)
- The Electronic Battlefield (C117X)
- Sub Commander: Tactics and Strategy for WWII Submarine Simulations (C1277)
- Gunship Academy: Tactics and Maneuvers for Attack Helicopter Simulations (C1536)
- Realistic Commercial Flying with Flight Simulator (C1692)
- 40 Great Submarine Simulator War Adventures (C1722)

Order your copies today. Minimum 2 books per order. Shipping and handling \$1 per book (\$5.00 for orders outside U.S. and Canada).

Send check or money order (in U.S. funds only) and appropriate sales tax (if you live in NC, NJ, and NY) to:

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

Please include ISBN number on your check or money order. Offer good only while supplies last. Please allow four to six weeks for delivery.

MAR91CP4

Earn \$4,000 Per Month From Your Home With A Computer!



FREE CBS 286 Computer

Start part-time with potential earnings of \$10,000 or more per month. This is a proven turn key business an individual or couple can run. If you purchase our software and business program, we will give you the computer and printer. If you already own a computer, you may receive a discount. You do not need to own, or know how to run, a computer — we will provide free, home office training. Financing available.

To receive a free cassette 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 230

What The Casinos Don't Want You To Know About Video Poker!



Features:

- On-line strategy advice
- Full session statistics
- Tip-rich 40-pp. manual
- Vivid sound & graphics

Here's all the fast-paced excitement of casino poker slots in a program that challenges your skill. Find out what cards to hold and why. Test strategies with the Simulator. Experiment with options — bet units, coins played, pay-off rates. Even print a guide to take to the casino if you go!

"... one of the most complete programs to be released. [It] is the light at the end of the tunnel." The Player, Dec. 1990

Only \$49.95 (add \$4 s/h; PA res. +\$3.24 tax)

For VISA/MC ORDERS call toll-free:

1-800-828-2259 x410

Info: 215-449-9767 Fax: 215-789-1672



LWS SOFTWARE
Dept. 4C • P.O. Box 688
Broomall, PA 19008

IBM PC or compatible; 512K; VGA, EGA, CGA or Mono.

Circle Reader Service Number 128

Problem Solving with PC Tools

by Lynn Frantz
ISBN 0-87455-192-7
\$21.95

PC Tools Deluxe version 5 is the best-selling memory-resident utility program. With our handy reference book, you'll learn how to protect data files; how to find, move, copy, rename, view, and print data with ease; and how to manage a mountain of files, directories, and disks. There are special tips and shortcuts to simplify work, including many ready-to-use macros and design suggestions. The book also includes extensive charts and tables. 512pp

Order your copy today.

Send \$21.95 plus \$2.00 shipping and handling (\$5.00 for orders outside the U.S. and Canada) and sales tax (if you live in NC, NJ, or NY) to

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

Please include the ISBN number on your check or money order.

MAR91CP

Reach more than
300,000 readers
each month
with an ad in
PRODUCT MART.

CLASSIFIEDS

SOFTWARE

SHAREWARE & FREE PD (IBM or C64 please Specify). FREE catalog or \$1 for Sample disk. (ASP Vendor) RVH Pub. 4291 Holland Rd. Suite 562-C, VA Beach, VA 23452.

A MUST FOR DIET CONSCIOUS PEOPLE! Diet-wise/energy wise diet analysis and fitness IBM software. \$49-\$120. Nutritional Data (800) NDR-DIET (216) 951-6593 OH.

METAPHYSICAL SOFTWARE C64/128! New Age, psychological, sexual programs. Request FREE demo disk & catalog. \$3.00 p/h. METATOOLS, PO Box 8027, Santurce, PR 00910.

GREATER MIDWEST MICRO SOURCE - Your BEST SOURCE of IBM Comp Shareware & Supplies for FREE Catalog write to GMMMS Dept. CPT, 2200 180th Ave. NW, Andover, MN 55304.

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

ADULT SOFTWARE: Amiga-IBM VGA. Free Lists. Specify Type. Large selection, low prices. Please state age (18+ only). CLEARLIGHT, DEPT. CO, PO BOX 1411, Milwaukee, WI 53201

FREE! IBM PD & SHAREWARE DISK CATALOG Specify 5 1/4 or 3 1/2. Low prices since 1988! ASP APPROVED VENDOR, Finto Software, Dept M, RT 2 Box 44, Rosebud, TX 76570

BUY/SELL Used software! Lowest prices. Free list. Specify 64/128 Amiga. Centsible Software, PO Box 930, St. Joseph, MI 49085. 616-982-0327

FREE CATALOG FOR COMMERCIAL SOFTWARE Apple, Amiga, Com., IBM. Disk-Count Software, P.O. Box 3, Carteret, NJ 07088, 1-800-448-6658 BATTLETECH 2/BATTLECHESS 2, JAMES BOND \$29. SOUNDBLASTER \$149. (DEALER PRICE AVBL).



WIN LOTTO MILLIONS!

NEW DOS RELEASE!

YOUR LOTTERY IS BIASED! Un-

intentionally certain number patterns

will be selected with a greater frequency

than others. LOTTO PICKER 3 will uncover &

exploit these biases & tell you which numbers to

play—no guesswork required! GUARANTEED to work

for all lotteries worldwide or your MONEY BACK! WHEEL-

ING now included in DOS version! BEAT THE LOTTERY

TODAY! \$39.95 (+2.55 s/h), 3.5" add \$5. Ver. 2.1 for Apple

II & C64/128. NY add tax.

ORDER TODAY! 1-800-835-2246 x 121

GE RIDGE SERVICES, INC., 170 Broadway,

Suite 201-CP, New York, NY 10038

Info/Dealers 718-317-1961.



Call
708-393-1399
for
Classified Ad
Information

BOOKS

TANDY 1000-SUBSCRIBE TO "ONE THOUSAND"-the magazine for your Tandy 1000. Send \$2 for sample or \$24 for one year (12 issues plus free software disk) to One Thousand, Box 1688A, Maryland Heights, MO 63043-0688.

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

BUSINESS OPPORTUNITIES

EARN \$4000/MONTH FROM YOUR HOME WITH A COMPUTER

Start part-time with potential earnings of \$10,000 or more per month. You do not need to own or know how to run a computer—we will provide free training. If you purchase our software we will give you a computer and printer. Complete financing available. To receive a FREE 2-hour Cassette and Color Literature. CALL:

Computer Business Services

1-800-343-8014 X303

317-758-4415

GET PAID for mailing letters!
\$200.00 daily

No exp. Write: PAASE-E06,
161 Lincolnway, N. Aurora, IL 60542

GUARANTEED TO MAKE YOU MONEY! Begin a homebased MULTI-LEVEL MAIL ORDER MARKETING BUSINESS. Send \$2 for COMPLETE program to: Capital Concepts, 7229 Crestwood Ave, Jenison, MI 49428.

Let the government finance your new or existing small business. Grants/loans to \$500,000. Free recorded message: 707-449-8600. (KS7)

HOW TO MAKE THOUSANDS OF \$\$\$ with your own part-time HOME COMPUTER BUSINESS. Will teach & help you setup. Send \$1 for INFO, Box 1442-A13, Orange Park, FL 32067.

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

COMPUTER REPAIR

AUTHORIZED COMMODORE REPAIR CENTER. C64, 128, Amiga & PC, 1541. Drive alignments \$39.95. 48-hr. turnaround, free UPS. Software City, 901-C N. Wendover Rd., Charlotte, NC 28211 (704) 362-2154.

Auth. Comm. repairs C64/128, 1541/1571, SX64, 128D, & Amiga. Selling DTK-IBM comp. comtrs. Quick Serv. 30 dy wrnty. MOM & POP's Computer Shop, 114 N. 16th, Bethany, MO 64424 816-425-4400.

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

MISCELLANEOUS

EMI's Password Breaker parameter disk now available. \$24.95. Includes TMNT Grave Yardage and Secret of the Silver Blades +7 others. Place your order today: 813-841-8769.

P.C. MODEM CLUB Correspond w/ Enthusiast or Business, hobbies or common interests LINK/UP with Creative individuals, Free details. Box 4534, Waterbury, CT 06704.

SAVE TO 70%—MASTER/VISA—(800)-654-2132 100'S OF PRINTERS/TYPENRITERS SUPPORTED PANASONIC (MOST MODELS) . . . AS LOW AS \$3.37 EPSON (MOST MODELS) . . . AS LOW AS \$3.57 IMAGEWRITER II . . . AS LOW AS \$2.67

COMPUTE Classified is a low-cost way to tell over 275,000 micro-computer 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 boldface words, or \$50 for the entire ad set in boldface (any number of lines.)

Terms: Prepayment is required.

Form: Ads are subject to publisher's approval and must be either typed or legibly printed. One line equals 40 letters and spaces between words. Please underline words to be set in boldface.

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. Preferred supplied material is Velox or PMT.

HOW TO ORDER

To place an ad, send order and payment to Barbara Vagedes, Classified Manager, COMPUTE, 29W382 Candlewood Lane, Warrenville, IL 60555, or call Barbara Vagedes 708-393-1399, FAX 708-393-1489.



HOTWARE

SOFTWARE BESTSELLERS FROM AROUND THE COUNTRY

HOME PRODUCTIVITY

- 1. Quicken 4.0**
Manage your finances.
Intuit
IBM
- 2. The New Print Shop**
Make signs, cards, banners, and more.
Broderbund
Apple II, Apple IIs, Commodore 64/128, IBM, Macintosh
- 3. The New Print Shop Companion**
Expand your *Print Shop* graphics collection.
Broderbund
IBM
- 4. Quicken 1.5**
Manage your finances on the Mac.
Intuit
Macintosh
- 5. Express Publisher**
Powerful desktop publishing at an affordable price.
Power Up
IBM
- 6. Managing Your Money**
Allocate your income.
MECA
Apple II, IBM, Macintosh
- 7. Calendar Creator Plus**
Create many different calendars.
Power Up
IBM, Macintosh
- 8. My Advanced Mail List**
Track your friends and clients.
My Software
IBM, Macintosh
- 9. Microsoft Works**
All-in-one productivity.
Microsoft
IBM
- 10. Address Book Plus**
Keep track of your addresses.
Power Up
IBM, Macintosh

HOME ENTERTAINMENT

- 1. Entertainment Pack for Windows**
Open new windows on fun.
Microsoft
IBM
- 2. SimCity**
Run the world's first simulated city.
Maxis
Amiga, Commodore 64/128, IBM, Macintosh
- 3. ChessMaster 2100**
Board strategy that isn't boring.
Electronic Arts
Apple II, Apple IIs, Commodore 64/128, IBM
- 4. Wings of Fury**
Fly a World War II Hellcat fighter.
Broderbund
Amiga, Apple II, Commodore 64/128, IBM, Macintosh
- 5. Wing Commander**
Take off for interstellar combat action.
Origin
IBM
- 6. Flight Simulator**
Head for the wild blue yonder.
Microsoft
IBM, Macintosh
- 7. Flight Simulator Aircraft & Scenery Designer**
Design your own plane.
Microsoft
IBM
- 8. Stellar 7**
Classic arcade action brought into the 1990s.
Sierra On-Line
IBM
- 9. Command HQ**
The balance of power is in your hands.
MicroProse
IBM
- 10. Test Drive III**
Pass even the fastest cars.
Accolade
IBM

HOME LEARNING

- 1. Mavis Beacon Teaches Typing**
Learn to touch-type.
Electronic Arts
Apple II, Apple IIs, Commodore 64/128, IBM, Macintosh
- 2. The Playroom**
Kids explore and learn on their own.
Broderbund
IBM
- 3. Where in Time Is Carmen Sandiego?**
Can you find Carmen in time?
Broderbund
IBM
- 4. Where in the USA Is Carmen Sandiego?**
The chase moves to the USA.
Broderbund
Amiga, Apple II, Commodore 64/128, IBM, Macintosh
- 5. Reader Rabbit**
Helps children learn to read.
The Learning Company
Apple II, Commodore 64/128, IBM, Macintosh
- 6. New Math Blaster Plus!**
Teaches basic math concepts.
Davidson & Associates
Apple II, Apple IIs, IBM
- 7. The Children's Writing & Publishing Center**
Desktop publishing for kids.
The Learning Company
Apple II, IBM, Macintosh
- 8. Donald's Alphabet Chase**
ABC's around the corner.
Disney
Apple II, Commodore 64, IBM
- 9. Math Rabbit**
Build early math skills.
The Learning Company
Apple II, Commodore 64/128, IBM, Macintosh
- 10. Outnumbered!**
Super Solvers is back.
The Learning Company
IBM



COMPUTE's Hotware lists were prepared by Egghead Discount Software and are based on retail sales of Apple II, IBM, and Macintosh software from September 15 through October 13, 1990, at 188 Egghead stores in the United States and Canada.



Ad Lib Sound. Listen, and you'll never see your games the same way again.

SCR-E-E-E-CCH!! Your wheels lock up and squeal as you fly into the hairpin turn.
 BA-BOOM... BA-BOOM! You bob and weave furiously to avoid the deafening and deadly anti-aircraft guns.
 TA DA-DA DAAA! And that black hole seems a whole lot darker with this music playing.

What?! You mean your games don't sound anything like this? Then listen up, because you need the Ad Lib Card. It's the digital synthesizer card that makes your games come alive!

Check this out. Ad Lib brings room-filling music and a huge range of digitized and synthesized sound effects right to your favorite PC games.

No more beeps and buzzes—the Ad Lib Sound is rich and full.

In fact Ad Lib sounds so awesome, it's become the industry standard for PC games. Today's top publishers are creating fantastic new games using Ad Lib Sound right now. But accept no substitutes—because when it comes to sounding great and working with the hottest games, no one can touch Ad Lib.

Look for ads and games that have the "Ad Lib Sound" sticker and logo at your software dealer. Or call us for the ever-growing list of games with spectacular Ad Lib Sound at 1-800-463-2686.

Add the missing dimension to your games with the Ad Lib Card. Then get ready to open your ears, and blow your mind.



AdLib®

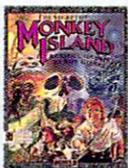
Ad Lib Inc., 50 Staniford Street, Suite 800, Boston, MA 02114. 1-800-463-2686 in U.S. or Canada. 1-418-529-9676 International. Fax: 1-418-529-1159.

New Games with Ad Lib Sound.

Here are just some of today's hottest games that use the Ad Lib Card:



LIVE Studios®
 FUTURE CLASSICS®
 COLLECTION



Lucasfilm's The
 Secret of Monkey
 Island



Electronic Arts'
 Stormovik: Soviet
 Attack Fighter SU-25



Virgin
 Mastertronic's
 SPOT™



MicroProse's
 Lightspeed



DigiTek's
 DINOWARS

System Requirements: IBM® PC, XT, AT, 386, 486 or compatible with 256K RAM, DOS 2.0 or higher, CGA, EGA, VGA or MGA, and headset or external speaker.
 © 1990 Ad Lib. Ad Lib is a registered trademark of Ad Lib Inc. IBM is a registered trademark of International Business Machines Corporation.

Circle Reader Service Number 214

"I can't say how much it hit me to be sitting up there, a couple of miles high, looking down on the battlefield, in fact, on four or five battlefields, and sweeping them all in one glorious bird's-eye view."

World War I Pilot

Red Baron™

It goes without saying that a good flight simulator recreates, in perfect detail, the elements that make an aircraft what it is — elements such as flight characteristics, weaponry, and the ability to sustain damage. To do less would be an affront to simulation purists everywhere.

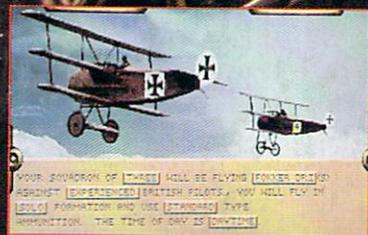
Red Baron takes the experience one step further by recreating not only the obvious details, but the *flavor* of the time. The humanity, the romance, the emotion that once filled the hearts of "those daring young men in their flying machines." It takes you backward in time to an age when aviation was in its infancy, and young pilots such as Eddie Rickenbacker, Billy Bishop and Manfred von Richthofen took to the air and invented the skills that would keep them alive. A time when fighter pilots of all nations formed a brotherhood that transcended allegiance. These men were the last true heroes — the legendary Aces.

Red Baron is more than a good flight simulator. It's an opportunity for you to discover what it was *really* like to be a fighting Ace in the war that launched aerial combat — World War I.

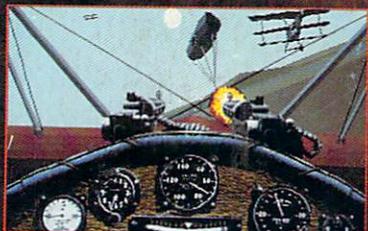
Dynamix®
PART OF THE SIERRA FAMILY

a registered trademark of Dynamix © 1990 Sierra On-Line, Inc.

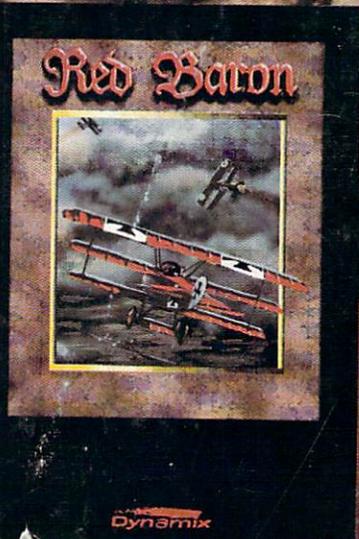
Circle Reader Service Number 227



28 different aircraft, intelligently modeled after historical Aces, randomly generated missions, and digitized artwork.



Fly on either side of the war. Save, replay and change your games with the Mission Recorder.



Dynamix

Order *Red Baron* From Your Local Software Dealer, Or Call The Department Toll Free At (800) 326-6654. Outside The U.S., Call