

Program of the Month  
Computerized Calendar

The Home User's Guide to Commodore Computing

U.S.A. \$2.95  
Canada \$3.50  
A CWC/I Publication  
January 1985

# RUN

## CREATE YOUR OWN GAMES

Programming Magic at  
Your Fingertips



Let There Be Light Pens

Valuable Disk Tips  
for Beginners

Avoid the Pitfalls of  
Printer Shopping

Plus: Commodore's  
Newest Printer

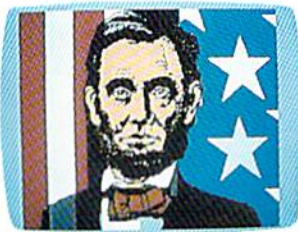


www.commodore.ca  
74 270 No 20691 Without Permission

DONALD  
DEMERS

# “Finally an easy-to-use program that really makes use of the great graphics capabilities of the Commodore 64.”—RUN

“Doodle! is a good value with a wide range of features. It'll show you a lot about the graphics capabilities of your Commodore 64.”—RUN



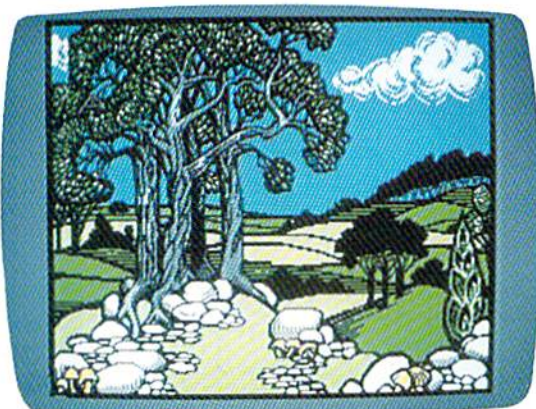
“Doodle! is a very good buy and an exceptional program to work with. The manual is well-prepared and easy to follow. If you get lost or make errors, Doodle! is very forgiving.”

—RUN



“The samples included are truly breathtaking. Never before has the Commodore 64 looked so good! The reasonable price makes it one of the bargains of the year!”

—Software Shopper



“This is the finest art program for its price that I've tested.”

— St. Petersburg Times Software Reviews

**ACTUAL PHOTOS OF COMMODORE MONITOR.**

## UNLOCK YOUR CREATIVITY!

**DOODLE!** the most powerful, versatile graphics program ever created for a popular computer.



COMMODORE 64  
COLOR SKETCH PAD

By Mark R. Rubin

DOODLE! the exciting graphic program acclaimed by thousands of Commodore 64 users!

DOODLE! turns your computer into a tool for unlimited design and artistic creativity! Regardless of your age or artistic skill, create anything you can imagine... from sketches to houseplans, to fine art, to business forms or letterheads that you can run off on your printer! Precise trackball or joystick operation, high-resolution graphics, program flexibility, and super ease of use add up to the friendliest, most versatile graphics program ever created for the Commodore 64.

**DOODLE! will sketch, color, fill, zoom, line, box, circle, and more. Plus things no other software will do.**

### PRINT.

DOODLE! prints copies at the touch of a key. Print designs, charts, forms, text, anything! Works with most popular printers.



### STAMP.



Create up to 9 of your own “rubber stamps”—great for plan drawing or graphic design!

**OKIMATE** compatible.

Print your DOODLE! in 16 colors with Okidata's new color printer.

### LETTER.



DOODLE! lets you type in keyboard graphics, letters and numbers in any size and any direction!

### SAVE.

Store your DOODLE! on disk for later recall or revisions.

### COPY.



Duplicate, squeeze, rotate, reduce, enlarge, stretch, or reposition your DOODLE! (or any part of it) onscreen.

\$39<sup>95</sup> on disk

**City Software**

735 W. Wisconsin Ave., Milwaukee, WI 53233

Commodore 64 is a registered trademark of Commodore Electronics, Ltd.

Circle 109 on Reader Service card

For information, to order, or for the name of your nearest dealer, call 1-800-558-1008. In Wisconsin, call collect 414-291-5125. Dealer and Distributor inquiries invited.

© 1984 City Software Software © 1984 Mark R. Rubin & OMNI Unlimited

# Quick.

How many plates can the Juggler juggle?



## Chinese Juggler

That depends on you. You are the Juggler and your act is the delicate art of plate spinning. Yours will be a tough act to follow if you succeed in matching colors and spinning plates on all 8 poles at the same time.

As your skill increases, so does the pace and the challenge of the game. You must act with speed and precision or the curtain will come down and your act will be all washed up!

Chinese Juggler is a refreshing departure from the usual shoot-em-ups and strategy games. It's fun, fast-paced and will delight players of any age. For Commodore 64. New from Creative Software.

**\$24.95**

How do you moonwalk, snake and tut?



## Break Street

You'll soon become a break dancing expert with our latest bestseller, Break Street. Now that combination of gymnastics, mime, funk, and just plain show-off, leaves the sidewalks and comes home to your Commodore 64.

Individual play guides you through the footwork of moonwalk, backspin, windmill, tut, and the rest of those sidewalk moves. Slow motion and lively musical accompaniment help you perform each move step by step. String together a whole series of moves and record them for future replay.

Catch the beat of the street with Break Street. For individual or team play. New from Creative Software.

**\$24.95**

**The answers are at your finger tips.**

What's the capital of Alaska?



## Roll Call USA

Do you know? Get ready to outwit your family and friends with Roll Call USA's fun facts on states, capitals and major industries.

Roll Call USA combines history and geography facts into a colorful question and answer game that challenges your knowledge of the 50 states, their capitals, major industries and statehood dates.

Feel confident? Drill yourself with a Flash Test. The game is speeded up, so think fast. Your answers are tallied up at the end for a final score.

Roll Call USA, a game of USA trivia for team or individual play. For Commodore 64. New from Creative Software.

**\$14.95**

Call and order today! Use your Visa, MasterCard or personal check. Toll Free **1-800-331-7990** (outside California), **1-800-448-1001** (in California), or **1-408-745-1655**. **MONEY BACK GUARANTEE**. If not completely satisfied, return within 10 days for full refund.

"Commodore 64" is a trademark of Commodore Electronics, Ltd.

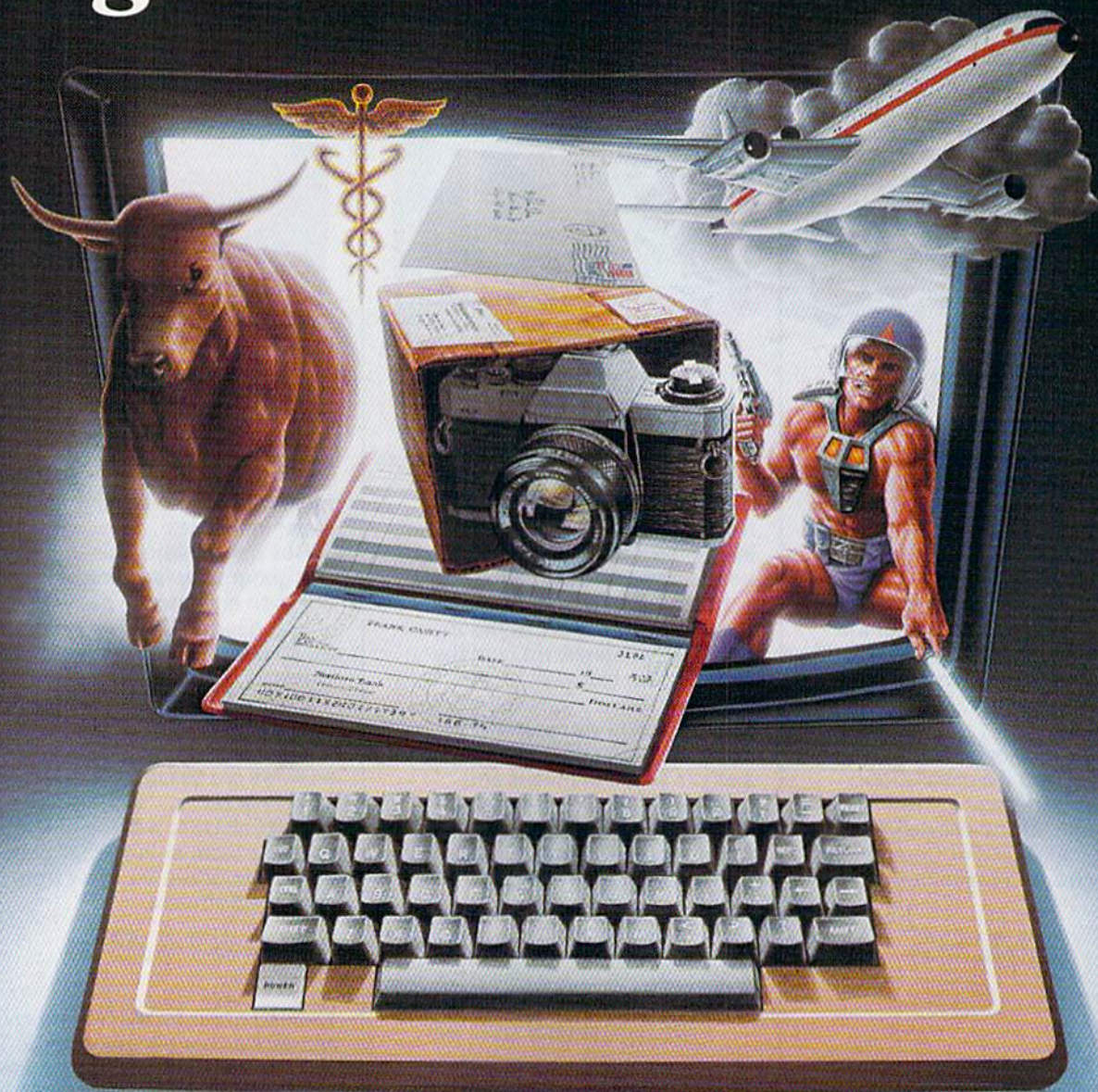
Circle 76 on Reader Service card.

**C R E A T I V E S O F T W A R E**

230 East Caribbean Drive, Sunnyvale, CA 94089

©1984 Creative Software

# We don't care which computer you own. We'll help you get the most out of it.



## CompuServe puts a world of information, communications, and entertainment at your fingertips.

CompuServe is the easy to use videotex service designed for the personal computer user and managed by the communications professionals who provide business information services to over one fourth of the Fortune 500 companies.

Subscribers get a wealth of useful, profitable, or just plain interesting information like national news wires, electronic banking and shop at home services, and

sophisticated financial data. Plus, a communications network for electronic mail, a bulletin board for selling, swapping, and personal notices and a multi-channel CB simulator.

You get games on CompuServe, too. Classic puzzlers, educational, sports and adventure games and fantastic space games featuring MegaWars, the "ultimate computer conflict."

The videotex service for you, no matter which computer you own. To buy a Starter Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call or write:

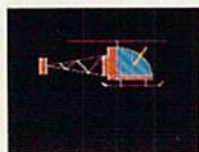
## CompuServe

Consumer Information Service, P. O. Box 20212  
5000 Arlington Centre Blvd., Columbus, OH 43220  
**800-848-8199** In Ohio Call 614-457-0802  
An H&R Block Company  
Circle 64 on Reader Service card.

# SUDDENLY,

## YOU CAN DRAW ANYTHING ON YOUR COMMODORE 64™!

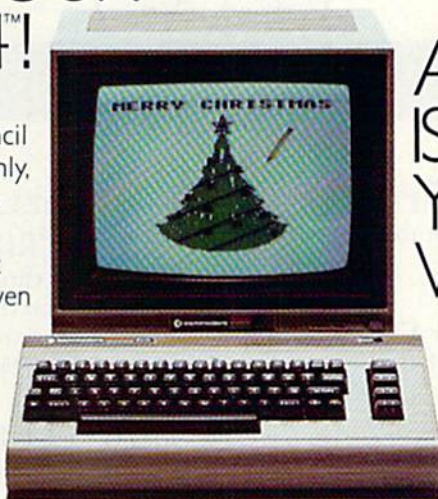
Put The Designer's Pencil in your hands. And suddenly, using only a joystick, you can command all of your computer's graphic abilities. You don't even have to be able to draw, because the computer does



it for you. And The Designer's Pencil doesn't just doodle around. It uses a revolutionary, simple programming technique called Prog™ to create actual computerized graphics... an infinite number of spectacular designs. You'll be able to feel the same challenge and satisfaction experienced by Activision designers when they create new software for your



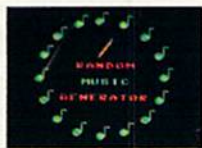
Commodore 64. Every command appears right on the screen as shown here. Just choose what you want to do, then watch as the computer carries out your every wish.



## AND IF THAT ISN'T MUSIC TO YOUR EARS, WRITE A TUNE.

The Designer's Pencil also lets you program musical compositions to accompany your visual masterpieces.

Again, everything you need appears right on the screen—just choose your notes, then sit back and let your computer serenade you. It's a delight for your ears as well as your eyes. The Designer's Pencil will amaze you with its powers—and yours.



**NOW PICTURE YOURSELF A WINNER.** How creative can you be? We can't wait to see. Use The Designer's Pencil to create your wildest fantasies, then enter the results in The Designer's Pencil \$10,000 Contest. Details in every specially-marked package.

Designed by Garry Kitchen.

### THE DESIGNER'S PENCIL™



## ACTIVISION

Commodore 64™ is a trademark of Commodore Electronics, Ltd. © 1984, Activision, Inc.

Circle 5 on Reader Service card.

January 1985

# RUN

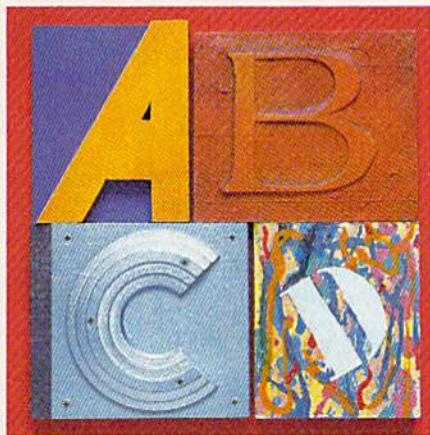
Vol. 2, No. 1

## FEATURES

- 22 **TRAPPED IN THE MAZE**  
Create your own mazes with this tutorial.  
By *JAMES MILLER*
- 30 **WRITING WORD GAMES**  
This article provides you with outlines to three games, to get you started on your way to writing your own games.  
By *M.J. WINTER*
- 34 **SMOKING JOE**  
Here are six tricks to make you a more creative sprite programmer.  
By *MARK JORDAN*
- 40 **QUATRO**  
This game adds a new dimension to tic-tac-toe.  
By *SOL STEINBERG*
- 48 **DON'T FORGET!**  
Here's the perfect program for people with a busy schedule and a bad memory.  
By *RICHARD LOVETT*
- 56 **SELECTING THE RIGHT PRINTER**  
A candid look at some of the available printers and their accessories, so you'll know what's best for you.  
By *JIM STRASMA*
- 80 **THREE PRINTERS FROM COMMODORE**  
Reviews of Commodore's new daisywheel letter-quality printer, the DPS-1101, and their new dot-matrix printers, the 1526 and the MPS-803.  
By *TOM BENFORD*
- 86 **DISK TIPS FOR BEGINNERS**  
Practical tips to help you better manage your disks.  
By *KARL T. THURBER, JR.*
- 98 **LET THERE BE LIGHT PENS**  
Find out what light pens are, how they work and what they can do for you.  
By *SHARON ZARDETTO AKER*

*RUN* (0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly by CW Communications/Peterborough, Inc., 80 Pine St., Peterborough, NH 03458. U.S. subscription rates \$19.97, one year; \$29.97, two years; \$41.97, three years. Canada and Mexico \$22.97, one year, U.S. funds drawn on U.S. bank. Foreign \$39.97, one year, U.S. funds drawn on U.S. bank. Foreign air mail subscriptions—please inquire. Application to mail at 2nd class postage rates is pending at Peterborough, N.H. 03458, and at additional mailing offices. Phone: 603-924-9471. Entire contents copyright 1984 by CW Communications/Peterborough, Inc. No part of this publication may be reprinted or otherwise reproduced without written permission from the publisher. Postmaster: send address changes to *RUN*, Subscription Services, PO Box 954, Farmingdale, NY 11737. Nationally distributed by International Circulation Distributors. *RUN* makes every effort to assure the accuracy of articles, listings and circuits published in the magazine. *RUN* assumes no responsibility for damages due to errors or omissions.

**Manuscripts:** Contributions in the form of manuscripts with drawings and/or photographs are welcome and will be considered for possible publication. *RUN* assumes no responsibility for loss or damage to any material. Please enclose a self-addressed, stamped envelope with each submission. Payment for the use of any unsolicited material will be made upon acceptance. All contributions and editorial correspondence (typed and double-spaced, please) should be directed to *RUN* Editorial Offices, 80 Pine Street, Peterborough, NH 03458; telephone: 603-924-9471. **Advertising Inquiries** should be directed to Advertising Offices, CW Communications/Peterborough, Inc., Elm Street, Peterborough, NH 03458; telephone: 603-924-7138. **Subscription problems, renewals or address changes:** Write to *RUN*, Subscription Department, PO Box 954, Farmingdale, NY 11737. **Problems with advertisers:** Send a description of the problem and your current address to: *RUN*, Rt. 101 & Elm Street, Peterborough, NH 03458, ATTN.: Rita B. Rivard, Customer Service Manager. If urgent, call 1-800-441-4403.



Writing Word Games p. 30



Let There Be Light Pens p. 98

## DEPARTMENTS

**6 RUNNING RUMINATIONS**  
This issue's highlights.

**10 MAGIC**  
Hints and tips that will let you perform computing wizardry.

**14 SOFTWARE GALLERY**  
Questprobe: The Hulk  
Kidwriter  
Saucer Attack!  
Space Taxi  
Word Processor—  
Professional

**61 CLUBS**

**120 COMMODORE CLINIC**  
A questions and answers column to help your ailing computer.

**128 MAIL RUN**

**130 RUN's 1984 INDEX**  
A complete listing of all articles and reviews published last year.

**136 NEW PRODUCTS RUNDOWN**

Cover Illustration by DONALD DEMERS

**PUBLISHER**  
Stephen Twombly

**EDITOR-IN-CHIEF**  
Dennis Brisson  
**MANAGING EDITOR/PRODUCTION**  
Swain Pratt

**MANAGING EDITOR/EDITORIAL**  
Shawn Laflamme

**COPY EDITOR**  
Marilyn Annucci  
**REVIEW EDITOR**  
Susan Tanona

**EDITORIAL ASSISTANT**  
Harold Bjornsen

**TECHNICAL MANAGER**  
Guy Wright

**TECHNICAL EDITOR**  
Margaret Morabito

**ASSOCIATE EDITORS**  
Christine Adamec, Robert Baker,  
Louis F. Sander, Jim Strasma

**ADVERTISING SALES MANAGER**  
Steve Robbins

**SALES REPRESENTATIVE**  
Ken Blakeman

**AD COORDINATOR**  
Heather Paquette  
1-800-441-4403

**WEST COAST SALES**  
Giorgio Saluti, manager  
1-415-328-3470  
1060 Marsh Road  
Menlo Park, CA 94025

**ART DIRECTOR**

Glenn Suokko  
**PRODUCTION SUPERVISOR**  
Roselyn Scribner  
**PRODUCTION ASSISTANT**  
Lynne Simonson  
**AD/GRAPHICS MANAGER**  
Jane Preston

**PRODUCTION MANAGER**  
Joyce Piliarella  
**MANUFACTURING CONSULTANT**  
Susan Gross

**TYPESETTING MANAGER**  
Dennis Christensen  
**FILM PREPARATION MANAGER**  
Robert M. Villeneuve  
**DARKROOM MANAGER**  
Nathaniel Haynes

**VICE-PRESIDENT/GENERAL MANAGER**  
Debra Wetherbee

**VICE-PRESIDENT/FINANCE**  
Roger Murphy

**ASSISTANT GENERAL MANAGER**  
Matt Smith

**ASSISTANT TO VP/FINANCE**  
Dominique Smith

**EXECUTIVE CREATIVE DIRECTOR**  
Christine Destrempe

**MARKETING MANAGER**  
Pamela Esty

**DIRECTOR OF CIRCULATION**  
William P. Howard

**ASSISTANT CIRCULATION MANAGER**  
Frank S. Smith

**DIRECT & NEWSSTAND SALES MANAGER**  
Raino Wirein  
800-343-0728

**DIRECTOR OF CREDIT SALES & COLLECTIONS**  
William M. Boyer  
**FOUNDER**  
Wayne Green

*RUN* is a member of the CW Communications/Inc. group, the world's largest publisher of computer-related information. The group publishes 52 computer publications in 19 major countries. Members of the group include: Argentina's *Computerworld/Argentina*; Asia's *The Asian Computerworld*; Australia's *Computerworld Australia*, *Australian Micro Computerworld*, *Australian PC World and Directories*; Brazil's *DataNews* and *MicroMundo*; China's *China Computerworld*; Denmark's *Computerworld/Danmark* and *MicroVerden*; Finland's *Mikro*; France's *Le Monde Informatique*, *Golden (Apple)* and *OPC (IBM)*; Germany's *Computerwoche*, *Microcomputerwelt*, *PC Welt*, *Software Markt*, *CW Edition/Seminar*, *Computer Business* and *Commodore Magazine*; Italy's *Computerworld Italia*; Japan's *Computerworld Japan* and *Perso ComWorld*; Mexico's *Computerworld/Mexico* and *CompuMundo*; Netherland's *CW Benelux* and *Micro/Info*; Norway's *Computerworld Norge* and *MikroData*; Saudi Arabia's *Saudi Computerworld*; Spain's *Computerworld/Espana* and *MicroSistemas*; Sweden's *ComputerSweden*, *MikroDatorn*, *Min Hemdator* and *Svenska PC World*; the UK's *Computer Management*, *Computer News* and *Computer Business Europe*; the U.S.' *Computerworld*, *Hot CoCo*, *inCider*, *InfoWorld*, *MacWorld*, *Micro Marketworld*, *PC World*, *RUN*, *73 Magazine* and *80 Micro*.

www.Commodore.ca  
May Not Reprint Without Permission

## In This Issue. . .

If you have time to read only one article in this month's issue, I strongly recommend Jim Strasma's "Selecting the Right Printer" on page 56—especially if you're in the market for a new printer.

More and more manufacturers are coming out with printers that will hook up to Commodore computers, and, sometimes, as Strasma says in his article, "making a printer work with your computer can be a real headache if you don't choose the proper printer-interface combination." This article provides some welcome relief with a candid look at some of the more popular models and some of the necessities and accessories that are available.

Of course, there is an alternative to the printer-interface imbroglio. If you purchase a Commodore printer, you won't have to mess with interfaces and switches. And, as luck would have it, the January issue features reviews of Commodore's three latest offerings—the 1526 upgrade, the MPS-803 and the DPS-1011.

Don't be disconcerted by the abstruse abbreviations and model numbers. The former two are low-cost dot-matrix printers, and the latter gives you letter-

quality output at a surprisingly affordable price.

This January issue could be a dream come true for those would-be game programmers who have ever dreamed of creating their own games. The series of articles beginning on page 22 will put you into the game-programming mode with valuable tips and game ideas you can add to your repertoire. You'll learn how to create your own word games and maze games and how to add sprite graphics to your arcade-type games.

These articles also offer game ideas you can further develop. Give 'em a try. Who knows, this could be your first step on the road to fame and fortune. . .or at least a great deal of enjoyment.

Are you still undecided about which input device to use? Well, with joysticks, mice and graphics tablets to choose from (evidently, keyboard input has become passé), it's no wonder. Now, there's another one to add to the list—light pens. Discover how these input devices work and what they can do for you.

Also in this issue, we present the perfect way for busy people to start the new year. Take the time now to enter the calendar program on page 48. This pro-

gram lets you store and display information for those important dates in your life. Now you need never again be late for a meeting or forget that birthday or anniversary.

## Articles Wanted

The introduction of Commodore's newest computers—the Plus/4 and the Commodore 16—has opened up a whole new area of Commodore computing. *RUN* is interested in publishing articles and programs for these new computers. If you have developed any programs or applications, *RUN* would like to consider them for possible publication.

We want to know how well-suited the Plus/4 is for its designed marketplace. How easy/difficult is it to use? Do you find the software adequate for your needs? The same questions could apply to the Commodore 16.

In addition, *RUN* would like to hear about any conversions you have made for these machines. Many fine programs have been published in the pages of *RUN*. Can they be adapted to the Plus/4 or C-16? If you have successfully converted such programs for use on your system, why not send them in? We need a printout and the listing on disk or cassette.

## How to type listings from *RUN*

Typing in listings can be difficult enough without having to worry about strange graphics characters, charts or tables. That's why we decided to make it easy to enter listings from *RUN* by translating everything we thought might be confusing in any program.

When you see something between the curly brackets, all you have to do is press the keys indicated. For example:

{SHIFT L}—means hold down the shift key and press the L key at the same time.

{COMD J}—means hold down the Commodore key (it is on the lower left side of the keyboard) and press the J key at the same time.

{SHIFT CLR}—hold down the shift key and press the CLR/HOME key.

{HOME}—press the CLR/HOME key without shifting.

{CTRL 6}—hold down the control key and press the 6 key.

{FUNCT 2}—function 2 (in this case, you hold down the shift key and press the function 1 key).

{CRSR UP}{CRSR DN}{CRSR LF}{CRSR RT}—these are the four cursor directions.

{UP ARROW}—means the arrow key (the one with the pi sign under it).

{LB.}—the British pound sign (£).

{PI}—the pi sign key ( $\pi$ ); (shift and press the up arrow key).

In some instances, when a large number of characters or spaces are repeated in a listing, we will represent them this way: {22 spaces} or {17 CRSR LFs}.

### Print vs Print#

*RUN* readers should be aware of difficulties that may arise when entering listings that contain the PRINT and PRINT# commands.

These two commands may look very similar, but they are different. If, for example, you use a question mark (?) to abbreviate PRINT in a line such as 10 PRINT#4,A\$, then you are signaling to the Commodore computer that you are trying to print to the variable #4, which is not a legal variable name.

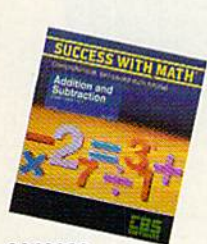
The command PRINT#4 actually means "print to device number 4." You can abbreviate PRINT# by hitting the P key and the shift and R keys at the same time and then entering the device number. But *do not* abbreviate PRINT# with a question mark.

If you think of PRINT as one command and PRINT# as an entirely different command, then you should have no problems.



# TAKE ANY 2 FOR \$4.95 EACH

when you join the Columbia Software Club and agree to buy 4 selections at regular Club prices in the next 2 years



**0040022**  
Addition/Subtraction  
**0041012**  
Multiplication/Division  
Both available for C-64, Atari H.C. and Apple: disk.



**8035022**  
Zaxxon  
Adam, C-64: cart; Atari H.C.: disk and cart; Apple: disk.



**8172052**  
Master Type  
C-64, Atari H.C.: disk and cart; Apple: disk.



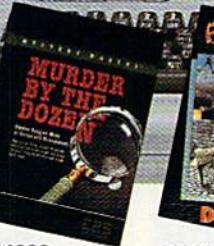
**8230052**  
Run For The Money  
C-64, Atari H.C. and Apple: disk.



**8122062**  
Pitfall II  
Adam, Atari H.C.: cart; C-64: disk and cart.



**8100022**  
Choplifter  
C-64, Atari H.C.: disk and cart; Apple: disk.



**0044082**  
Murder By The Dozen  
C-64, Apple: disk.



**8123052**  
Bruce Lee  
C-64, Atari H.C. and Apple: disk.



**8216032**  
Seastalker  
C-64, Atari H.C. and Apple: disk.



**8101012**  
Lode Runner  
C-64, Atari H.C.: disk and cart; Apple: disk.



**8090042**  
River Raid  
C-64: disk and cart; Atari H.C., Adam: cart.



**8105072**  
Zork II  
Atari H.C. and Apple: disk.



**8104082**  
Zork I  
Atari H.C. and Apple: disk.



**8149052**  
WarGames  
Adam: cart.



**8102002**  
Temple of Apshai  
C-64, Atari H.C. and Apple: disk.



**8215042**  
Beach-Head  
C-64, Atari H.C.: disk.



**8103092**  
Pitstop  
C-64, Atari H.C.: cart.



**8229082**  
Pitstop II  
C-64, Atari H.C. and Apple: disk.

Here's a great selection of sensational software for every member of the family—at super savings! You've seen these software selections in stores anywhere from \$19.95 and up—yet, now, you can have any two for the fantastic low price of only \$4.95 each! That's our way of introducing you to the Columbia Software Club—a brand-new service that delivers the best software for Atari® Home Computers, Apple® Commodore 64™, and Adam™ systems. **How the Club works:** about every 6 weeks (up to 9 times a year) you will receive the Columbia Software Club Magazine. In it you'll find out about an exciting variety of the newest software available: simple shoot-em-up adventures, more challenging strategy software, learning software to help the entire family acquire new skills—how to type, master basic math, budget your finances, and much more.

In addition, each issue of the magazine announces the "Pick-Hit Selection"—an outstanding software selection specifically for your system. If you want only this Selection, you need do nothing—it will be sent to you automatically. If you want one of the alternate selections—or nothing at all—just tell us so on the response

card always provided, and mail it by the date indicated. You'll always have ten days to make your decision. If you ever receive a selection without having had ten days to decide, you may return it at our expense.

The selections you order will be mailed and billed at regular Club prices—which currently begin at \$24.95 and are less than list prices! (A shipping/handling charge and applicable sales tax is added.) Remember, you don't have to buy a selection every time you hear from us—your only membership obligation is to purchase four selections, at regular Club prices, in the coming two years. And you may cancel membership at any time after doing so. If you decide to continue, you'll be eligible for our generous money-saving bonus plan.

**10-Day Free Trial:** we'll send you complete details of the Club's operation with your introductory selections. If you are not satisfied for any reason whatsoever, just return everything within 10 days for a full refund and you will have no further obligation. So act now!

All applications subject to review, and the Columbia Software Club reserves the right to reject any application or cancel any membership.

COLUMBIA SOFTWARE CLUB, Dept 2RS 102  
3000 North 35th Street, Terre Haute, Indiana 47811

Please accept my application under the terms outlined in this advertisement—and send me the 2 selections indicated below, for which I am enclosing check or money order for \$9.90 (that's \$4.95 for each selection). I agree to buy 4 more selections at regular Club prices in the next 2 years.

Write in numbers of the 2 selections you want

--	--

Send my selections for the following system (check one system only):

- ATARI® HOME COMPUTERS 2  APPLE® 3  
 COMMODORE 64™ 4  ADAM™ 5 (cartridges only)

If you have selected Atari Home Computer or Commodore 64 software—be sure to check the type of format you prefer (check one format only):

- CARTRIDGE A  DISK H

Name (please print) First Name Initial Last Name

Address Apt.

City/State Zip

Do you have a telephone? (check one)  Yes  No

Parent's Signature if under 18

Offer not available: APO, FPO, Alaska, Canada, Hawaii, Puerto Rico  
**WANT THIS CHARGED TO YOUR CREDIT CARD?** Fill in information below, we'll charge the \$9.90 and future shipments to your credit card—and credit your account with any returns.

American Express  VISA  MasterCard Interbank No.

Credit Card No. in full Expiration date

Signature 103

ATARI® is a registered trademark of Atari, Inc.—APPLE® is a registered trademark of Apple Computer, Inc.—ADAM™ is a trademark of Coleco Industries, Inc.—COMMODORE 64™ is a trademark of Commodore Electronics, Ltd.—BRUCE LEE™ is a trademark of Linda Lee—ZAXXON™ is a trademark of Sega Enterprises, Inc.

## SPECIAL INTRODUCTORY OFFER

For a limited time only, MUSE® will include a blank BASF qualitative disk free with the purchase of the SMART START™ program.



## SMART START™... REALIZE THE GREATEST POTENTIAL OF YOUR COMMODORE 64

Sound, graphics and other advanced features are what make the Commodore 64 as popular as it is. But these features can also require a lot more programming know-how than many Commodore owners care to learn. That's why MUSE® developed SMART START™—to harness the power of the Commodore and put it conveniently at your finger-tips.

Here are just a few of the things you can do with SMART START™:

- You don't need to be familiar with the Commodore keyboard, SMART

START™ lets you quickly select all functions from pull-down menus with cursor or joystick.

- No need to type long instructions to LOAD, RUN, SAVE and CATALOG programs, with SMART START™ you press a single key.
- Easily design colorful sprite graphics and exciting sound effects. SMART START™ automatically generates the BASIC code for use in your own programs.
- Keep track of time with an on-screen digital clock and alarm.
- Easily create exciting and unique sound effects.
- Merge multiple programs into one.
- Easily print out screens and programs.

Get the most out of your Commodore 64 with a SMART START™ from MUSE.®

(Joystick and printer with parallel interface optional)



Super-Tex® Professional and Castle Wolfenstein™ are available for the Apple II+, IIe, IIc; Commodore 64; Atari 400/800/1200XL; IBM—PC, PC jr. Beyond Castle Wolfenstein™ is available for the Apple II+, IIe, IIc; Commodore 64; Atari 400/800/1200XL. SMART START™ and Space Taxi™ are available for the Commodore 64.

Apple, Atari, Commodore and PC and PC jr. are registered trademarks of Apple Computer Corporation, Atari Inc, Commodore Business Machines and IBM respectively.

EXPECT THE EXCEPTIONAL...

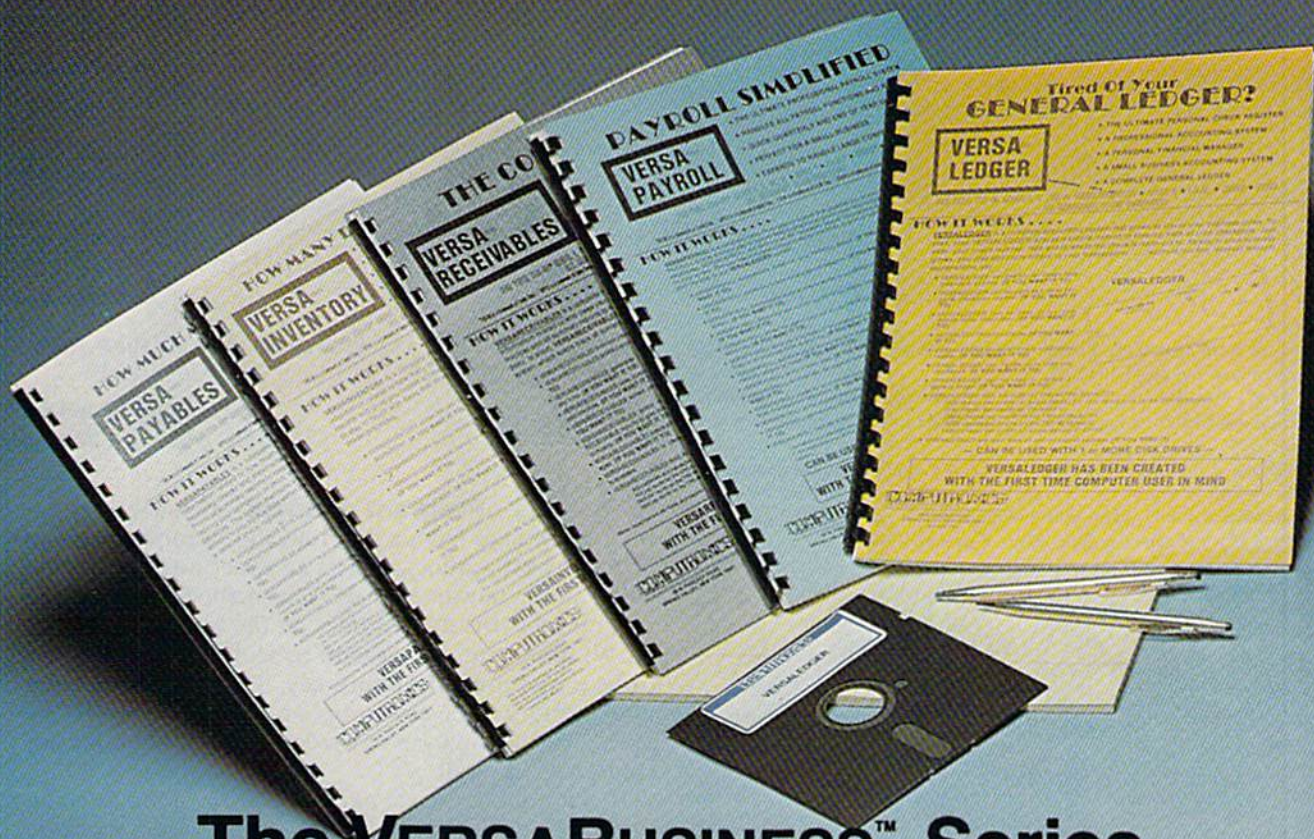
# MUSE® SOFTWARE

347 N. Charles Street  
Baltimore, MD 21201  
(301) 659-7212

Circle 75 on Reader Service card.

# Introducing the Most Powerful Business Software Ever!

FOR YOUR TRS-80 • IBM • APPLE • KAYPRO • **COMMODORE 64** • MSDOS OR CP/M COMPUTER\*



## The VERSABUSINESS™ Series

Each VERSABUSINESS module can be purchased and used independently, or can be linked in any combination to form a complete, coordinated business system.

### VERSARECEIVABLES™

\$99.95

VERSARECEIVABLES™ is a complete menu-driven accounts receivable, invoicing, and monthly statement-generating system. It keeps track of all information related to who owes you or your company money, and can provide automatic billing for past due accounts. VERSARECEIVABLES™ prints all necessary statements, invoices, and summary reports and can be linked with VERSALEDGER II™ and VERSAINVENTORY™.

### VERSAPAYABLES™

\$99.95

VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

### VERSAPAYROLL™

\$99.95

VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information on it. If desired, totals may be posted to the VERSALEDGER II™ system.

### VERSAINVENTORY™

\$99.95

VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

### VERSALEDGER II™

\$149.95

VERSALEDGER II™ is a complete accounting system that grows as your business grows. VERSALEDGER II™ can be used as a simple personal checkbook register, expanded to a small business bookkeeping system or developed into a large corporate general ledger system **without any additional software.**

- VERSALEDGER II™ gives you almost unlimited storage capacity (300 to 10,000 entries per month, depending on the system),
- stores all check and general ledger information forever,
- prints tractor-feed checks,
- handles multiple checkbooks and general ledgers,
- prints 17 customized accounting reports including check registers, balance sheets, income statements, transaction reports, account listings, etc.

VERSALEDGER II™ comes with a professionally-written 160 page manual designed for first-time users. The VERSALEDGER II™ manual will help you become quickly familiar with VERSALEDGER II™, using complete sample data files supplied on diskette and more than 50 pages of sample printouts.

### SATISFACTION GUARANTEED!

Every VERSABUSINESS™ module is guaranteed to outperform all other competitive systems, and at a fraction of their cost. If you are not satisfied with any VERSABUSINESS™ module, you may return it within 30 days for a refund. Manuals for any VERSABUSINESS™ module may be purchased for \$25 each, credited toward a later purchase of that module. All CP/M-based Computers must be equipped with Microsoft BASIC (MBASIC or BASIC-80)

#### To Order:

Write or call Toll-free (800) 431-2818  
(N.Y.S. residents call 914-425-1535)

- \* add \$3 for shipping in UPS areas
- \* add \$5 to CANADA or MEXICO
- \* add \$4 for C.O.D. or non-UPS areas
- \* add proper postage elsewhere

#### DEALER INQUIRIES WELCOME

All prices and specifications subject to change / Delivery subject to availability.



# COMPUTRONICS

50 N. PASCACK ROAD, SPRING VALLEY, N.Y. 10977

\*The VersaBusiness Series is available for TRS-80 • IBM • APPLE • KAYPRO • COMMODORE 64 • OSBORNE • XEROX • TELEVIDEO • SANYO • ZENITH • NEC • DEC • TI • EPSON • MORROW • MICRO DECISION • ROTH • SEAL • MSDOS and CP/M computers with 8" disk drives (Computer names are trademarks and/or trademarks of their respective manufacturers).

May Not Be Reprinted Without Permission  
Circle 9 on Reader Service card.



Compiled by LOUIS F. SANDER

MAGIC is tricks, MAGIC is fun. MAGIC is doing what cannot be done.

MAGIC is a monthly column of hints, tricks and odds and ends from the worlds of software, hardware and applications.

Every month, MAGIC brings you brief and useful computer tricks from around the world—tricks that others have found to make computing easier, more enjoyable or more exciting.

MAGIC features simple hardware ideas, one-line programs, useful programming techniques, little-known computer facts and similar items of interest. We look for new or recycled material that is of current value to Commodore computerists and that can be implemented with a minimum of time, effort, or theoretical knowledge.

Send your own tricks to:

MAGIC  
c/o Louis F. Sander  
PO Box 101011  
Pittsburgh, PA 15237  
U.S.A.

If you send a self-addressed stamped envelope to the above address, you'll receive a Trick Writer's Guide.

RUN will pay up to \$50 for each original trick we print.

MAGIC's tricks are numbered in hex, the number system of sorcery and computers.

At the time of last summer's solstice, a transcendental task force began a worldwide quest. Nymphs and nixies, banshees and brownies, swimming, flying, and riding the bus, scoured the Earth from pole to pole. Their mission: to find the finest tricks for this, your New Year's Magic.

On every continent, these thaumaturgical travelers found crowds of Commodore computerists clamoring to contribute their conjurings. Addis Ababa was ababble; Greece and Guam were agog; all with the urge to share their strongest sorcery. In the end, the best from sixteen countries, from Argentina to Uruguay, were chosen for this issue. As you work these tricks and add them to your bag, consider this literal truth: The power of your Magic extends to the ends of the Earth!

**\$166 Reclaiming erased programs**—If you accidentally erase a program from memory when using the New command, there's an easy way to reenter it without retyping. Just move your cursor onto any part of the first line, then press the return key. Repeat the process for the other lines on the screen (except for NEW), and your program will be reclaimed (prove the fact by listing the program). The trick works well for the

short programs that beginners practice on, since many of them can be listed in less than a whole screen.

Douglas Shepherd  
Addis Ababa, Ethiopia

**\$167 Program subsets**—If you want to extract a few lines from a program (for example, a sound or scoring subroutine), there's an easier way than by deleting all the unwanted lines. The method is to load the program, list the desired lines on the screen, then enter NEW. Move your cursor onto each of the lines you want to save, and press the return key. This will put the lines into memory as a new program, which can easily be saved. The method can be used to save lines that are not contiguous, as well.

If you want to extract more lines than can be listed on the screen at one time, just go through the procedure more than once, saving each segment with a different name. Then merge all the segments together, using the following procedure.

- Load and List segment #1.
- Load segment #2.
- Put your cursor on each of the listed lines from segment #1, pressing the return key on each line.
- Save the combined segments, and repeat as necessary.

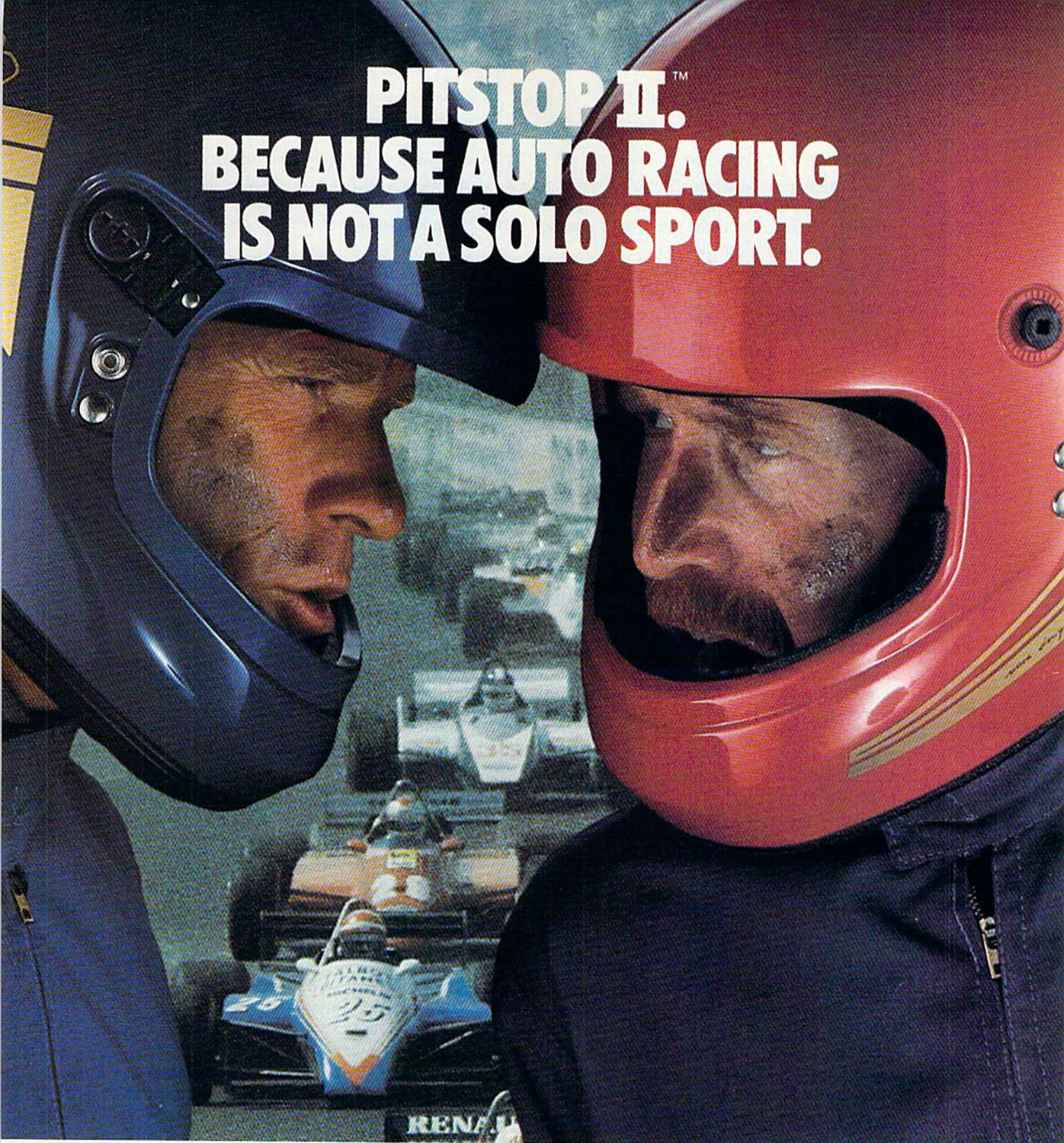
Ian Hayes  
Westville, South Africa

**\$168 Sorcerer's handbook**—If you're a fan of Magic, you must get a copy of RUN's special extra issue, advertised elsewhere in the magazine. It has 60 pages of Magic, including every trick published in 1984, plus over 150 new ones. The tricks are organized by topic, and a comprehensive index is included. We've tried to make this the best computer book ever printed, and rumor has it we've succeeded.

The Editors

**\$169 Trace utility**—The accompanying program traces the execution of any Basic program, a procedure which can dramatically ease debugging. As printed, Trace is for the C-64. For the VIC, change 189 to 221 in line 840. After you've typed in the program, enter in Direct mode:

# PITSTOP II.™ BECAUSE AUTO RACING IS NOT A SOLO SPORT.



When we introduced Pitstop, we created action in the pits. Now, with PITSTOP II, EPYX introduces true competitive auto racing, both on the track and in the pits. Auto racing is not a one man sport. With PITSTOP II, you can now experience the thrill of speed and competition as you battle your opponent in a race against the clock. Now, more than ever, the strategy of when you make a pit stop and your pit crew's speed and performance, combined with your skill on the track, will determine the winner.

A split screen shows you your position and that of your

opponent, a digital clock displays time and a lap counter gives you your race position as you race against each other in pursuit of the checkered flag. You can also play against the computer or take a few practice laps as you prepare for the real head-to-head competition. Step up to PITSTOP II because auto racing is not a solo sport.

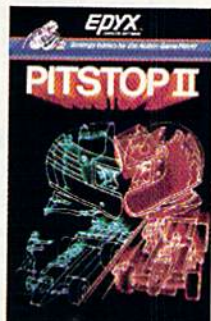
*One or two players: joystick controlled; disk or cassette.*



**EPYX**  
COMPUTER SOFTWARE

**Strategy Games for the Action-Game Player**

Circle 12 on Reader Service card.



[www.comindore.ca](http://www.comindore.ca)  
May Not Reprint Without Permission

```
FOR X=1 TO 54 : READ Y : Z=Z+Y : NEXT : PRINT Z
```

The computer should print 6341 for the C-64 version; 6373 for the VIC. Any other number means there's an error in your Data statements. Once the proper number is printed, save Trace on disk or tape.

Running Trace puts a machine language program into memory, and displays its controlling SYS commands on the screen. You should record these commands for future reference. Type SYSxxx[return], where xxx is the appropriate number from the screen display, to either enable or disable the tracing function. While enabled, Trace will print the line number of each Basic statement as it is executed. To trace a program, first load and run Trace. Then load a Basic program, enable Trace, and run the Basic. Tracing the following test program will give you a good understanding of Trace's workings.

```
10 PRINT "A" : PRINT "B" : X=5 : Y=6
20 PRINT "C" : PRINT "D" : Z=7
```

Notice how four statements are traced in line 10, plus three in line 20.

To get a hardcopy of what you're tracing, add this line at the start of the program being traced:

```
5 OPEN 4,4 : CMD4
```

You can make Trace's SYS calls a part of the traced program, to limit tracing to those parts where it is needed. Try enabling/disabling Trace before/after one of the Print statements in the test program, and you'll see how this feature can be used.

As printed, Trace's machine language resides in the cassette buffer, where any tape activity will overwrite it. But the machine language is completely relocatable; to put it in a protected area at the top of memory, add:

```
115 POKE 56,PEEK(56)-1 : CLR : S=5+PEEK(56)*256
```

**Stanley Tobojka**  
New Bedford, MA

```
100 PRINT"(SHFT CLR)TRACE UTILITY -
MAGIC(CRSR DN)"
110 S=828: REM RELOCATABLE START ADDR
120 FORX=S TO S+53:READ Y:POKEX,Y:NEXT
130 PRINT"SYS";S+22;"ENABLES,"
140 PRINT"SYS";S+43;"KILLS."
828 DATA 165,058,201,255,240,013
834 DATA 169,060,032,210,255,032
840 DATA 201,189,169,062,032,210
846 DATA 255,108,251,000,173,008
852 DATA 003,133,251,173,009,003
858 DATA 133,252,169,060,141,008
864 DATA 003,169,003,141,009,003
870 DATA 096,165,251,141,008,003
876 DATA 165,252,141,009,003,096
```

**\$16A Direct tape reading**—When a program using cassette files is troubled with errors, it often helps to see what is recorded on the tape. This routine will display the data:

```
10 OPEN 1
20 GET #1,AS
30 PRINT AS; : GOTO20
```

To verify what is being written on the tape, use OPEN x,3,1 instead of OPEN x,1,1. This will output the data to the screen instead of the cassette. In either case, use the CTRL key to slow down the listing.

**Max W. Kuypers**  
Haugesund, Norway

**\$16B Debugging hint**—When debugging a program with a lot of variables, I find it helpful to "echo print" the variables. This is done by putting a Print statement in the program each time a variable is defined or updated. For example, to echo print the variable A, I enter:

```
160 A=INT(RND(0)*10) : PRINT A
```

When debugging a program like this, it's easy to find where a variable is going astray, since each value is printed as the program is run.

**James Ryan**  
Winthrop, MA

**\$16C Speech synthesis**—If you have a speech synthesizer, it can make Data statement debugging much easier. For example, here's how your program might read data:

```
10 FOR T=0 TO 62 : READ Q : POKE 832+T,Q : NEXT
```

The speech synthesizer will pronounce the numbers in your Data statements if you change this statement to:

```
10 FOR T=0 TO 62 : READ QS : FOR D=1 TO 500 : NEXT :
SPEAK=QS : NEXT
```

All you have to do is follow along in the program listing, noting errors when they appear. When you've finished debugging, of course, change your program line back to its original form.

**Bryan Jacques**  
Lyn, Ontario  
Canada

**\$16D Typing tip**—Ever lose your place while typing a program from a magazine? Try cutting a piece of colored cellophane (approximately 9 inches long and 2 inches wide). Rub it on the page with the program, to build up static electricity, and it will stick to the page anywhere you slide it! Now use your magic cellophane to keep track of your place on the page. If it starts to slide off, just give it another rub.

**Wake Lankard**  
Kenner, LA

**\$16E West Indies update**—The personal computing craze is slowly arriving in the Caribbean. In the Netherlands Antilles, the Commodore line is sold by

*Continued on p. 114.*

# BREAKDANCE.™ BREAKIN' MADE EASY.



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

Breakdance, the game, includes an action game in which your dancer tries to break through a gang of Breakers descending on him, a "simon-like" game where the dancer has to duplicate the steps of the computer-controlled dancer and the free-dance segment where you develop your own dance routines and the

computer plays them back for you to see. There's even a game that challenges you to figure out the right sequence of steps to perform a backspin, suicide or other moves without getting "wacked."

Learn to Breakdance today! Epyx makes it easy!

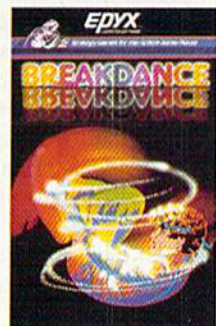
*One or two players; joystick controlled.*



**EPYX**  
COMPUTER SOFTWARE

**Strategy Games for the Action-Game Player**

Circle 12 on Reader Service card.





Compiled by SHAWN LAFLAMME

## Questprobe: The Hulk

*The First Release in a  
Series of Marvel Comics  
Adventure Games*

**W**hat is Questprobe? It's a merging of the minds of Marvel Comics and Commodore Business Machines with the programming talent of Adventure International's Scott Adams, to produce a complicated series of adventure games. Adams has programmed adventure games for years, and Questprobe displays his talent for creating complex thinking games, while keeping them interesting. Commodore 64 users have a choice of a cassette text adventure version of Questprobe, or a disk version with graphics. I reviewed the disk version of Questprobe, because I wanted to comment on both the adventure and graphics of the game.

Each Questprobe game is accompanied by a comic book, which features the classic Marvel characters and explains many things not covered in the games. The comic book tells the story of Durgan the Philosopher, who enlists the aid (by trickery) of the Hulk to save his doomed planet.

The Hulk computer game belongs to the adventure-game genre and begins with Bruce Banner, the Hulk's alter ego, tied to a chair in a mysterious chamber. You must find a way to become the Hulk, and then break free of the chair. Once you've destroyed the chair, you're free to begin your search for 16 gems and one bio gem. This quest

**B** will lead you out of the great dome, and into new worlds and dimensions beyond comprehension.

On your adventure, you will run into familiar figures—the villainous Ultron and your friends, Antman and Dr. Strange.

The pictures used in this first Questprobe game were created by Marvel, in the form of pen and ink drawings. Fifty to 70 drawings were produced for the program, using from 100 to 4000 bytes to generate each picture. I was pleased to see the Hulk, Bruce Banner and the guests in this program appearing exactly as they do in Marvel comics. The background scenery in Questprobe is also very artistic.

I've played about ten graphics adventures on two different computers, and

Questprobe is one of the best I've played. I was disappointed that there were no sounds in the program, but this game appeals to my love of comics and adventure games. I like the idea of gaining the Hulk's powers and using my own mind to control them.

The problems offered to the player of Questprobe are very well thought out. After all, what do you expect from Scott Adams, the creator of the first microcomputer adventure game? Adams has also surprised a lot of Commodore 64 owners by solving the problem of disk speed. Scott maintains that the disk version of Questprobe runs faster than any other disk program on the market for the C-64.

With a new Questprobe comic and game being issued every three to five months, the series will take years to run its course. The subject of the second Questprobe game will be Spiderman, and it appears that he will encounter his old foes, Mysterio and Doctor Octopus. Allen Milgrom, script writer for many Spiderman stories, is writing the second Questprobe comic. Beyond Spiderman, Scott Adams informs me that the next two Questprobe games will probably feature the Human Torch and Captain America.

Keep following the Questprobe series, because the final game will be played using information acquired from the earlier programs. If the Hulk graphics adventure is a preview of things to come, Questprobe will be a popular subject for a long time. (Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380.)

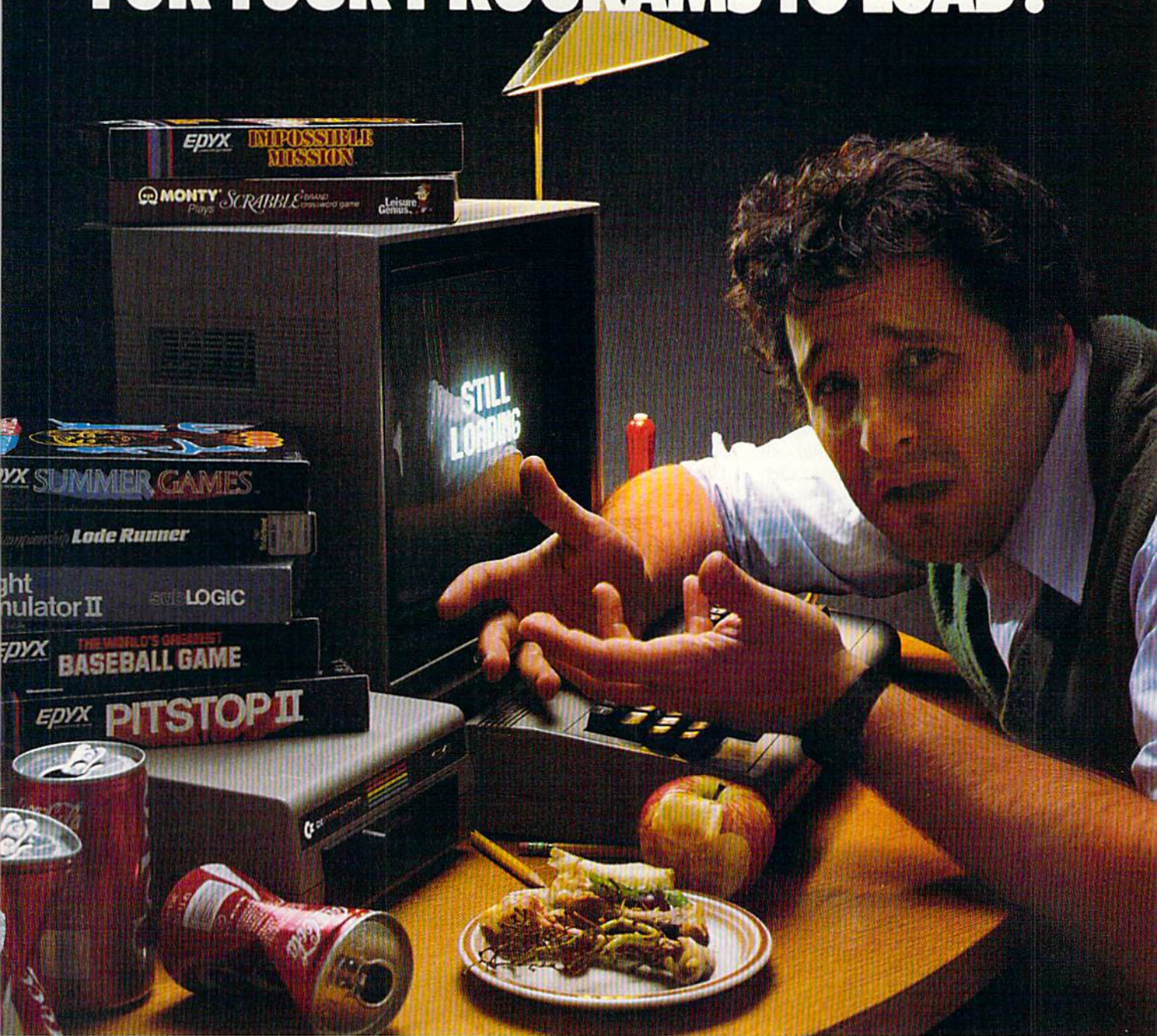
**John Jermaine  
Taylorville, IL**

## Report Card

- A** *Superb!*  
An exceptional program that outshines all others.
- B** *Very Good.*  
One of the better programs available in its category. A worthy addition to your software library.
- C** *Good.*  
Lives up to its billing. No hassles, headaches or disappointments here.
- D** *Mediocre.*  
There are some problems with this program. There are better on the market.
- E** *Poor.*  
Substandard, with many problems. Should be deepsixed!



# TIRED OF WAITING FOREVER FOR YOUR PROGRAMS TO LOAD?



## INTRODUCING THE FAST LOAD CARTRIDGE FROM EPYX.

You're tired of waiting forever for your Commodore 64 programs to load. But it's no use glaring at your disk drive. Calling it names won't help, either. It was born slow — a lumbering hippo. You need the FAST LOAD CARTRIDGE from EPYX. FAST LOAD transforms your Commodore 64 disk drive from a lumbering hippo into a leaping gazelle. With FAST LOAD, programs that once took minutes to load are booted up in a matter of seconds.

FAST LOAD can load, save and copy your disks five times faster than normal. It plugs into the cartridge port

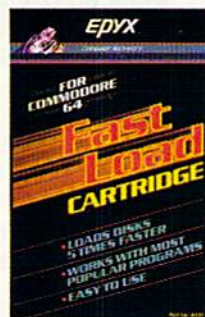
of your Commodore 64 and goes to work automatically, loading your disks with ease. And that's only the beginning. You can copy a single file, copy the whole disk, send disk commands, and even list directories without erasing programs stored in memory.

And unlike other products, the FAST LOAD CARTRIDGE works with most programs, even copy protected ones, including the most popular computer games.

The FAST LOAD CARTRIDGE from Epyx. Easy to insert, easy to use and five times faster. So why waste time waiting for your disks to load?

**Speed them up with FAST LOAD!**

Circle 12 on Reader Service card.



# EPYX™

## Kidwriter



*This Interactive Program Lets Kids Create Their Own Electronic Storybooks*

Children love storybooks, with the pictures, bright colors and, of course, the words describing it all. And now your children can use a Commodore 64 to open wide their vivid imaginations, actually creating their own electronic storybooks!

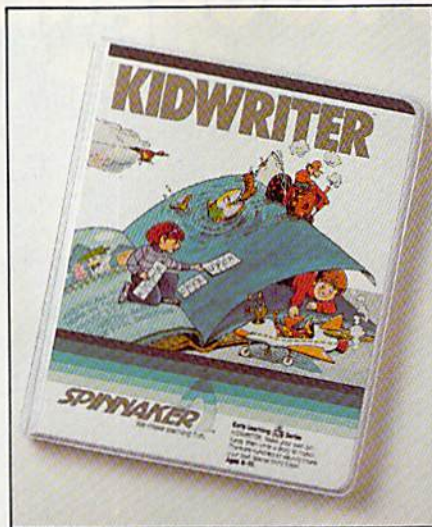
Spinner's Kidwriter is a fascinating program for kids in elementary school. (It is also appropriate for smart kindergarten children whose parents don't mind providing some necessary help.) Using Kidwriter, your child can choose from a variety of settings, such as a stage, a starry night, a picture frame and many more.

Selecting from 99 objects (boys, girls, lunar landers, moons, cabooses, etc., as well as the whole alphabet and numbers), the child places those objects where he wants them on the screen. You can also easily change the color or size of the objects. You don't like a white snowman? Be unconventional—make him black or green! Or, you can shrink him down to a shadow of his former self, or puff him up until he's gigantic!

Once your child is completely satisfied with the scene, he'll be ready to write a page of his story. If it's truly great (to your child), it can be saved on the program disk.

Kidwriter starts off with a short demonstration mode of pictures and stories explaining the program. You can continue watching or stop the demo to move on to the story-creation part. When your child is ready to create, pressing the B key will bring him back to the story-making program. Choices on the next menu allow the child to make a new picture-story, load an old one or call up a directory of picture-stories. The program uses simple, logical menus, taking the child every step of the way, without sacrificing creativity or spontaneity.

A new menu appears on the bottom half of the screen for creating a new picture-story. To set the scene, the child will press S until a satisfactory scene appears. (The scene can be changed later, if desired.) Next, people, animals, let-



ters or numbers can be chosen. Let's see, do you want that little boy? No? Then press F, for forward to the next object. You accidentally skipped past a cute little duck? No problem. Go backwards with a press of the B key. Now you have the duck on your lower screen, and you want to set him on your stage scene. Press P, for pick, as the bottom half of the screen explains. Move your little duck in place with the arrow keys. Now you can move on to the next object with a press of the N key.

Once your child has set the scene with enough colorful characters, he's ready to write a page of his story. (Several sentences are allowed per page.) For typographical errors, Kidwriter has simple editing capabilities; you can go backward and correct, or you can erase the whole thing if you wish, using simple commands. Don't worry about words being broken at the end of a line—the program automatically wraps words on to the next line.

After writing the page, the child can press the asterisk key to tell the computer he's done, as the menu explains. Then your child can sit back and enjoy his story, accompanied by something you won't get in conventional storybooks—music!

Saving the story on disk is a simple task. You don't even need another disk to do it—just save the story right on your program disk. The computer asks if you would like to save this page of your story. Press Y, for "yes," and the computer will ask you to give a name to the story (no more than 12 letters long). Voila! The story is saved for posterity! Later on, if you've forgotten the name

of the story, you can simply call up the Directory to refresh your memory, and then load the story you want.

Any problems? Preschoolers would probably find the simple word processing confusing or frustrating, because, of course, you must be able to read in order to write. But, if you buy the program for an older brother or sister, your five- or six-year-old can have a great time with the picture-making part of the program. Kidwriter is intended for children ages 6-10. (I'd move it up to ages 7-11.)

What I really wish the programmers could have put in Kidwriter, although I suspect there wasn't enough memory for it, is animation. It would have been interesting to see a purple flower dance across the stage, or an alien sitting on his spaceship, skimming through the universe.

I think Kidwriter is a super program with great potential to inspire budding writers. But don't throw away those beloved storybooks! For a child, nothing can replace the experience of sitting on Mom or Dad's lap and being read to. Use Kidwriter as a supplement. With a combination of traditional storybooks and this electronic storybook, you may be grooming one of America's future writers! (Spinner Software Corp., 215 First St., Cambridge, MA 02142. \$34.95.)

Christine Adamec  
Palm Bay, FL

## Saucer Attack!



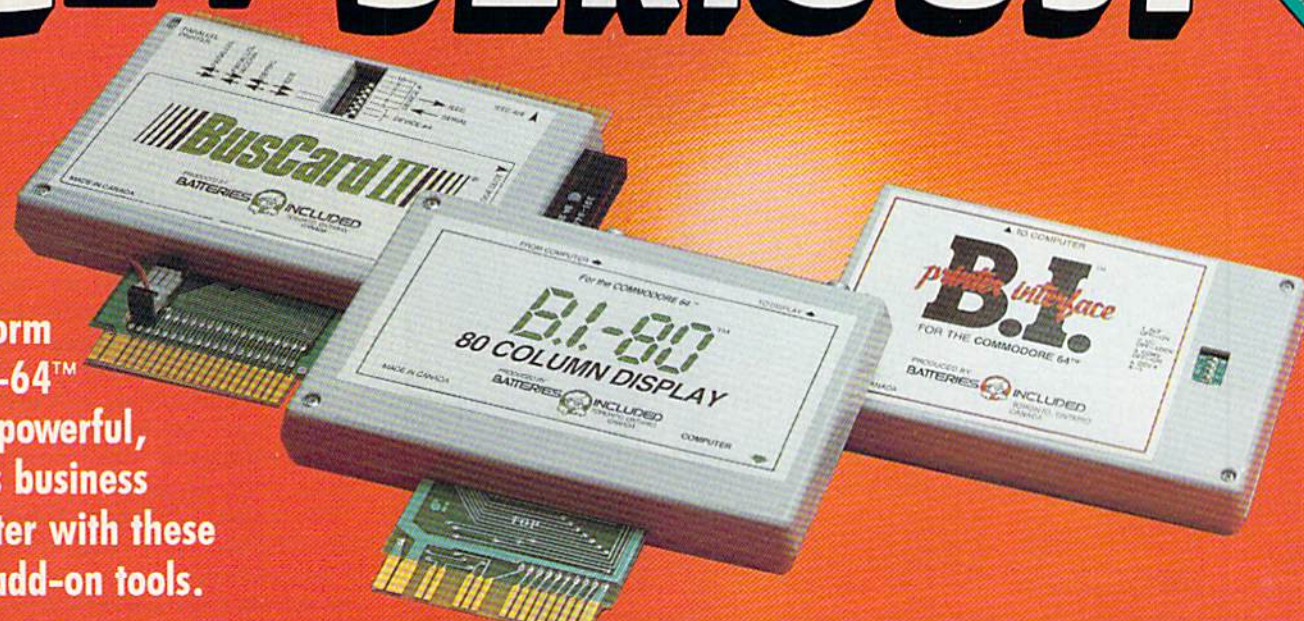
*Defend Washington, DC, From an Invasion of Flying Saucers*

The classic space shoot-'em-up game was one of the first to appear on the microcomputer, and now the people at Sachs Enterprises have brought the playing field down to Earth. In Saucer Attack!, an action-packed disk program for the C-64, you are responsible for protecting Washington, DC, from an invasion of flying saucers.

Saucer Attack! has no instruction booklet. I've grown to expect a booklet (or printing on the package) that explains how a program works, perhaps giving playing tips or a story to support

# GET SERIOUS!

FOR COMMODORE  
AND THE NEW  
80-COLUMN DISPLAY FOR ATARI



Transform your C-64™ into a powerful, serious business computer with these three add-on tools.

## BusCard II

Mix and match the hardware peripherals of your preference. Increase your programming power with easier-to-use disk commands and machine language. All with one plug-in module.

- lets you use almost any combination of Commodore-compatible floppy or hard disk drives and Centronics-type parallel printers
- all interface functions and device allocations are set by switches on the BusCard II module; errors due to software incompatibility are eliminated
- includes BASIC 4.0, the same powerful language used in Commodore's top-of-the-line business computers, plus a machine language monitor

## B.I.-80 Column Adaptor for PaperClip and The Consultant

Double your screen capacity when using your favourite Batteries Included software programs. B.I.-80 turns your 40-column screen into a crystal-clear, high-visibility 80-column display. Works with PaperClip word-processor and The Consultant database manager—maximum readability and minimum eye-strain, even with a screen full of characters. It's the fast, easy, plug-in way to get twice the amount of data onto your monitor screen. And B.I.-80 also gives you the easier-to-use disk commands, with BASIC 4.0 language built right into the module.

- fully self-initializing, no commands to enter; just plug B.I.-80 into the cartridge slot and you're ready to run
- switch back and forth

- completely eliminates snow, fuzziness, hashing and interference
- easy-to-install module incorporates highest quality hardware components throughout; one-year manufacturer's warranty is standard
- comes complete with 80-column operating system and comprehensive documentation, including full description of BASIC 4.0 commands
- use with Commodore 1701 and 1702 color monitors, or any monochrome video monitor

**NEW!** B.I.-80 Column Adaptor coming soon for Atari XL computers!

## B.I. printer interface

Use the printer of your choice with your Commodore computer—just plug in this compact module, and you're instantly compatible! Take advantage of today's high-speed, high-quality printers with the B.I. Printer Interface.

- works with any Centronics-type parallel printer, which includes almost all major printers on the market
- completely self-contained and ready to run; no extras to buy, no hardware or software modifications to printer or computer are required
- all print functions are controlled by switches on the module; just set them once, and never worry about it again

USE THESE TOOLS WITH PaperClip, The Consultant, AND OTHER HARD-WORKING, HIGH-QUALITY SOFTWARE PROGRAMS FROM BATTERIES INCLUDED



"The Energized Software Company!"

WRITE FOR A FULL COLOR BROCHURE

186 Queen St. West  
Toronto, Ontario,  
Canada M5V 1Z1  
(416) 596-1405

17875 Sky Park North, Suite P  
Irvine, California  
USA 92714



the game. Apparently, the creators of Saucer Attack! saw that their instructions only occupied a paragraph, so they included that information on the disk and saved themselves the printing costs. I'm satisfied with this arrangement, because the game's concept is simple and clear.

To blast flying saucers out of the sky, you must first move the joystick to align your weapon's cross hairs with a target. Pressing the fire-button will launch an energy ball at your intended victim.

Scoring in Saucer Attack! is fairly complicated, with many factors that can determine the outcome of the game in mere seconds. There are two types of saucers. A saucer that rotates from right to left will stop moving when the fire-button is pressed. If you blast one of these saucers, you will earn one point. Other saucers move continuously—these are worth four points apiece. Saucers lose a point for each point you score in the game. Saucers gain a point whenever you fire at a target and miss it; they also gain a point for every three seconds of play during the game.

If you can manage to earn 50 points, you'll then have to battle the saucers in twilight. After 100 points have been earned, the scene changes to night. Every screen change increases the point value of the enemy saucers, while the speed and agility of the saucers also increases.

As you pass the magic number of 150 points, the final menace is faced—the Mothership. Remember to watch the saucer scoreboard, because an enemy score of 50 points will end the game. The game will also end if a saucer is allowed to land. Be sure to blast any low-flying saucers; this will give you bonus points and keep the game going.

You must also destroy saucers as they approach national monuments, because they will attack the buildings, giving them bonus points. This scoring system is rather confusing, but points can add up on either side very rapidly. Set a steady pace as you play the game, and don't shoot at a target unless you have a really excellent chance of destroying it.

The graphics of Saucer Attack! are incredible. The programmers of the game have created excellent images of the White House, the Capitol Building, the Lincoln Memorial and the Washington Monument. Clouds in the sky look almost as though they are painted onto the screen, while an American flag waves in the breeze. The programmers had such an eye for detail that they included many famous Washington sights, including cherry trees and the pool in front of the Capitol Building.

Creating beautiful, detailed graphics of an existing city is one thing, but artistically depicting the destruction of that city is another. Again, the creators of the program did a fantastic job. The

saucers shoot energy bolts at the buildings and monuments, destroying them piecemeal. Each building can be hit by enemy fire several times; more damage is done with each hit. When the game is lost, the city is completely annihilated by the aliens in a few seconds.

If you destroy the Mothership, the game ends in a festive display, with fireworks and patriotic music. Even the graphics of the saucers are well designed, with interesting colors and details. The graphics of Saucer Attack! appear to have been carefully planned, as well as painstakingly executed. The game is worth buying just to see some of the best graphics that have ever appeared in a C-64 game.

The sounds of Saucer Attack! are also well done. They range from pieces of patriotic music to eerie sound effects, reminiscent of the late 1950s science fiction movies. The saucers' energy bolts make a sizzling noise, while your energy balls sound like gunfire.

The classic sci-fi movie, *Earth vs. the Flying Saucers*, seems to have been the inspiration for the creation of Saucer Attack! In the movie, Washington, DC, is attacked by flying saucers that blast national monuments, using powerful energy bolts. I like the idea of taking the theme of a classic film and expanding it to produce a microcomputer game.

The graphics and sounds of Saucer Attack! are brilliant, showing what a good programmer can do on the Commodore 64. However, I regret that there aren't more than two screens in the program. It would also be preferable to have the game continue at a higher difficulty level after the destruction of the Mothership.

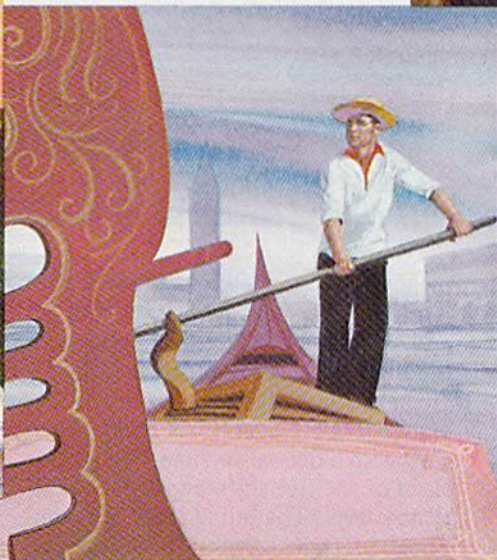
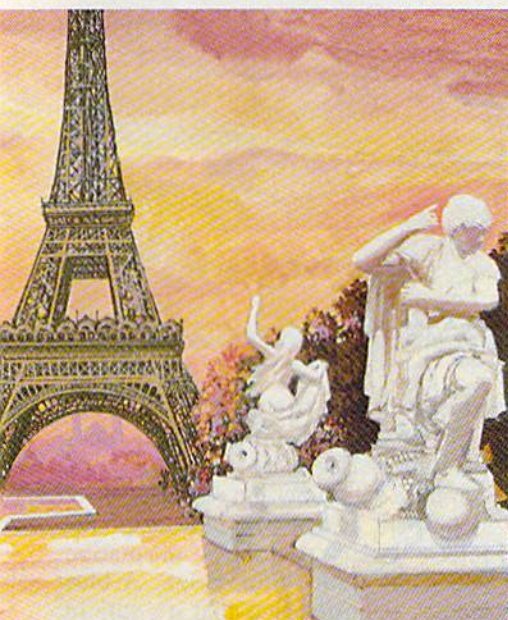
However, don't let these two shortcomings dampen your opinion of Saucer Attack! The game provides plenty of challenge. It is set up to penalize you for any mistake you make. If you fire too often and miss your targets, you'll lose points. What could be a greater challenge to the average arcade addict, who is used to unleashing a barrage of shots at anything that moves?

Saucer Attack! will capture your interest, challenge you and dazzle your senses! (*Sachs Enterprises, PO Box 1182, Lake Arrowhead, CA 92352. \$29.50.*)

**John Jermaine  
Taylorville, IL**

# Paris Rome Venice Madrid

\$29.95



Experience the real flavor of these four cities through their most intimate secret...their languages. Whether you choose to explore Paris, Rome, Venice or Madrid, Orbyte Software's new ChallengeWare Foreign Language Series can take you there. ChallengeWare guides you through all the basics...and of course, you have the opportunity to venture out on your own.

The Foreign Language Series offers four separate titles: French, Latin, Italian and Spanish, each for only \$29.95. Step-by-step instructions accompany all programs for a self-paced, individualized learning experience. Lessons are fully-menueed and include nouns, verbs and general terminology, with a special section for entering your own word-lists for lesson-incorporation. Savor ChallengeWare International, and enjoy a new world of learning!

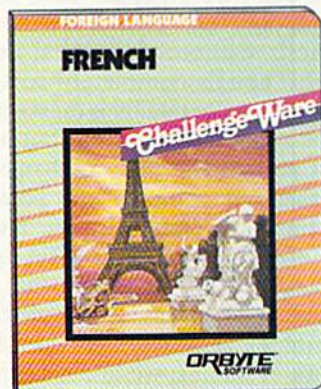
ChallengeWare has quickly become synonymous with quality and excellence. Enhance your horizons with all 54 titles! For the name of your nearest dealer call Orbyte Software today!

For Commodore 64, Apple IIe & II+

Commodore is a trademark of Commodore Business Machines.  
Apple is a trademark of Apple Computer Products.

Circle 26 on Reader Service card.

**1-800-253-2600** In CT 203-621-9361



**ORBYTE**  
SOFTWARE  
PO Box 948, Waterbury, CT 06720



## Space Taxi

*You'll Need Finesse, Agility and Precision To Finish Your Shift*

**A**s you navigate your cab through the corridors of a colorful outer space community, a little customer hails you from afar. "Taxi! Hey, Taxi!"

Muse Software's Space Taxi, for the Commodore 64, provides real voice synthesis without additional equipment! Though completely software driven, the voice quality is outstanding.

Not a gimmicky add-on, but an integral part of the play mechanic, the verbalization complements colorful, sometimes cartoony, visuals. Though parts of Space Taxi come off a bit too cute, successfully steering the hack through all 24 screens is a completely serious matter. This setup provides a nice balance of humor, wit and challenge.

Precision is required to angle into tight spots, move to the next screen and gently land on pads and refueling depots. The reckless driver will quickly become a sparkling cinder of space debris. Inertia, gravity and the old adage that two objects can't occupy the same place at the same time are observed in Space Taxi.

Unlike some games, where precision

**B**

means frustration, the joystick control is perfect. Steering, direction changes and deployment of landing gear with the fire-button are controlled easily.

Up to four cabbies can compete in a game. Each player must complete a shift with a fleet of six high-flying cabs. Each of the five shifts represents a difficulty level. The initial three are composed of eight screens, while the last two (standard and random 24-hour shifts) cycle through every screen, provided you're good enough to make it all the way through!

Greed is the primary motivator. Besides the fare (\$5 for a safe transit within a screen and \$10 for interscreen trips), a bonus tip meter counts down, starting anywhere from \$11 to \$19. Any remaining cash is received as a tip, if (and it's a big if) the customer thinks the ride was satisfactory. There's no obligatory tipping here.

Amassing \$300 worth of fares (no mean feat) entitles you to a free cab. You'll also have to keep an eye on your fuel consumption. Though your cab isn't a gas guzzler, using a light touch on the joystick will help stretch your gas mileage until you reach a refueling station.

Fuel purchases and delays in picking up customers will deplete the amount earned. For these reasons, finesse and agility are important in navigating your cab through the surrounding scenery,

which ranges from sprouting beanstalks and oversized beach furniture to tricky cityscapes and a delightful winter scene, complete with snow and conifers.

A small area at the bottom of the screen is devoted to instrumentation and game status information. A blue landing light indicates that it's safe to land, a yellow one warns you to be cautious, and a red one signifies a one-way trip to the galactic cemetery for reckless drivers. By the way, landing on customers will provoke a verbal complaint from your computer!

Little cab icons portray the number of fleet reserve vehicles, while the screen indicator tells you how far into the shift you are. There is also a takeoff indicator and a fuel gauge.

The bonus tip meter and the earnings meter are on opposite sides of the screen. A message center prints words as they are spoken by your customers.

At the game's end, the crown of immortal cabbie is bestowed upon you if your earnings exceed \$50 and fall into the all-time high-score range. It's an honor you'll want to keep pursuing—Space Taxi is a feature-packed game with lots of amusing twists. (Muse Software, 347 N. Charles St., Baltimore, MD 21201. \$29.95.)

**Ted Salamone  
Bridgeport, CT**

# Word Processor-**A** Professional

*An Enhanced, Professional  
Version of Mirage Concepts'  
Word Processor*

**T**horough documentation, ease of use and complete menus are the most striking elements of this outstanding word processor, which is from Mirage Concepts.

The first thing you notice about the program is its sturdy, three-ring vinyl binder, which is common among software products for expensive micros, but rare for C-64 programs.

The binder includes a plastic quick-reference card, containing the program's most commonly used commands. The card is handy when you're reading the tutorial, as well as when you're using the program.

The documentation contains 12 chapters, a reference section briefly describing each command, a glossary for first-time word processor users, a section of hints on using the program and a listing of printer commands for the most popular printers.

The 12 chapters are broken into two segments: a beginning tutorial (five chapters) and an advanced tutorial (seven chapters). The manual itself was prepared by professional writers. The contents are lucid, easy to read and logically organized, requiring no previous experience with computers or word processors.

The program begins by letting you select screen colors from a wide palette. Certain color combinations are recommended, depending upon whether you are using a TV or a monitor. After selecting colors, you simply press return, and the program loads in about 30 seconds. You are then instructed to remove the program disk and insert a data disk, which will contain your written material.

A main menu then appears, giving you a choice of submenus. The menus are quite complete, even allowing easy formatting of a blank disk.

The submenus tell you exactly what steps to take. For example, to load a file

from your data disk, you are instructed to enter a filename (with a maximum of ten letters) and to press return when you are finished.

Most of your actual writing takes place in the Edit mode. As you enter that mode, a display area at the top of the screen gives you the default values for the printed page. The program sets up a standard 8½" × 11" page. You can change these values, if you wish.

In the Edit mode, there is a counter at the top of the screen to help you keep track of page, line and character number. Below the counter, 17 rows of text are displayed. You do your editing in the twelfth row, which is highlighted in a special color.

The program has 16K of storage space, which is equal to 4½ pages. Although you can chain 4½-page files together to create long documents, the small storage space is the program's main drawback. The program's designers traded file length for the ability to let you see 80 columns of text without additional hardware. Although the normal length of lines in this word processor is 40 columns, pressing f8 will give you an 80-column display. Although the individual characters are virtually illegible in the 80-column display, you can at least get a sense of what your document will actually look like when it is printed. The program also features word wrap, global search and replace, centering and indenting.

This program is an upgraded version of Mirage Concepts' Word Processor, released last year. The enhancements include a 30,000-word spelling checker, an advanced print section (rewritten in assembly language to increase speed) and greater printer compatibility. These enhancements, together with the standard features, make this a powerful and versatile package.

The Word Processor-Professional is an excellent buy for both the experienced user and the novice. Mirage Concepts' emphasis on user friendliness is evident throughout the program. A toll-free customer support telephone line is available to answer questions and provide assistance. (*Mirage Concepts, 4055 W. Shaw # 108, Fresno, CA 93711. \$89.95.*)

**Jerome Beck  
Glendora, CA**

## Move up to **FORTH**

*There's more to programming  
than BASIC.*

A complete disk-based Forth system for the Commodore 64 for only **\$27.95!**

Write fast programs, write structured programs, and have fun writing them.

This powerful Forth system includes these features:

- Forth-79 Standard
- A complete screen editor that scrolls to display 64 columns by 16 rows (user can select colors)
- Disk-based virtual memory - 166 screens per disk
- Save compiled code, including your dictionary extensions, at any time
- Simple access to basic C64 sound and graphics features
- A Forth 6502 Assembler
- IRQ Interrupt handler
- Compatible with MSD single and double disk drives as well as Commodore 1540 and 1541 drives
- Supports MSD and Batteries Included IEEE interfaces
- Supports Commodore 1525 (or compatible) printers and interfaces
- No license or royalty fees.

**\$27.95** including shipping and handling  
(Cal. residents add 6% tax)

(Source code and listings available. Write or call for prices.)

## **FASTCOPY**

Copy Your Valuable Data and Programming Disks with this Fast, Reliable Disk Backup Utility for C64 Single Drive Systems.

- Backs up complete disk sector for sector\*
- Supports 1541 and MSD drives
- Supports MSD and Batteries Included IEEE interfaces
- Requires only three reads and three writes
- Audible signal alerts operator to switch disks

\*will not back up copy-protected disks

**\$18.50** including shipping and handling  
(Cal. residents add 6% tax)

**The M&M  
Software Company**  
PALO ALTO, CALIFORNIA

Phone Orders (VISA/MC) or Information Call:

**415-321-2722**

Or Write To:

3790 El Camino Real, Suite 2003,  
Palo Alto, CA 94306

# Don't Get ITRAPPED IN THE MAZE

By JAMES MILLER

**W**hen I first tried simple game programming on the VIC, I was stumped! Poring over scores of game programs and tutorials didn't help much, either. I thought that it was just too tough!

I believed there was some secret (and very complex) formula that controlled everything, a formula that the great gamers knew by intuition and were not about to share with slow-witted folks like me!

But that was my problem. . . I was looking for a solution far more difficult than it really turned out to be! The simplicity of Basic game design is so apparent that I missed it completely!

Maybe that's been your problem, too? If this is the case, let's run through some simple ideas and concepts that really control game action and see how it's done.

This tutorial is for those of you who are too often mystified by computing and want some elementary, step-by-step help!

## Screen and Color + Get

After many attempts at Poking and printing graphics and trying, unsuccessfully, to get them to move up and down and right and left on the screen, I finally hit upon a solution.

Poking movement in one direction is easy, but adding the Get command finally gave me four-way keyboard control. The core routine I devised for character movement was so direct and simple that I almost doubted its ability.

If you've dabbled with Pokes at all, you've learned that the computer screen is divided into locations for character

and color. On the VIC, the screen begins at location 7680 (upper-left corner) for character placement. For color values, the screen begins at 38400.

From the top left, there are 506 possible Poke locations within a 23-row by 22-column screen.

You can use any part of this total working area. Here's some simple math to keep in mind. If  $x$  = your starting point, then:

$x + 1$  = one space right  
 $x - 1$  = one space left  
 $x + 22$  = one row down  
 $x - 22$  = one row up

Using a GET A\$ command combined with a blind Goto loop is just about all you need to create and control a graphics character's movement on the screen.

I'll look at the core routine first. Next, I'll develop and expand it, adding sound and color, then custom characters and a maze. Finally, I'll turn it into a strategy game you play against the clock.

## The Core Routine

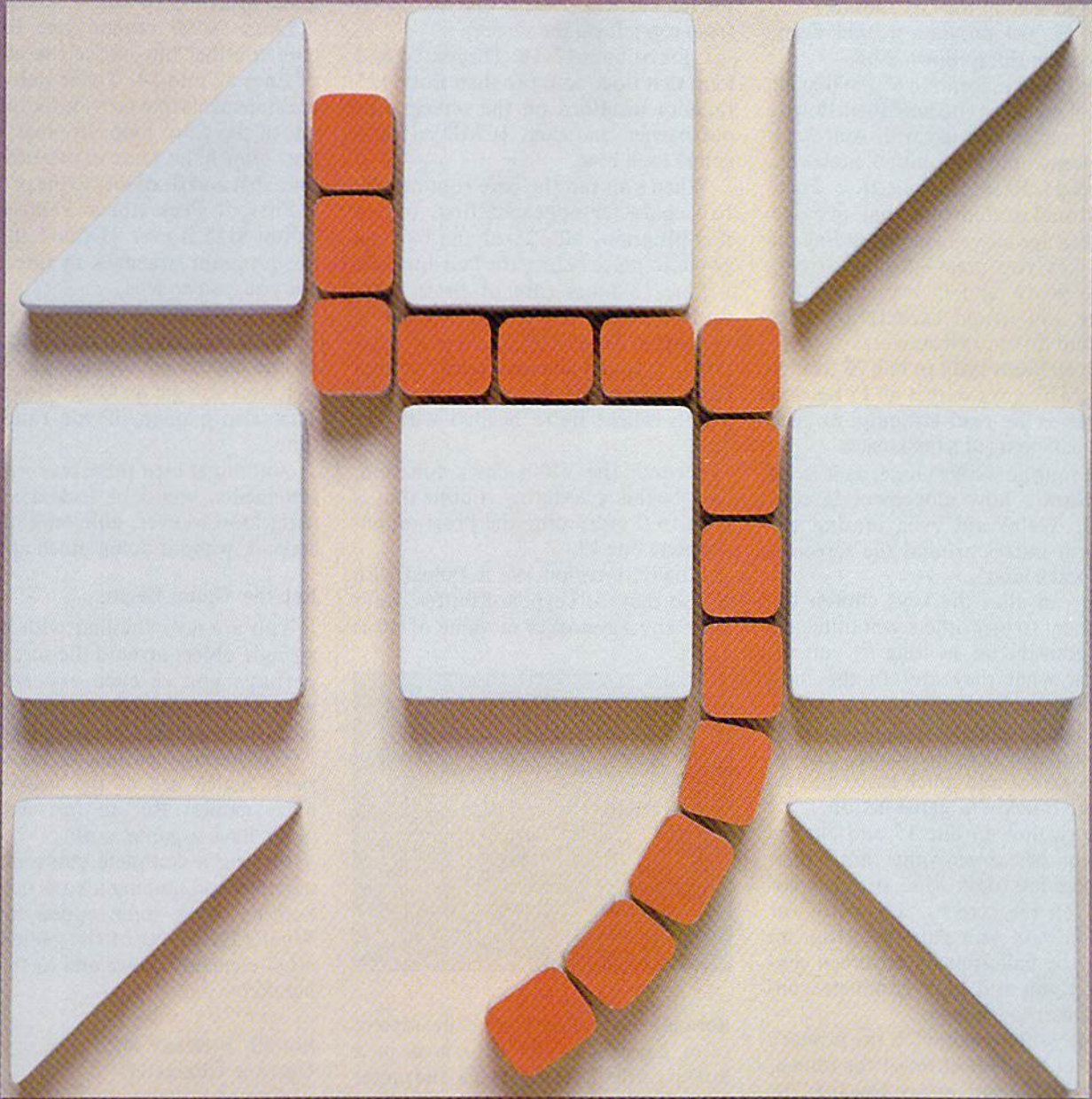
The core program in Listing 1 is only 12 lines long and could be shortened if you used a lot of multiple statements. The routine takes care of four basic action elements: choosing a starting location for the character, setting a color-value constant, Poking the character and its color to the screen and moving it around.

Line 10 clears the screen.

Line 15 initializes two variables. X is the first screen character location, and CL is the color constant used to color the character.

Line 22 Pokes a ball character (81) in





**This article takes you from keyboard character movement through random maze construction, to a complete program, using color, sound and custom characters.**

the first screen position and colors it black.

Line 30 sets up the Get routine.

Line 32 just provides a brief delay loop to slow things down a bit.

Line 33 Pokes location 650 so that all keys will repeat as you hold them down. We're only concerned with four keys for movement in this routine, however.

Lines 35-50 set up four If. . .Then conditional statements that provide for character movement depending on which key you press—the up arrow, left arrow, R and D keys move the ball as you would expect: up, left, right and down, respectively.

Line 60 loops back to line 20 continuously. This ensures that all Pokes and key presses are read instantly, to keep movement going at a brisk pace.

The routine works alone, as it is, to demonstrate how movement is controlled. We're not even erasing the ball as it moves around the screen—that comes later!

You can alter the keys chosen for movement to any others you think are more convenient, as long as you remember what they are! In the final game program, we'll use the cursor control keys plus f5 and f7 for left, right, up and down, because they're close together and much easier to manipulate quickly in game action.

Return now to line 15 and change X to another screen value larger than 7680 but less than 8185 (the last location on the screen). Try 7910, for example. As you run the program again, the ball appears at screen center, but you still have complete control of its movements.

Some games begin with the primary character at the bottom of the screen, and the basic moves are towards the top of the screen. In that case, there's no need for a Down command—like line 50. In fact, it's a good idea to exclude it in some cases, or you'll find your character dropping off the bottom of the screen, into never-never land!

## Building a Game

From the core program, you can expand the simple Get movement technique to include routines that begin to create a game atmosphere. The program in Listing 2 is just twice as long as the core routine, and if you study the listing, you'll see it's all there, with only slight changes.

Lines 16-20 are new and initialize new parts of the game structure we're planning. BR in line 16 sets up 125 barrier elements (something to avoid

or run into as you move the ball about the screen!). Y is the starting location for the barriers (7702 is one line down from top left on the screen).

Look at lines 17-18. They serve as a loop that does no more than Poke 125 random locations on the screen with our barrier character, {CMD+}, and colors each blue.

When you ran the core routine, the ball character appeared first, but in this program, all 125 of the barriers pop into place before the ball appears.

Line 19 takes care of three functions necessary in the development of the game. First, it Pokes a goal location (8185) and places a purple symbol that looks somewhat like a # there. That's where we're headed with the ball!

Second, the VIC's clock function, TIS, begins a counting routine that is reset to 0 every time the program encounters line 19.

Finally, location 198 is Poked with a 0 so that the keyboard buffer won't store any keystrokes (a value of 10 is



normal). As you race across the screen, extra keystrokes can be stored in a buffer, thus causing extra character movement when you don't want it.

Line 20 represents a change from the core routine. The REM has been deleted and replaced by a random variable that changes the color of the ball. You remember that line 60 was a Goto statement that sent the program back to line 20.

This adds a nice touch to the program and also helps you know exactly where you are. The ball changes color several times a second and you can turn back on yourself without worry because the color change tells you your position! That would not be the case if we used a single, unchanging color Poke.

Line 22 Pokes the ball character *after* the new color variable; also, the color Poke has been changed to include variable CX, the random color value. Line 29 also is new and prints

the clock at the top right of the screen. If more than 29 seconds tick off, the game branches to a new subroutine.

Lines 30-60 remain just like the core routine, but notice the addition of lines 52 and 54. Those pair of IFs are statements that provide the only way out of the Goto loop. In other words, they branch the game to two other routines that add flexibility to the program.

First, if Peek (the # value of) location 8185 is ever 81 (the ball), then the program branches to line 100 to tell you you're free!

If, however, you run into a barrier, the program jumps to line 65 and then to line 200 as a \* replaces the {CMD+}, and you get an OUCH! message. That also happens if you run out of time.

Without at least these two branching statements, you'd be locked into the main loop forever, able only to move around, without doing much at all.

## Let the Game Begin

You are now familiar with moving a single object around the screen, and perhaps you've even experimented with another character in place of the ball (there are lots of choices).

You've also learned to create barriers, which are at the heart of all maze games. But so far, we really don't have a game at all.

Putting a complete game program together and making it entertaining or exciting takes some added thought. What's the object of the game? What other elements do we add to fill in the blanks?

## Sound, Strategy and Custom Characters

By its very nature, a maze game involves escape and, usually, a race against the clock. In addition, most of us like to see some progress or reward, and that's where scores come in.

Beyond that, you may want to explore more of your computer's capabilities, especially its talent for special characters you create in place of common keyboard graphics.

The main Frenzy program (see Listing 3) takes care of all of that and a little more in just 58 lines. Even with the addition of custom characters, there's plenty of memory left for you to experiment, modify and change the program until you have just what you want in a maze game!

The core remains the same, and the branches used in Listing 2 are still there—they're just changed to include scoring, sound and color.

“... facts attest to its  
**EXCELLENCE!**”

FOR  
COMMODORE  
AND COMING SOON  
FOR APPLE AND ATARI

**FAMILY COMPUTING**

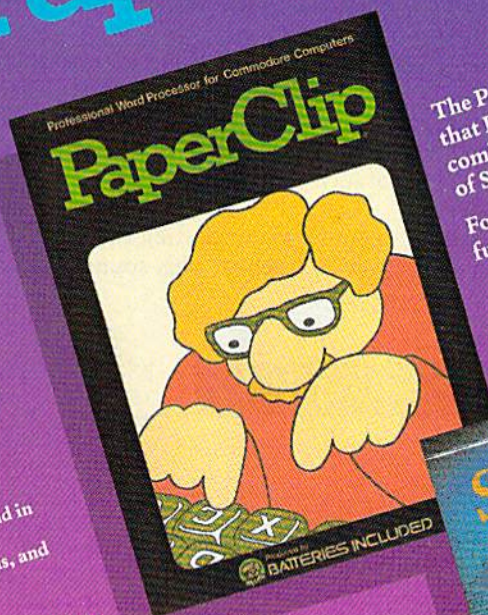
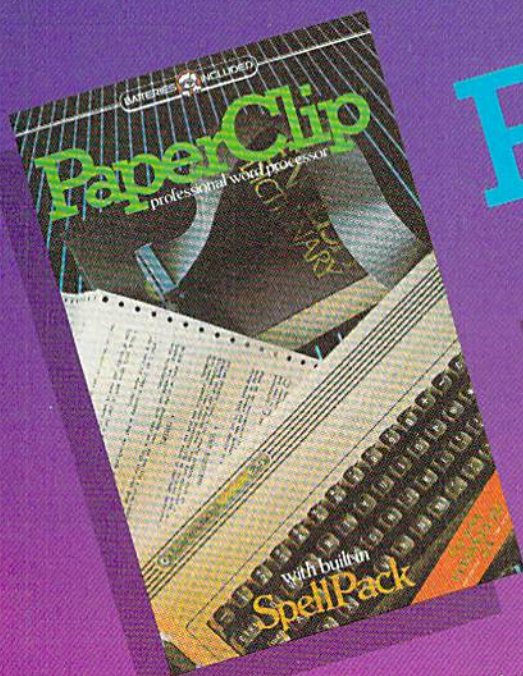
“So far as we are concerned,  
Paper Clip is the top word processor  
running on a micro computer.”

—Home Applications For The C-64

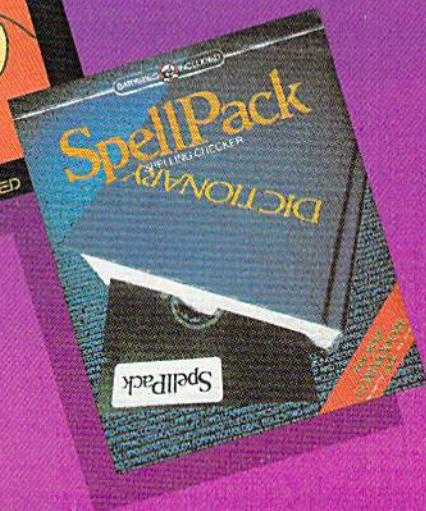
“Paper Clip is one of the easiest  
of the professional word processors to use,  
with a sensible manual and plenty of aids for the accident-prone.”

—Computing Now

# PaperClip™



The Power, Flexibility and Ease of use  
that Paper Clip users rave about,  
combined with the infallibility  
of Spell Pack.  
For those who want the best in  
full word processing



- 20,000 word dictionary
- User expandable dictionary
- Highlights words and documents not found in dictionary for spelling confirmation
- Re-arranges words, sentences, paragraphs, and pages with a few keystrokes
- Easy to learn, easy to use!
- 40 & 80 column output
- Compatible with virtually every printer available
- Compatible with The Consultant Database™

FROM CLAY TABLETS, THROUGH PARCHMENT, GUTENBERG AND BEYOND, MAN HAS SEARCHED FOR THE ULTIMATE METHOD TO STORE, SORT AND PRINT THE WRITTEN WORD. NOW, BATTERIES INCLUDED PROVIDES THAT METHOD, THE PAPER CLIP FAMILY, AN OUTSTANDING WORD PROCESSOR AND SPELLING CORRECTION SYSTEM FOR ALL COMMODORE COMPUTERS — AND COMING SOON FOR APPLE AND ATARI.

**BATTERIES INCLUDED**



“The Energized Software Company!”

WRITE FOR A FULL COLOR BROCHURE

186 Queen St. West  
Toronto, Ontario,  
M5V 1Z1 Canada  
(416) 596-1405

17875 Sky Park North,  
Suite P, Irvine, California  
USA 92714

© 1984 BATTERIES INCLUDED. ALL RIGHTS RESERVED. ATARI, APPLE, AND COMMODORE ARE REGISTERED TRADEMARKS RESPECTIVELY OF ATARI, INC., APPLE COMPUTERS, INC., AND COMMODORE BUSINESS MACHINES, INC.

www.Commodore.ca  
May Not Reprint Without Permission

In addition, several new elements have been added: custom characters, several sound routines, screen color changes, a way to animate the moving character and a way to end the game.

Look over the final program carefully before you type it in. Compare the similarities and differences with the program in Listing 2.

Lines 2-7 take care of special character development by changing three standard keyboard characters (@, [, ]) to three created characters that add interest to the game.

In place of a ball is a creature that you can move around the screen. The barriers, too, are customized. Also, a new character is used as an added element in the game. . . a bomb to defuse for points.

Look at lines 35-50. You will see one new command in each line. As the creature moves about the screen, these commands act as an eraser; spaces behind it are Poked with a blank so that the creature doesn't leave a trail as he moves.

Lines 35-50 also change the movement keys, to make things easier on our fingers.

Pressing the cursor-down key moves the creature left only, the cursor-right key moves him right, f5 moves him up and f7 moves him down.

Escapes to the goal (#) earn points, and defusing the bombs earns a bonus. The bombs are randomly Poked on the screen, and there's plenty of time to get most of them.

As an additional element, the maze grows more complex as you advance from round to round, but it's worse on you if you slam into a barrier—points are lost and the maze really grows!

Below, you'll find an explanation of this program's important routines, plus a brief description of the variables and suggestions about changes you may make.

Lines 1-7: Title, lower memory, the creation of custom characters in Data statements.

Lines 8-9: Initialize score and rounds plus barriers.

Lines 10-16: Clear screen, set volume and sound variables plus screen and color locations for each custom character.

Lines 17-22: Poke and randomize character placement, set time TIS to 0.

Lines 30-60: Get/Goto character movement loop plus conditional branch statements.

Lines 100-110: Routine for incrementing and reporting the score if the goal is reached, plus sound and color changes.

Lines 200-210: Routine for score decrement if barrier hit, plus sound and color changes.

Lines 300-360: Game end routine.

Lines 600-610: Title screen character Poke routine.

Remember that the key to this program remains as simple as the core routine: a short Get/Goto loop takes care of all movement, and the addition of a few If. . .Then branching statements takes care of all the rest—scoring, sound and color. ®

*Address all author correspondence to James Miller, 2142 Odema Drive, Lima, OH 45806.*

<p>SK = score, RO = round  BR = barriers  V = volume  S1, S2 = sound 1&amp;2  X = beginning character location  CL = color constant  Y = beginning location for barriers  Z = beginning location for bombs  B = random # of bombs  CY = random location of bombs  CX = random color for moving creature</p>
---

**Table 1.** *Frenzy program variables.*

### Listing 1. The core program.

```

10 PRINT "{SHIFT CLR}"
15 X=7680:CL=30720
20 REM BALL CHARACTER
22 POKE X,81:POKE X+CL,0
30 GET A$
32 FOR D=1 TO 30:NEXT
33 POKE 650,255
35 IFA$="{UP ARROW}" THEN X=X-22
40 IFA$="{LEFT ARROW}" THEN X=X-1
45 IFA$="R" THEN X=X+1
50 IFA$="D" THEN X=X+22
60 GOTO 20

```

```

33 POKE 650,255
35 IFA$="{UP ARROW}" THEN X=X-22
40 IFA$="{LEFT ARROW}" THEN X=X-1
45 IFA$="R" THEN X=X+1
50 IFA$="D" THEN X=X+22
52 IF PEEK(8185)=81 THEN 100
54 IF PEEK(X)=102 THEN 65
60 GOTO 20
65 POKE X,42:GOTO 20
100 PRINT "{HOME}" TAB(17) "{CTRL 9}{CTRL 5}FRE"
    REE "{CTRL 0}"
110 FOR D=1 TO 2500:NEXT:GOTO 10
200 PRINT "{HOME}" TAB(17) "{CTRL 9}{CTRL 3}O"
    UCH "{CTRL 0}"
210 FOR D=1 TO 2500:NEXT:GOTO 10

```

### Listing 2. Basic game shell to the Frenzy program.

```

10 PRINT "{SHIFT CLR}"
15 X=7680:CL=30720
16 BR=125:Y=770
17 FOR J=1 TO BR:A=INT(RND(1)*475)+1
18 POKEY+A,102:POKEY+A+CL,6:NEXT J
19 POKE 8185,88:POKE 8185+CL,4:TIS$="000000":POKE 198,0
20 CX=INT(RND(1)*5)+2
22 POKE X,81:POKE X+CL,CX
29 PRINT "{HOME}" CTRL(1);TAB(20);RIGHT$(TIS,2):IF TIS>"000029" THEN 65
30 GET A$
32 FOR D=1 TO 30:NEXT

```

### Listing 3. The main Frenzy program.

```

1 PRINT "{SHIFT CLR}" {10 CRSR DNS} TAB(7) "{CTRL 9}FRENZY!{CTRL 0}{@}"
2 POKE 52,28:POKE 56,28:FOR I=7168 TO 7664:POKE I,PEEK(I+25600):NEXT
3 FOR X=7168 TO 7175:READ A:POKE X,A:NEXT X:DATA 153,219,36,60,126,90,102,102
4 FOR X=7384 TO 7391:READ A:POKE X,A:NEXT X:DATA 36,24,189,126,189,24,36,0
5 FOR X=7399 TO 7406:READ A:POKE X,A:NEXT X:DATA 255,231,153,231,24,231,153,231
7 POKE 36869,255:FOR D=1 TO 2500:NEXT:GOSUB 600
8 SK=0:RO=0
9 BR=75

```

# GREAT NEWS FOR OWNERS OF COMMODORE, APPLE, & ATARI COMPUTERS!

**Most printers don't work with Commodore or Atari. And to get one that does, costs too much. That's why the engineers at Blue Chip designed a new personal printer called the M120/10. If you own a computer read on:**

Of the ten high speed dot matrix printers most often used with Commodore, Apple, and Atari, none is less expensive than the Blue Chip M120/10. Or more powerful.

Fully equipped, it's about \$50 less expensive than a comparable, yet much slower Commodore printer. And in the vicinity of \$300 less than an Epson\* set-up to work with a Commodore.

Despite its low price, the Blue Chip M120/10 is not a stripped down, bargain basement printer.

In fact, when you judge it by the same stringent standards computer professionals use—by weighing total

performance against cost—it's difficult to find a printer that compares to the Blue Chip M120/10.

Top speed with a Blue Chip M120/10 is 120 characters per second. To beat that in any other make of printer, you have to spend about \$400 more.

Special print modes on an M120/10 include graphics; condensed, bold-faced and expanded characters; as well as superscripts and subscripts, and near letter quality characters. And to beat that in any other make of printer you have to spend nearly \$300 more.

And since it also has the IBM-PC\*, Apple Macintosh\* and IIC\*, Serial, and Centronics interfaces\*\*, you can use the Blue Chip M120/10 with just about any computer you may eventually own.

The Blue Chip Personal Printer costs a lot less than anything similar... without compromise in quality. Highly powerful and relentlessly practical.

**See one today.** Blue Chip printers are available at Best Products, LaBelle's, Jafco, Dolgin's, Miller Sales, Rogers, Great Western catalog showrooms, and other fine stores. Or call (800) 556-1234 Ext. 540. In California, call (800) 441-2345, Ext. 540, for more information and name of your closest Blue Chip dealer.

Circle 13 on Reader Service card.

## BLUE CHIP

### ELECTRONICS

2 West Alameda Drive/Tempe, Arizona 85282/(602) 991-9833

\*Commodore is a registered trademark of Commodore Business Machines Corp.

Epson is a registered trademark of Epson America, Inc.

IBM is a registered trademark of International Business Machines Corp.

Apple is a registered trademark of Apple Computer Inc.

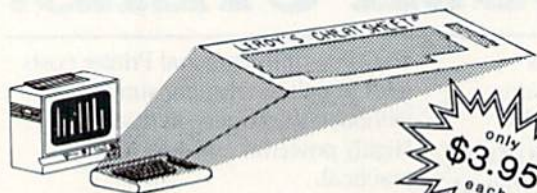
\*\*Replacement interfaces sold separately.



Circle 225 on Reader Service card.

# LEROY'S CHEATSHEET<sup>®</sup>

KEYBOARD OVERLAYS



## FOR COMMODORE 64

(VIC-20 also available)

LEROY'S CHEATSHEETS<sup>™</sup> are plastic laminated keyboard overlays designed for use with popular software and hardware for Commodore's VIC-20 & C-64 computers.

These cut-it-out yourself overlays are designed to fit over the keyboard surrounding the keys with commands and controls grouped together for easy references.

## LEROY'S CHEATSHEETS<sup>™</sup>

make life easier for you

### WORD PROCESSORS

- EASY SCRIPT<sup>1</sup>
- HES WRITER
- PAPER CLIP
- QUICK BROWN FOX
- SCRIPT 64
- \*  SPEEDSCRIPT (GAZETTE)
- WORDPRO 3/PLUS

### PRINTERS

- COMMODORE 1525; MPS-801
- COMMODORE 1526<sup>1</sup>
- EPSON RX-80
- \*  GEMINI 10X

### TERMINALS

- TERM 64
- \*  THE SMART 64 Terminal
- \*  VIDTEX

### LANGUAGES & UTILITIES

- BASIC
- HESMON 64
- LOGO (CBM-sheet 1)<sup>1</sup>
- LOGO (CBM-sheet 2)<sup>1</sup>
- PILOT (CBM)<sup>1</sup>

\* NEW

### DATA BASES

- THE CONSULTANT (Delphi's Oracle)
- MANAGER (CBM)<sup>1</sup>
- SUPER BASE 64

### SPREADSHEETS

- CALC RESULT (ADVANCED)
- CALC RESULT (EASY)
- EASY CALC<sup>1</sup>
- MULTIPLAN (HES/MICROSOFT)
- PRACTICALC 64/PLUS

### MISCELLANEOUS

- BLANKS (3 ea-NOT laminated)
- \*  FOR THE BEGINNER
- SPRITES ONLY
- \*  FLIGHT SIMULATOR II
- \*  DOODLE

RUN 1

Qty.  X \$3.95 \$

Shipping & handling \$  1.00

6% sales tax \$   
(PA residents only)

TOTAL \$

Dealer inquiries welcome

Name

Address

City  State  Zip

(1) Products of Commodore Business Machines.

**CHEATSHEET PRODUCTS<sup>™</sup>**

P.O. Box 8299 Pittsburgh PA. 15218

(412)731-9806



... or see your local dealer !

Listing 3 continued.

```

10 PRINT"{SHFT CLR}":POKE36879,28
12 V=36878:S1=36875
14 S2=36877
15 X=7702:CL=30720
16 Y=7710:Z=7900
17 FORJ=1TOBR:A=INT(RND(1)*465)+1
18 POKEY+A,29:POKEY+A+CL,0:NEXTJ
19 POKE8185,35:POKE8185+CL,0:TI$="000000":P
   OKE198,0
20 B=INT(RND(1)*9)+7:FORNX=1TOB:CY=INT(RND(
   1)*175)+1:POKEZ+CY,27
21 POKEZ+CY+CL,2:NEXTNX
22 CX=INT(RND(1)*5)+2:POKEX,0:POKEX+CL,CX
24 POKEV,15:POKES1,235
26 FORDE=1TO10:NEXT
28 POKEV,0:POKES1,0
29 PRINT"{HOME}{CTRL 1}";TAB(20);RIGHT$(TI$
   ,2):IFTI$>"000045"THEN65
30 GETA$
32 FORD=1TO10:NEXT
33 POKE650,255
35 IFA$=CHR$(136)THENX=X+22:POKEX-22,32
40 IFA$=CHR$(135)THENX=X-22:POKEX+22,32
45 IFA$=CHR$(17)THENX=X-1:POKEX+1,32
50 IFA$=CHR$(29)THENX=X+1:POKEX-1,32
51 IFPEEK(X)=27THENSK=SK+25:POKEV,15:POKES1
   ,245:FORDE=1TO30:NEXT:POKEV,0:POKES1,0
52 IFPEEK(8185)=0THEN100
53 IFX>8185THENPOKEX-1,0
54 IFPEEK(X)=29THEN65
60 GOTO22
65 POKEV,42:POKEV+CL,7:GOTO200
100 SK=SK+100+(RO*2):RO=RO+1:POKE36879,121
101 PRINT"{HOME}"TAB(2)"{CTRL 9}{CTRL 1}SK=
   {CTRL 0}";SK;" RO=";RO
102 POKEV,15:FORM=187TO245STEP10
104 POKES1,M
106 FORDE=1TO50:NEXT:NEXTM:FORDE=1TO50:NEXT
   :POKES1,147
107 POKEV,0:POKES1,0
108 IFRO=15THEN300
109 BR=BR+5
110 FORDE=1TO2500:NEXT:GOTO100
200 SK=SK-50:RO=RO+1:POKE36879,47
201 PRINT"{HOME}"TAB(2)"{CTRL 9}{CTRL 8}SK=
   {CTRL 0}";SK;" RO=";RO
202 POKEV,15:FORM=245TO147STEP-.2
204 POKES2,M:NEXTM
206 POKEV,0:POKES2,0
207 IFRO=15THEN300
209 BR=BR+10
210 FORDE=1TO2500:NEXT:GOTO100
300 POKE36869,240
305 PRINT"{SHFT CLR}{2 CRSR DNs}{CTRL 1}GAM
   E OVER!"
310 PRINT"{CRSR DN}{CTRL 1}SCORE=";SK
320 PRINT"{CRSR DN}{CTRL 1}IN ";RO;" ROUNDS
   "
330 PRINT"{2 CRSR DNs}{CTRL 1}PLAY AGAIN(Y/
   N)?"
340 GETK$:IFK$=""THEN340
350 IFK$="Y"THENRUN7
360 IFK$="N"THENEND
600 FORJ=7702TO8185STEP23:POKEJ,0:POKEJ+307
   20,0:FORDE=1TO50:NEXT
607 NEXTJ
610 RETURN

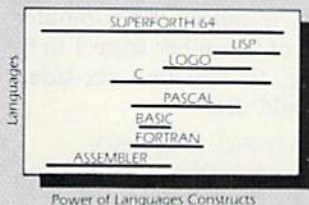
```

# "SUPERFORTH 64"

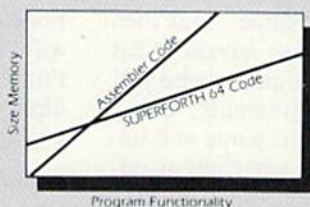
TOTAL MASTERY OVER YOUR COMMODORE 64 USING ONLY WORDS!  
WE MAKE PROGRAMMING FAST, FUN AND EASY!

SUPERFORTH 64 increases your creative productivity 600%  
Saving you or your company time, effort and money!

Super Forth 64 is more powerful  
than most other computer languages!



Super Forth 64 compiled code  
becomes more compact than even  
assembly code!



SUPERFORTH 64 is the ultimate in a complete full-integrated program development system designed to help you program quickly and easily whether you are a beginner or a professional with interests in—Home use, Fast Games, Graphics, Music, Data Aquisition, Business, Education, Real Time Process Control, Communications, Robotics, Scientific, Artificial Intelligence. SUPERFORTH 64 is now used extensively industry wide by Software Professionals, Scientists, Engineers, Educators, Business People, Students...

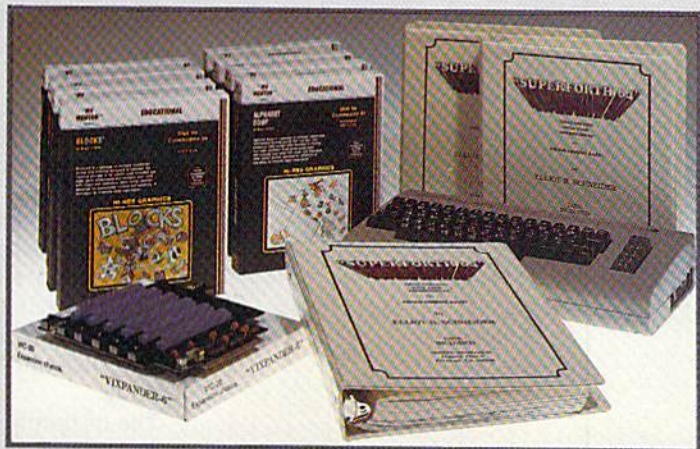
SUPERFORTH 64  
A SUPERIOR PRODUCT  
in every way! At a low  
price of only  
**\$96.00**

"MY MENTOR" Series, Educational Software **\$24.95**  
Alphabet Soup and Blocks are packages of carefully re-  
searched, entertaining learning games that can help your  
preschool child acquire skills essential to reading and  
math readiness.

VIXPANDER VIC-20™ EXPANSION **\$75.00**  
Six Slot Switched, Electronic Buffering

## SUPERFORTH 64 FEATURES

- 20 to 600 x faster than Basic
- 1/4 to 1/6 x the programming time
- Easy full control of all **sound, hi res. graphics**, color, sprite, plotting line, circle & arc
- Controllable **SPLIT-SCREEN** Display
- Interactive **interpreter & compiler**
- Forth **virtual memory**
- Full cursor Screen Editor
- Market your own program, without licensing
- Conditional **Macro Assembler**
- Meets all Forth 79 Industrial standards plus
- Source screens provided
- Compatible with the book "Starting Forth" and "Thinking Forth" by Leo Brodie
- Access to all I/O parts RS232, IEEE, including memory & interrupts
- **ROMABLE** code generator
- **Music, Sprite Editors**
- **Turtle Graphics**
- **SPRITE-EDITOR**
- Access all C-64 peripherals including 4040 drive and EPROM Programmer
- Disk & Cassette based. **Disk included**
- Supports all Commodore file types and Forth Virtual disk
- Up to 40K user memory
- **Trace** facility
- **DECOMPILER** facility
- Full String Handling
- ASCII error messages
- **FLOATING POINT MATH** SIN/COS SQRT
- Conversational user defined Commands
- Manual—extensive 261 pgs, cross referenced, many examples
- **INTERRUPT** routines provide easy control of hardware timers, alarms and devices
- Personalized user support and update service.



## BUY TODAY!

Take this ad to your local dealer or bookstore. If there is not a dealer in your area call:  
Parsec Research at (415) 651-3160.

Shipping charges: \$2.50 U.S.A. and Canada • \$2.00 C.O.D. (U.S.A. only) • \$15.00 Overseas

**DEALER INQUIRES INVITED, 100% SUPPORT IN YOUR AREA, FAST DELIVERIES.**

PARSEC RESEARCH  
Drawer 1766, Fremont CA 94538

Circle 208 on Reader Service card.



# WRITING WORD GAMES

By M.J. WINTER

If you say, "I'm going to write a Hangman game" and then do it, you have advanced far beyond the beginner who just knows the Basic statements. Being able to both outline the game and implement the outline is what sets an advanced programmer apart from a novice.

In this article, we'll first look at some properties common to word games, and I'll show you how to program these into outline form. I'll construct outlines for three word games: Scramble, Hangman and Word Mastermind. The outlines will provide you with enough detail to make a bare-bones, working game. Once the game is working, you can improve upon it.

Most word games have two requirements: A word must be randomly selected from a list of words in Data statements, and the letters of the selected word are dealt with individually. These properties suggest the programmer should first use a function that will make the computer select a number,  $FNR(N)$ , which produces integers from 1 to  $N$ , and, secondly, make a list of the letters of the word. Elements of a list are easy to change; it is very difficult to alter the middle of a string.

The beginning steps of a game outline are:

1. Select a word  $W\$$
2. Make a list of the letters of  $W\$$

In the next two sections, we'll generate the code to perform these steps.

## Think of a Number

```
10 DEF FNR(X) = INT(RND(1)*X + 1)
```

If the function  $FNR(X)$  is defined as

in the above line, then each time  $FNR(6)$ , say, is called, the computer will "think" of a number from 1 to 6. For example, to roll two six-sided dice, you would use:

```
X = FNR(6): Y = FNR(6): PRINT X,Y
```

Suppose you have 20 words listed in Data statements. To pick one at random, let  $N = FNR(20)$ . Read  $W\$$   $N$  times; each time,  $W\$$  will be replaced by a new word. The last read value of  $W\$$  will be the  $N$ th word in the Data statements.

```
100 N = FNR(20)
110 FOR I = 1 TO N
120 READ W$
130 NEXT I
140 RESTORE
```

(It's always a good idea to use the Restore command after reading data. That way, if you think of another word, the program will start reading from the top of the list.)

## List the Letters

The secret word is  $W\$$ . Since it is very awkward to work with individual letters of a string variable, let's define a list of the letters of  $W\$$ .  $L$(1)$  will be the first letter of  $W\$$ ;  $L$(2)$  will be the second letter of  $W\$$ ;  $L$(3)$  will be the third letter of  $W\$$ . And so on. To construct the list (array)  $L$$ , use:

```
200 FOR I = 1 TO LEN(W$)
210 L$(I) = MID$(W$,I,1)
220 NEXT I
```

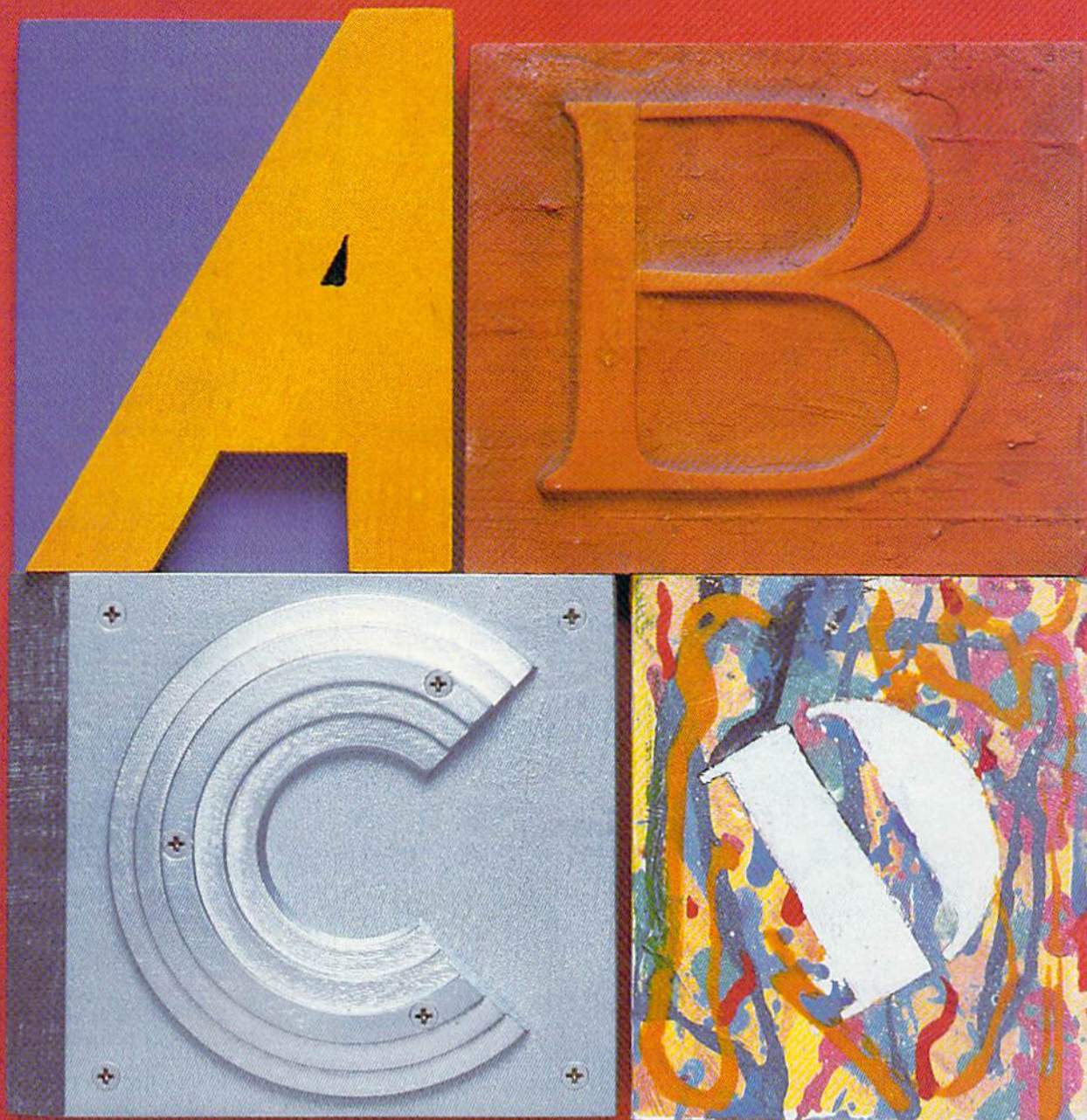
And, since a Basic program must be told the limits of a list's length, enter:

```
5 DIM L$(25)
```

(No word in the Data statements has more than 25 letters.)

Lines 5-220 will be used in all the





**How would you like to write your own word games, like Scramble, Hangman and Word Mastermind? This article provides you with outlines for these games, to get you started.**

Line	Description
5-140	choose word W\$
200-220	make list of letters of W\$
300	FOR I = 1 TO LEN(W\$)
400	let L = FNR(LEN(W\$))
	has letter L been used?
	if yes, gets another L
500	IF L\$(L) = "." THEN 400
510	PRINT L\$(L);
520	L\$(L) = "."
530	NEXT I
600	PRINT
	Asks user to guess word
700	PRINT "GUESS THE WORD"
710	INPUT GW\$
	tests:
800	IF GW\$ = W\$ THEN PRINT
	"RIGHT": END
820	IF GW\$ <> W\$ THEN PRINT
	"WRONG"

**Table 1.** Word Scramble outline.

Line	Description
5-140	choose word W\$
20	DIM GL\$(25)
200-220	make list of letters of W\$
250	FOR I = 1 TO LEN(W\$)
260	GL\$(I) = "-"
270	NEXT I
300	clear the screen
400	FOR G = 1 TO 10
	prints current version
410	FOR I = 1 TO LEN(W\$)
420	PRINT GL\$(I);
430	NEXT I
440	PRINT
500	PRINT "GUESS A LETTER"
510	INPUT A\$
	checks whether A\$ is in word
600	FOR I = 1 TO LEN(W\$)
610	IF A\$ = L\$(I) THEN 1000
620	NEXT I
	if here, then A\$ not in word
	later print body part #G here
750	NEXT G
	if here, then game is lost
800	PRINT "WORD WAS " W\$
810	PRINT "WORD WAS " W\$
820	END
	makes all replacements
1000	FOR I = 1 TO LEN(W\$)
1010	IF A\$ = L\$(I) THEN GL\$(I) = A\$
1020	NEXT I
	now checks if done
	gets another letter if not done
1100	FOR I = 1 TO LEN(W\$)
1110	IF GL\$(I) = "-" THEN 410
1120	NEXT I
1200	PRINT "RIGHT"
1210	PRINT "WORD WAS " W\$
1220	END

**Table 2.** Hangman outline, without graphics.

Line	Description
5-140	choose word W\$
20	DIM C\$(25), GL\$(25)
200-220	make list of the letters of W\$
300	tells player how many letters in W\$
	makes copy of list
400	FOR I = 1 TO LEN(W\$)
410	C\$(I) = L\$(I)
420	NEXT I
500	PRINT "GUESS A WORD"
510	INPUT A\$
	makes list of letters of A\$
600	FOR I = 1 TO LEN(W\$)
610	GL\$(I) = MID\$(A\$, I, 1)
620	NEXT I
	counts black pegs
	crosses out letters getting black
	pegs
700	BP = 0
710	FOR I = 1 TO LEN(W\$)
720	IF GL\$(I) = C\$(I) THEN
	BP = BP + 1: C\$(I) =
	"."; GL\$(I) = "."
730	NEXT I
	counts white pegs
	doesn't look at any periods
800	WP = 0
810	FOR I = 1 TO LEN(W\$)
820	IF GL\$(I) = "." THEN 860
830	FOR J = 1 TO LEN(W\$)
840	IF GL\$(I) = C\$(J) THEN
	WP = WP + 1: C\$(J) =
	"."; GOTO 860
850	NEXT J
860	NEXT I
	IF BP = 0 THEN 1000
900-950	print black pegs here
	IF WP = 0 THEN 1100
1000-1050	print white pegs here
	tests if done
1100	if BP <> LEN(W\$) THEN 400

**Table 3.** Word Mastermind outline.

following examples. All the games must have Data statements containing 20 words.

### Scramble

The outline for Scramble is simple. After the word, W\$, is selected and a list of the letters made, the letters must be printed in random order. In terms of "steps," the program first chooses a number, L. If letter number L, L\$(L), has already been used, the

program chooses another L. When an unused L is selected, the letter L\$(L) is printed; L\$(L) is then scratched off—set equal to a period. When all the letters have been printed, the player is asked to guess the word.

Table 1 shows an outline for the Word Scramble game; the line numbers for each step are indicated.

If the guess is incorrect, you might want to show another scrambling of the same word. Since the list L\$(I) is now all periods, it must be recon-

structed. After line 820, you would go to line 200.

To score this game, you might add:

```
20 SC = 110
230 SC = SC - 10
```

A player who gets the word on the first guess will get 100 points; every rescrambling will cost the player ten points.

### Hangman

In Hangman, not only do you need a list of the letters of W\$, but you

need a list of the "letters" of the guessed word. Call this list GL\$(1). GL\$(1) will begin as a set of dashes. As letters are guessed, the GL\$ will be updated.

The body in Hangman usually has ten parts: head, torso, arms, legs, hands and feet. Let's allow the user ten guesses.

Checking whether the guessed letter is in the word and making the replacements are separate parts of the program. The checking is done to decide whether to replace letters in GL\$ or to add a body part.

Table 2 is an outline of Hangman, without graphics.

To add graphics, you'll need a list of body parts, BP\$(1). BP\$(1) will draw the head, BP\$(2) will draw the torso, and so on. These should be added before line 100. A simple body might start:

```
60 BP$(1) = "{2 CRSR RTs}O"
62 BP$(2) = "{2 CRSR RTs}{CRSR DN}
{CMD +}{CRSR DN}{CRSR LF}
{CMD +}"
```

Before drawing each body part, move the cursor to row 11 by printing P\$: which consists of a {CRSR HOME} followed by ten {CRSR DNs}. Make these changes:

```
20 DIM GL$(25),BP$(10)
30 P$ = "{CRSR HOME followed by 10
CRSR DNs}"
410 PRINT "{CRSR HOME}";: FOR I = 1
TO LEN(W$)
740 PRINT P$;BP$(G)
```

### Word Mastermind

This game begins in the same way as the others: a word is selected, and a list of the letters of the word is made. Calculating the score, however, involves scratching out letters that have been matched. A copy of the list C\$(1) is used for this. Each time the player guesses a word A\$, a list of the letters of A\$ must be made. This list will be GL\$(1).

Table 3 is an outline of the game. Try to write the program.

Deciding how to print the pegs is left as an exercise. Use the cursor color controls and the ball on the Q key.

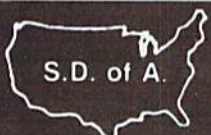
All the games have been presented in skeleton form. Get them running, then make them fancier. Add scoring, color, graphics, instructions and so on. They're your games. ®

Address all author correspondence to M.J. Winter, 360 Centerlawn, East Lansing, MI 48823.

## Software Discounters of America

For Orders Only 1-800-225-SOFT\*

Inquiries and PA 412-361-5291



Open Saturday

- Free shipping on orders over \$100 in continental USA
- No surcharge for VISA/MASTERCARD

### Commodore 64 Software

<b>ACCESS</b>	<b>CONTINENTAL</b>	Heist (D)	\$21	Questron (D)	\$25
Beach Head (T or D)	FCM (D)	Home Accountant	\$47	RF 1985 (D)	\$25
Beach Head II	Get Rich Series	Home Cataloger (D)	\$33	Rails West (D)	\$25
Raid Over Moscow	Home Accountant	Home Cataloger (D)	\$33	Ringside Seat (D)	\$25
(T or D)	Scrolls of Abaddon (D)	<b>DATASOFT</b>		Tigers in Snow (D)	\$25
Scrolls of Abaddon (D)	<b>ACTIVISION</b>	Bruce Lee (T/D)	\$23	<b>SUBLOGIC</b>	
<b>ACTIVISION</b>	Decathlon (D)	Conan the Barbarian	(D)	Flight Simulator II	(D)
Bridge 4.0 (T or D)	<b>Ghostbusters (D)</b>	(T or D)	\$25	Night Mission	\$35
Monkeymath (T or D)	Pitfall II (D)	Dallas Quest (D)	\$23	Pinball (T or D)	\$21
River Raid (D)	River Raid (D)	Letter Wizard w/		<b>SYNAPSE</b>	
Space Shuttle (D)	Space Shuttle (D)	Speller (D)	\$47	Blue Max (T or D)	\$21
<b>ARTWORX</b>	Mr. Do (T or D)	Mr. Do (T or D)	\$25	Et. Apocalypse	(T or D)
Bridge 4.0 (T or D)	Pooyan (T or D)	Pooyan (T or D)	\$19	Necromancer (T or D)	\$21
Monkeymath (T or D)	<b>EPYX</b>	Gateway Aphai (R)	\$25	Pharaoh's Curse	(T or D)
Strip Poker (D)	<b>BATTERIES INCLUDED</b>	Impossible Mission	(D)	Sentinel (T or D)	\$21
Buscard II	Buscard II	Oil Barons (D)	\$39	Zaxxon (T or D)	\$25
Checkbook (D)	80 Column Card	Pitstop II (D)	\$25	Zeppelin (T or D)	\$21
Electronic Address	Book (D)	Robots of Dawn (D)	\$25	<b>TIMWORKS</b>	
Home Inventory (D)	Home Inventory (D)	Summer Games (D)	\$25	Cave Word Wizard (D)	\$23
Mail List (D)	Mail List (D)	Temple of Aphai	(T or D)	Data Manager (T or D)	\$17
Paperclip (D)	Paperclip w/ Spellpak	World's Greatest	Baseball (D)	Data Manager 2 (D)	\$33
Paperclip w/ Spellpak	Recipes (D)	<b>FISHER PRICE</b>		Elect. Checkbook	(T or D)
Recipes (D)	Spellpak (D)	Alpha Build (R)	\$19	Evelyn Wood Reader	(D)
Stamps (D)	The Consultant (D)	Dance Fantasy (R)	\$19	Money Manager (D)	\$17
The Consultant (D)	<b>BOOKS</b>	Hop Along Counting	(R)	Programming Kit 1, 2	(3 or T or D)
Book of Adv. Games	Book of Commodore	Linking Logic (R)	\$19	Robbers Lost Tomb	(T or D)
Software 85	Commodore 64 User's	Memory Manor (R)	\$19	Spellbound (T or D)	\$17
Commodore 64 User's	Encyclopedia	Number Tumbler (R)	\$19	Word Writer (D)	\$33
Encyclopedia	Commodore 64 Color	Sea Speller (R)	\$19	<b>TRILLIUM</b>	
Commodore 64 Color	Graphics	Up & Add 'Em	\$19	Amazon (D)	\$23
Games Commodores	Play	<b>FUTUREHOUSE</b>		Dragonworld (D)	\$23
Play	Kids and the C64	CPA (D)	\$47	Fahrenheit 451 (D)	\$23
Shortcut Through	Adventureland I	Light Pen (T or D)	\$19	Rendezvous with	Rama (D)
Adventureland I	Shortcut Through	Peripheral Vision (D)	\$23	Shadowkeep (D)	\$23
Adventureland II	(Infocom)	<b>HBJ</b>		<b>TRONIX</b>	
<b>BRODERBUND</b>	Bank St. Writer	Computer SAT (D)	\$59	Chatterbee (D)	\$25
Bank St. Writer	Castles Dr. Creep (D)	<b>HES</b>		Pokersam (D)	\$19
Castles Dr. Creep (D)	Championship	Graphics Basic (D)	\$23	S.A.M. (D)	\$39
Championship	Loderunner (D)	HES Modem I	\$44	<b>WAVEFORM</b>	
Loderunner (D)	Drol (D)	HES Mon 64 (R)	\$25	Musicalc 1 (D)	\$35
Drol (D)	Karateka (D)	HES Games 84 (D)	\$23	Musicalc 2 or 3 (D)	\$23
Karateka (D)	Mask of the Sun	Millionaire (D)	\$25	Colortone Keyboard	\$59
Mask of the Sun	Music Shop	Multiplan (D)	\$59	<b>WINDHAM CLASSICS</b>	
Music Shop	Operation Whirlwind	Space Station (D)	\$25	Below The Root (D)	\$19
Operation Whirlwind	Raid on Bungeling	<b>INFOCOM</b>		Gulliver's Travels (D)	\$19
Raid on Bungeling	Serpent's Star (D)	Enchanter (D)	\$23	Swiss Family Robinson	(D)
Serpent's Star (D)	Spelunker (D)	Hint Books	\$6	Wizard of Oz (D)	\$19
Spelunker (D)	Whistler's Brother (D)	Hitchhiker's Guide to	the Galaxy (D)	<b>ACCESSORIES</b>	
Whistler's Brother (D)	<b>CBS</b>	Infidel (D)	\$23	BASF SS, DD	\$16 Bx
<b>CBS</b>	Astro Grover (D)	Planetfall (D)	\$23	Cardco Access	call
Astro Grover (D)	Big Bird Funhouse	Sea Stalker (D)	\$23	Commodore Dust Co-	vers (All Models)
Big Bird Funhouse	(R)	Sorcerer (D)	\$26	Compuerve Starter Kit	(5 hrs.)
(R)	Big Bird Spc Delivery	Witness (D)	\$23	Combat Leader (D)	\$25
Big Bird Spc Delivery	(R)	<b>KOALA</b>		Computer Baseball	(D)
(R)	<b>CBS</b>	Touch Tablet w/	Painter (D)	Computer QB (D)	\$25
<b>CBS</b>	Astro Grover (D)	Touch Tablet w/	Painter (R)	Cosmic Balance (D)	\$25
Astro Grover (D)	Big Bird Funhouse	Muppet Learning	Keys	Epidemic (D)	\$23
Big Bird Funhouse	(R)	<b>LEARNING CO.</b>		Field of Fire (D)	\$23
(R)	Big Bird Spc Delivery	Addition Magician	(D)	50 Mission Crush (D)	\$25
Big Bird Spc Delivery	(R)	Moptown Hotel (D)	\$25	Fortress (D)	\$23
(R)	Dinosaur Dig (D)	Rocky's Boots (D)	\$33	Geopolitique 1990 (D)	\$25
Dinosaur Dig (D)	Duck's Ahoy! (R)	<b>MICROLAB</b>		Germany 1985 (D)	\$39
Duck's Ahoy! (R)	Ernie's Magic Shapes	Boulder Dash (D)	\$21	Knights in Desert (D)	\$23
Ernie's Magic Shapes	(R)	Death Caribbean (D)	\$23	Pro Tour Golf (D)	\$25
(R)	Match Wits (D)	Dino Eggs (D)	\$23		
Match Wits (D)	Math Mileage (D)				
Math Mileage (D)	Mastering SAT (D)				
Mastering SAT (D)	Murder by Dozen (D)				
Murder by Dozen (D)					

P.O. BOX 278—DEPT RN—WILDWOOD, PA 15091

\*Ordering and Terms: Orders with cashier check or money order shipped immediately. Personal/company checks, allow 3 weeks clearance. No C.O.D.'s. Shipping: Continental U.S.A.—Orders under \$100 add \$3; free shipping on orders over \$100. PA residents add 6% sales tax. AK, HI, FPO/APO—add \$5 on all orders. International—add \$15 or 15% of order whichever is greatest. Defective merchandise will be replaced with same merchandise—NO CREDITS! Return must have authorization number (412)361-5291. Prices subject to change without notice. Order today, get it tomorrow! Overnight delivery is just \$17.50—software orders only in Continental USA.

# SMOKING JOE

## A Spritely Program

By MARK JORDAN

**S**prites are the greatest things since plastic straws, but their potential is largely untapped. Documentation for them is not hard to come by, but most of it is too technical, depressingly uncreative and fails to demonstrate their unique capabilities. I've discovered six programming tricks that have added many dimensions to my sprite programming. Smoking Joe, the program included with this article, demonstrates all these techniques. If my explanations of any of the tricks confuse you, just run the program, and Joe will clear the smoke.

One last note: Three of the sprites in this program are interrupt-driven by a machine language routine. If you don't know machine language, don't worry about it. You'll still be able to glean plenty from the Basic portion of the program.

### Alpha Sprites

Sprites are excellent places to put words because you can push them around very handily and can needle-point them into any design you want. For example, if you wanted to show a plane in the sky, pulling a message behind it, you could jerk letters eight pixels at a time, using a complicated printing routine, or you could do it professionally with a sprite.

But wait, you say. A sprite is only 24 pixels across. At eight pixels per letter, that's only enough space for three letters. True, but who said you have to use eight pixels per letter? You can halve that amount and still get crisp letters. . .with this trick.

Use the Horizontal Expansion mode.

If you've never done it, it's easy. Just turn on the proper bit (bit 0 for sprite 0, etc.) on register 53277 (D01D in hex, V + 29 with V at 53248), and your sprite will double its width. The Horizontal mode will double the thickness of all your vertical lines. That way, to form the letter H, you only need one pixel for each vertical side, another for the crossbar and a fourth as a separating space from the next occurring letter. An L could be made with only three pixels (including separating space). "HELLO" in this mode only requires 16 dots in the X direction—a mere two-thirds of your total 24. You could create words up to eight letters long.

As you know, sprites are 21 pixels deep. Capital-letter alpha sprites need five pixels for most letters and another for a separating space, so you'll probably only get words that are three letters long.

Need some ideas where to use word sprites? How about a cartoon-type balloon above another sprite's head, expressing a monosyllabic emotion such as "Ouch!" Or try one as a warning message scrolling across the screen, like "Duck!" or "Run!" Smoking Joe uses two alpha sprites—"Puff" and "X-Ray." Check them out—you'll be amazed at how charming and useful alpha sprites can be.

### Window Sprites

This trick utilizes the background priority register, 53275 (\$D01B). The Default mode sets all bits to 0, which causes the sprites to always have priority over background data. Admittedly, this is often what you want,



**Warning: The Surgeon General has determined that the following six tricks and accompanying program will make it impossible for you not to be more creative in your sprite programming.**

but reversing the situation will give you some clever effects.

Print a message on the screen in the same color as the background, so the message can't be seen. What good is this invisible message? A lot, if you use a sprite to uncover it.

Now make a simple solid box sprite like this:

```
FOR T=12288 TO 12350:POKE T,255:NEXT
Place it under your invisible message.
The sprite can be made to move, via
joystick, keyboard, loop or whatever,
```

across the hidden letters, and, if bit number 0 on 53275 is set to 1, the letters will show up on top of the sprite. The effect is one of a roving window or periscope.

You can use this technique to hide secret information on the screen; only a sprite can uncover it. You may also use this technique to keep a sprite in safe territory. Individual letters, functioning as clues, can be dispersed across the screen. Again, you are limited only by your imagination. Ob-

serve the use of the window sprite in Smoking Joe—a cigarette package. Ah, but what wisdom it unearths.

### Layered Sprites

Sprites that are stacked one on top of another are layered. They're easy to keep together as long as you always move them in harmony. The uses of layered sprites are many and varied.

You could design one sprite as a body minus some parts, then use another to supply the missing elements.

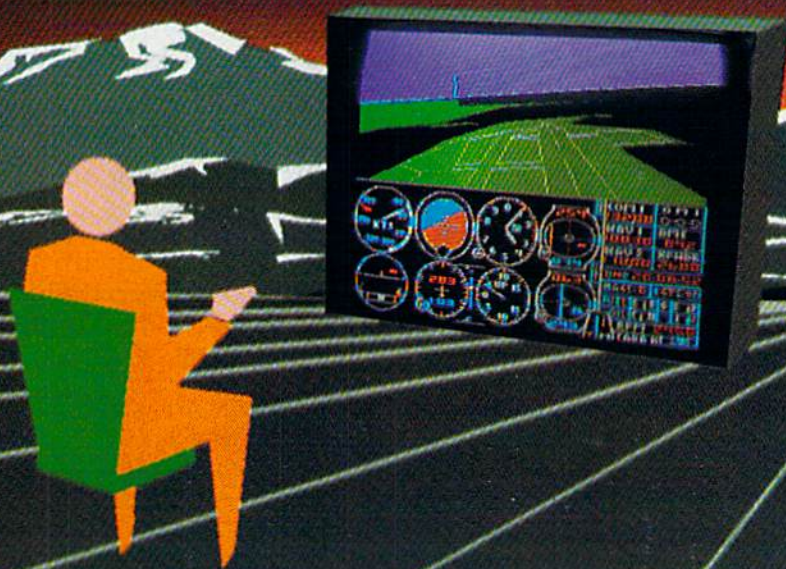
### Listing 1. Smoking Joe program for the C-64.

```
10 POKE53281,1:POKE53280,1:N=1:SC=1670:CC=
55942:POKE252,25:POKE254,5
20 PRINT"{SHFT CLR}{4 CRSR DNS}{CTRL 2}CAUT
ION:{2 SPACES}SMOKING IS HAZARDOUS{COMD
7}
30 FORT=12288TO12670:READA:POKET,A:NEXT
40 FORT=49152TO49215:READA:POKET,A:NEXT
50 V=53248:POKEV+27,255:POKEV+29,25:POKEV+2
3,24:O=V+21
60 FORT=0TO7:POKEV+T+39,14:POKET+2040,T+192
:NEXT
70 POKEV,70:POKEV+2,52:POKEV+4,52:POKEV+6,1
0:POKEV+8,42:POKEV+10,62
80 POKEV+1,130:POKEV+3,162:POKEV+5,183:POKE
V+7,64:POKEV+9,183:POKEV+11,166
90 POKESC,160:POKECC,1
100 PRINT"{15 CRSR DNS}MEET JOE.":POKEO,6:
FORT=1TO2500:NEXT
105 PRINT"{3 SPACES}HE SMOKES."
110 POKESC,32:SP=39:SYS49152:FORT=1TO2500:N
EXT
120 GOSUB670
130 Z=Z+1:IFZ=3THENSP=47
140 IFZ=11THEN160
150 GOTO120
160 PRINT"{CRSR UP}JOE'S BREATH GETS SHORTE
R":GOSUB670:POKE252,8:POKE254,2
170 FORI=0TO6:GOSUB670:NEXT
180 PRINT"{CRSR UP}{10 SPACES}JOE'S LUNGS G
ROW BLACKER . . .":POKE252,5:POKE254,1
190 POKEO,51:POKEV+1,145:FORT=29TO0STEP-1:P
OKET+12547,255
200 FORI=1TOT*25:NEXT:POKEV+1,145:NEXT
210 PRINT"{SHFT CLR}{6 CRSR DNS}{CRSR UP}FI
NALLY, JOE TAKES HIS LAST . . .":SP=18:
GOSUB680:POKE254,2
220 FORT=0TO22:POKEV+3,162+T
230 FORI=1TO100:NEXT:NEXT
240 POKEV+1,120:PRINT"{SHFT CLR}
250 POKEV+23,17:POKEO,1:POKE254,255:GOSUB68
0
260 FORT=12288TO12350:RN=INT(RND(0)*256):PO
KET,PEEK(T)ANDRN
270 NEXT:C=C+1
280 IFC<6THEN260
290 PRINT,"{8 CRSR DNS}{4 SPACES}DON'T SMOK
E!"
300 POKEV+2,100:POKEV+3,115:POKEO,2
310 GOTO310
320 REM "PUFF"
330 DATA 3, 57, 224, 28, 198, 24, 32, 0, 6,
78, 7, 1, 73, 20, 245, 73, 84, 133
340 DATA 142, 86, 201, 136, 84, 137, 136, 8
4, 129, 72, 96, 145, 64, 0, 6, 60
350 DATA 24, 56, 2, 39, 192, 3, 192, 0, 0,
6, 0, 0, 9, 0, 0, 6, 0, 0, 0, 0, 0
```

```
360 DATA 48, 0, 0, 72, 0, 0, 48, 0
370 REM{2 SPACES}JOE'S HEAD
380 DATA 103, 15, 224, 0, 60, 248, 0, 113,
255, 56, 255, 255, 252, 234, 255
390 DATA 252, 191, 160, 32, 255, 134, 112,
255, 200, 16, 243, 195, 56, 225, 192
400 DATA 16, 225, 128, 8, 225, 128, 132, 97
, 128, 66, 124, 0, 62, 112, 0, 8
410 DATA 232, 0, 248, 8, 128, 24, 4, 96, 44
, 2, 24, 198, 1, 7, 3, 0, 129, 0
420 REM{2 SPACES}JOE'S BODY
430 DATA 103, 3, 255, 128, 4, 0, 32, 8, 32,
16, 16, 32, 16, 31, 192, 16, 16
440 DATA 64, 112, 16, 64, 144, 16, 128, 144
, 21, 0, 144, 17, 0, 80, 17, 0, 80
450 DATA 17, 255, 160, 8, 247, 160, 7, 247,
192, 3, 239, 0, 3, 207, 0, 3
460 DATA 207, 0, 3, 207, 0, 3, 199, 0, 3, 2
52, 248, 3, 254, 252
470 REM{2 SPACES}CIGARETTES
480 DATA 103, 0, 1, 224, 0, 7, 32, 0, 29, 3
2, 0, 21, 32, 15, 245, 32, 15, 255
490 DATA 224, 15, 255, 224, 15, 255, 224, 1
5, 255, 224, 15, 255, 224, 15, 255
500 DATA 224, 15, 255, 224, 15, 255, 224, 1
5, 255, 224, 15, 255, 224, 15, 255
510 DATA 224, 15, 255, 224, 15, 255, 224, 1
5, 255, 224, 15, 255, 224, 0, 0, 0
520 REM{2 SPACES}X-RAY
530 DATA 255, 127, 255, 254, 252, 56, 127, 2
40, 16, 31, 224, 16, 15, 224, 16, 15
540 DATA 224, 56, 15, 224, 56, 15, 224, 56,
15, 240, 124, 31, 248, 124, 63, 252
550 DATA 254, 127, 255, 255, 255, 192, 0, 3
, 192, 0, 3, 202, 0, 3, 202, 114, 83
560 DATA 202, 87, 83, 196, 101, 35, 202, 87
, 35, 202, 85, 35, 202, 0, 3, 160
570 REM{2 SPACES}JOE A-PUFFING
580 DATA 0, 0, 0, 0, 0, 6, 0, 0, 25, 0, 0,
18, 0, 0, 12, 0, 0, 0, 0, 0, 0, 0
590 DATA 0, 0, 0, 0, 0, 0, 0, 10, 0, 0, 18,
0, 0, 12, 0, 0, 0, 0, 0, 0, 0
600 DATA 96, 0, 0, 64, 0, 0, 0, 0, 0, 0, 28
, 0, 0, 12, 0, 0, 4, 0, 0
610 REM INTERRUPT DATA
620 DATA 120, 169, 13, 141, 20, 3, 169, 192
, 141, 21, 3, 88, 96, 238
630 DATA 6, 208, 198, 253, 165, 253, 208, 7
, 206, 1, 208, 165, 254, 133
640 DATA 253, 198, 251, 165, 251, 208, 26,
24, 173, 10, 208, 74, 176, 9
650 DATA 238, 10, 208, 206, 11, 208, 76, 57
, 192, 206, 10, 208, 238, 11
660 DATA 208, 165, 252, 133, 251, 76, 49, 2
34
670 POKEV+1,145:POKEO,SP:GOSUB680:POKEO,SP-
1:GOSUB680:RETURN
680 FORK=1TO500:NEXT:RETURN
```

# Flight Simulator II

For Commodore 64<sup>™</sup>  
Computers



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

**See your dealer . . .**

or write or call for more information. For direct orders enclose \$49.95 plus \$2.00 for shipping and specify UPS or first class mail delivery. American Express, Diner's Club, MasterCard, and Visa accepted.

**Order Line: 800 / 637-4983**

**subLOGIC**  
Corporation  
713 Edgebrook Drive  
Champaign IL 61820  
(217) 359-8482 Telex: 206995

Circle 40 on Reader Service card.

[www.Commodore.ca](http://www.Commodore.ca)

May Not Be Reprinted Without Permission



# FANTASTIC!

## VIC-20 & C64 PRODUCTS

### CASSETTE INTERFACE & DUPLICATOR



#10-101

# \$34<sup>95</sup>

Use any portable cassette recorder to load and save programs. Controls cassette motor to start and stop the tape. Allows you to connect two cassette recorders together to make backup copies.

### PARALLEL PRINTER INTERFACE

# \$39<sup>95</sup>



#10-106

Connects to the User port. Allows you to use any Centronics standard parallel printer with a C64

or VIC-20. Translates PET to standard ASCII. Several printing modes allow you complete control over printer. Print PET graphics/control characters as mnemonics and CHR\$ codes i.e. [CLR] or [174]. Virtually any printer with bitmap graphic ability can print actual graphics characters. Emulation of most all CBM printer functions. Software adds a PLIST command for BASIC program listing. Printer Driver software consumes no normal user memory space, and is compatible with most all popular software. Disk includes software for C64 and VIC-20.

### DELUXE RS232 INTERFACE

# \$39<sup>95</sup>

#10-112



Connects to the User I/O port. Provides full RS232 signals for modems & printers. Switch selectable DTE/DCE, pin 5 or 20 handshake & handshake polarity. Supports full signal set included Ring detect. Male 3 ft cable or Female PCB mount connector. Totally replaces the 1011A. Comes with a Type-in BASIC terminal program and printer instructions. The RS232 Interface is guaranteed to work. Call if you have questions.

replaces the 1011A. Comes with a Type-in BASIC terminal program and printer instructions. The RS232 Interface is guaranteed to work. Call if you have questions.

### COMPLETE SERIAL PRINTER DRIVER

For use with any serial printer.

Gives you all the features of the Parallel Printer driver program described above. Prints data addressed to both device 2 and 4, allowing you to use programs which don't normally allow you to use a serial printer. Configuration program allows you to set up for graphics printing on any serial printer with bitmap capability.

# \$29<sup>95</sup>

#10-109

### VOLKSMODEM INTERFACE CABLE

# \$22<sup>95</sup>

Connects a Volksmodem to a C64 or VIC-20. Cable housing contains miniature circuitry to handle all signals. No other interface needed. Includes Type-in terminal program. Volksmodem not included.

**TO ORDER:** See your local Dealer or call (206) 236-2983 or mail to the address below. One year unconditional guarantee. If not delighted, return it within 30 days for a full refund (less shipping). Phone orders mention this ad and get \$1.00 discount. Add \$1.60 each for shipping. \$1.65 extra for C.O.D. VISA & Mastercard welcome.



If you like these products, and want to see more, mark the reader's service card or send to get our FREE CATALOG containing dozens of other exciting products.

# Omnitronix

P.O. BOX 43 - DEPT. R1 - MERCER IS., WA 98040

You could then animate the layered parts independent of the foundation sprite.

For example, you could use a heart-shaped sprite centered on a sprite boy's chest. Then, when sprite boy meets sprite girl, you might start sprite boy's heart pulsating by jumping it in and out of Expanded mode (love at first sprite?). Is such an effect worth an extra 63 bytes of data and five or so program lines? You bet. Just watch Smoking Joe's chest (and cigarette smoke) rise and fall, and you'll see the value of this ploy.

Another use of layered sprites utilizes the collision-detection register. You program one of the layered sprites (but not the other) to detect collisions. Imagine having a sprite creature whose innards are actually a different sprite. Since only the innards detect collisions, a bullet you shoot must hit a vital organ, or no luck.

You might decide to let one of the stacked MOB's (moveable object blocks—the technical term for sprites) function as a window sprite. You could create an eyeless Martian, who must "see" through his hands. Only his hands, which would be a different sprite entirely, would have background priority. He could then "feel" his way across the screen to find invisible information.

### Multiple Sprites

It's tough to make a complete body in a 24 x 21 grid of dots. A superficial solution to this problem is to expand the sprites, which sometimes helps, but you lose resolution and still don't have any more realistic figure than you did before—just bigger.

Why not use two sprites to accomplish the same thing? This trick is so obvious you've probably thought of it, but have you actually done it? It really works.

Combined with animation, you can get your sprites to get down and get with it. Make a person in two halves and let the legs walk. Smoking Joe is a prime example of this technique. If you incorporate the reverse sprite feature, you can achieve a comical effect by having Joe's head turning from side to side while his body remains stationary.

### Evolving Sprites

By altering the data that comprises a sprite, you can make it do interesting things. For instance, you can watch it dissolve or fill up. For what? Well, how about this.

You design a milk bottle and then

use a data-altering routine to slowly fill in the bottle from the bottom up. If the bottle sits beneath a multiple sprite cow, then you've got some fun going. A thirsty sprite cat could reverse the process. Smoking Joe's lungs aptly describe this technique as the blackness of his disease spreads. Lines 190-200 perform this by changing the data in the sprite block, in reverse order and one at a time, to 255s.

The dissolving idea is a little harder to describe. Smoking Joe shows off this technique as his final puff of smoke dissolves. Lines 260-270 should be studied to see how random numbers (between 0 and 255), used with AND along with the existing data, cause the sprite to slowly wisp away.

You can do a sprite kaleidoscope by Poking in all the necessary numbers to get a sprite going, then filling the data block like this:

```
100 FOR T = 12288 TO 12350 : R = INT (RND (0) * 256) : POKET,R : NEXT : GOTO 100
```

### Cover Sprites

This technique is based on the ability of sprites to move one pixel at a time. By creating a solid block sprite and giving it the same color as your screen's background, you can effectively, dot by dot, either hide or reveal something.

You might have a stick of dynamite with a long fuse. Your cover sprite could slowly but surely make that fuse disappear. Or you could use a timer technique similar to many professional games like Frogger, where a solid bar represents remaining time. The bar could be printed on the screen, and a horizontally expanded solid sprite bar (which would be invisible because it's the same color as the screen background) would be placed next to it and then incremented a pixel at a time until the printed bar was covered.

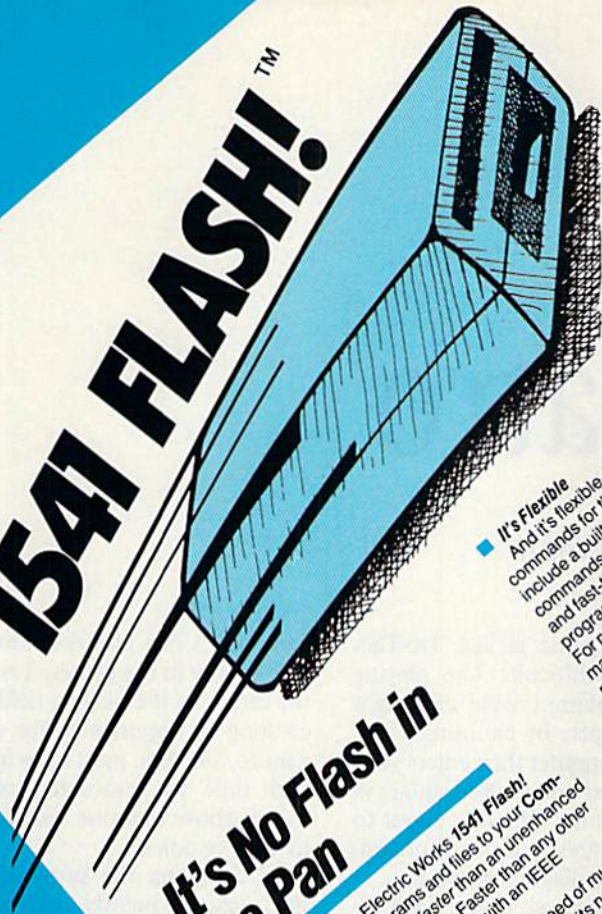
Smoking Joe utilizes background data as a cover sprite. In Joe's introduction, a reversed space that is the same color as the screen's background was printed over Joe's cigarette. Then, when the program tells you of his bad habit, the space is deleted and there dangles his vice.

Well, there they are—six nifty ways to put new life into your 64's moveable object blocks. Now it's your turn. Get busy and put Smoking Joe to shame. R

Address all author correspondence to Mark Jordan, 70284 C.R. 143, Ligonier, IN 46767.



# 1541 FLASH!™



## It's No Flash in the Pan

The new Skyles Electric Works 1541 Flash! Commodore 64 three times faster than an unenhanced Commodore single disk drive with an IEEE interface.

It gives your 1541 disk drive the speed of much more expensive drives—at three times its normal speed! The 1541 Flash! is faster than the MDS disk drives and any parallel interface faster than the Commodore 2031. The Skyles Electric Works 1541 Flash! is one of the most exciting time-saving devices we've ever seen.

### ■ It's Permanent!

The Flash! is a permanent firmware installation in your Commodore 64 and 1541 disk drive. It has both a software (ROM) and a hardware component.

### ■ It's Transparent!

Best of all, the 1541 Flash! is transparent. Computer operations all remain unaffected as it speeds up every disk-related function. And there is nothing new to learn for the Flash! No special tricks or techniques. Once it's in, just watch it go. We have tested it on well over one hundred programs and it loads spectacularly fast.

### ■ It's Flexible!

And it's flexible. The 1541 Flash! adds 21 extra commands for the Commodore 64 user. These include a built-in "DOS WEDGE," eight editing and fast-transfer commands for the advanced programmer. Here is an example of what it can do: program like **BUSICALC 3** then loads in about 25 seconds. Through keyboard commands or a hardware "off" switch, you can even return to the old, slow loading method, if for some reason you really want to. Or you can ignore all its commands, and just enjoy the speedy disk operations.

### ■ It's Serious!

But if you are really serious about programming, the 1541 Flash! is a gold mine. For example, the manual will show you how to write software allowing data transfer to and from the disk drive at speeds up to 10 times the normal.

### ■ It's Easy!

Installation of the 1541 Flash! consists of plugging a small assembly inside the Commodore 64 and two small assemblies plug into the Commodore 1541. Except for a small percentage of Commodore 64s, no soldering is required. Assembly instructions include detailed pictures and drawings. And installation is—well, a flash.

### ■ It's Available!

Call Skyles Electric Works to place your order or to get more info on the 1541 Flash! Hurry up, though. They may be gone before you know it.  
**1541 FLASH! C-64/1541 . . . . . \$89.95\***

\*There is an additional \$3.50 US and Canada, \$10.00 Europe and Asia, shipping charge per order. California residents add sales tax.

Skyles Catalogue Page 1

## FOR COMMODORE 64 AND VIC-20 OWNERS ONLY:

This is just 1 of 15 pages of the newest and biggest Skyles catalog, hot off the press.

We know you'll want this page, in its full 7 x 10 splendor, and another 14 pages of peripherals, software and books that will make your Commodore 64 or VIC-20 computer even nicer to live with.

So, if we missed sending you your very own copy within the last few weeks, call us at (800) 227-9998, unless you live in California, in which case call (415) 965-1735.

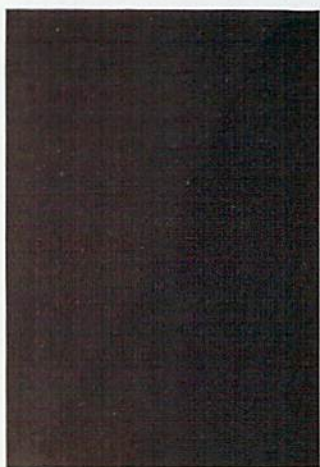
From Skyles  
Electric Works, the  
oldest and largest  
professional specialists in  
the business.



**Skyles Electric Works**  
231E South Whisman Road  
Mountain View, CA 94041  
(415) 965-1735

1541 FLASH! is a trademark of Skyles Electric Works. Commodore 64 is a trademark of Commodore.

Circle 90 on Reader Service card.



# Quatro

By SOL STEINBERG

*This game adds a new dimension to tic-tac-toe. You must get four in a row to defeat your opponent.*

This strategy game is like Tic-Tac-Toe, but more difficult. The playing field is seven columns wide and eight rows high. You play by choosing a column, and the computer then enters your color in the *lowest* unoccupied square in your chosen column. The first player to occupy four squares in a line (horizontally, vertically or diagonally) wins.

The program will ask if you want instructions. Type Y for yes or N for no. Next, you'll be asked if you want to play against the computer or another player. Type C or P.

If you type P, the game will start and one player will be red and the other black. The computer's only functions in this situation will be to act as a recorder and an umpire; it will neither allow illegal moves nor overlook a win.

If you type C, you'll be asked for the play level. Type A for amateur, P for pro or W for world class. At the pro level, the computer looks ahead to see that it doesn't create new opportunities for you to win. At the world class level, the computer sets traps and waits for you to fall into them. If you are playing against the computer, you will always be red.

Each player will be asked "Which Column?" Simply type the column number you want to play, and the computer will fill the next vacant square with your color and will sound a tone. It also will check to see if that move gives you a win and if any squares are left to be played. A winning move receives a fanfare. After each game, the program will ask if you want to play again. Type Y or N. The starting player varies with each new game.

If you play against the computer, the

computer's first play is random, to provide variety in the games. Try to control the center of the playing field and avoid creating an opportunity for your opponent to win. You must keep in mind that each time you move to a square, the square above that one becomes available to your opponent.

In designing the program, I placed the most frequently used subroutines near the beginning, to obtain maximum speed. Despite that, the computer takes nearly 15 seconds per move; it must consider every possible combination of four contiguous squares that includes the available square in the chosen column.

## Queuing Up

Lines 140-170 calculate the value,  $V(C)$ , of playing a column after the number of red, black and empty squares in the line of four squares is known. The calculation depends on the offensive and defensive potential of a move. It also determines if a win is possible or a block is necessary (W will be the winning column and B the blocking one).

This routine is entered with Q telling whether offense or defense is being considered and T giving the number of red or black squares in the line of four squares. If  $T = -1$ , then the line is useless for offense or already blocked for defense.

Lines 180-320 calculate the number of red and black squares in each combination of four squares that the potential move involves. Line 140 is then called to evaluate that combination. Each set evaluates a different direction—180-210 vertical, 220-260 horizontal, 270-320 diagonal.

Lines 350-1160 determine the lines to

**RUN It Right**

Commodore 64

## Listing 1. Four in a Row program.

```

100 REM FOUR-IN-A ROW BY SOL STEINBERG
110 DIMV(7),G(7,7),N(7)
120 GOSUB1930
130 PLAYER=1:GOTO1400
140 IFT=-1THENRETURN
150 IFQ=1THENV(C)=V(C)+100{UP ARROW}:T:IFT=3
  THENW=C
160 IFQ=-1THENV(C)=V(C)+10*100{UP ARROW}(T-
  1):IFT=3THENB=C
170 RETURN
180 T=0:FORI=0TO3:IFG(X+I,Y)=QTHEN T=T+1:GOT
  O200
190 IFG(X+I,Y)=-QTHEN T=-1:I=3
200 NEXTI
210 GOTO140
220 FORJ=1TO4:T=0:FORI=0TO3
230 IFG(C,J+I)=QTHEN T=T+1:GOTO250
240 IFG(C,J+I)=-QTHEN T=-1:I=3
250 NEXTI:GOSUB140:IFT=0THENJ=4
260 NEXTJ:RETURN
270 T=0:FORI=0TO3:IFG(X+I,Y+I)=QTHEN T=T+1:G
  OTO290
280 IFG(X+I,Y+I)=-QTHEN T=-1:I=3
290 NEXTI:GOTO140
300 T=0:FORI=0TO3:IFG(X+I,Y-I)=QTHEN T=T+1:G
  OTO320
310 IFG(X+I,Y-I)=-QTHEN T=-1:I=3
320 NEXTI:GOTO140
330 PRINT"(HOME){20 CRSR DNs}{CTRL 1} HMM,
  LET'S SEE..."
340 IFMOVE=1ORMOVE=0THENC=INT(7*RND(0))+1:W
  =0:GOTO1320
350 FORI=1TO7:V(I)=0:NEXTI:W=0:B=0:IFN(1)=8
  THENV(1)=-100:GOTO400
360 C=1:X=1:Y=N(1):Q=1:GOSUB180:Q=-1:GOSUB1
  80
370 GOSUB220:Q=-Q:GOSUB220
380 IFN(1)<5THENGOSUB270:Q=-Q:GOSUB270
390 IFN(1)>3THENGOSUB300:Q=-Q:GOSUB300
400 IFN(2)=8THENV(2)=-100:GOTO500
410 C=2:Y=N(2):FORX=1TO2:GOSUB180:NEXTX
420 Q=-Q:FORX=1TO2:GOSUB180:NEXTX
430 GOSUB220:Q=-Q:GOSUB220
440 IFN(2)<2ORN(2)>5THEN460
450 X=1:Y=N(2)-1:GOSUB270:Q=-Q:GOSUB270

```

```

460 IFN(2)<5THENX=2:Y=N(2):GOSUB270:Q=-Q:GO
  SUB270
470 IFN(2)>6ORN(2)<3THEN490
480 X=1:Y=N(2)+1:GOSUB300:Q=-Q:GOSUB300
490 IFN(2)>3THENX=2:Y=N(2):GOSUB300:Q=-Q:GO
  SUB300
500 IFN(3)=8THENV(3)=-100:GOTO640
510 C=3:Y=N(3):FORX=1TO3:GOSUB180:NEXTX
520 Q=-Q:FORX=1TO3:GOSUB180:NEXTX
530 GOSUB220:Q=-Q:GOSUB220
540 IFN(3)<3ORN(3)>6THEN560
550 X=1:Y=N(3)-2:GOSUB270:Q=-Q:GOSUB270
560 IFN(3)<2ORN(3)>5THEN580
570 X=2:Y=N(3)-1:GOSUB270:Q=-Q:GOSUB270
580 IFN(3)<5THENX=3:Y=N(3):GOSUB270:Q=-Q:GO
  SUB270
590 IFN(3)<2ORN(3)>5THEN610
600 X=1:Y=N(3)+2:GOSUB300:Q=-Q:GOSUB300
610 IFN(3)<3ORN(3)>6THEN630
620 X=2:Y=N(3)+1:GOSUB300:Q=-Q:GOSUB300
630 IFN(3)>3THENX=3:Y=N(3):GOSUB300:Q=-Q:GO
  SUB300
640 IFN(4)=8THENV(4)=-100:GOTO820
650 C=4:Y=N(4):FORX=1TO4:GOSUB180:NEXTX
660 Q=-Q:FORX=1TO4:GOSUB180:NEXTX
670 GOSUB220:Q=-Q:GOSUB220
680 IFN(4)<4THEN700
690 X=1:Y=N(4)-3:GOSUB270:Q=-Q:GOSUB270
700 IFN(4)<3ORN(4)>6THEN720
710 X=2:Y=N(4)-2:GOSUB270:Q=-Q:GOSUB270
720 IFN(4)<2ORN(4)>5THEN740
730 X=3:Y=N(4)-1:GOSUB270:Q=-Q:GOSUB270
740 IFN(4)<5THENX=4:Y=N(4):GOSUB270:Q=-Q:GO
  SUB270
750 IFN(4)>4THEN770
760 X=1:Y=N(4)+3:GOSUB300:Q=-Q:GOSUB300
770 IFN(4)<2ORN(4)>5THEN790
780 X=2:Y=N(4)+2:GOSUB300:Q=-Q:GOSUB300
790 IFN(4)<3ORN(4)>6THEN810
800 X=3:Y=N(4)+1:GOSUB300:Q=-Q:GOSUB300
810 IFN(4)>3THENX=4:Y=N(4):GOSUB300:Q=-Q:GO
  SUB300
820 IFN(5)=8THENV(5)=-100:GOTO980
830 C=5:Y=N(5):FORX=2TO4:GOSUB180:NEXTX
840 Q=-Q:FORX=2TO4:GOSUB180:NEXTX
850 GOSUB220:Q=-Q:GOSUB220
860 IFN(5)<4THEN880
870 X=2:Y=N(5)-3:GOSUB270:Q=-Q:GOSUB270

```

be checked for each column.

Lines 1170-1180 check for a possible win or necessary block.

Lines 1190-1210 determine which column has the greatest value.

Line 1220 checks for the level of play. If the level is amateur or the move cannot be harmful or cannot be avoided, the column with the highest value is played. This is the end of the amateur level.

Lines 1230-1260 check to see if the move will set up a win for the player. This uses the routine at 2110, which checks for a win. This check is the only difference between amateur and pro.

Lines 1270-1310 check to see if the level is world class. If so, the computer checks to see if it should leave that column as a trap for you. If, by playing

that column, you would allow the computer to win (by playing that column next), the computer will try to avoid that column.

Lines 1320-1390 display the computer's move.

Lines 1400-1590 initialize the game.

Lines 1600-1690 set red's move, check it for validity, check for a win and adjust all variables.

Lines 1700-1810 determine if you are playing against the computer or another player. If another player, then it does the same for black that was just done for red.

Lines 1820-1860 give the result of the game and ask if you want to play again.

Lines 1870-1900 initialize variables for a new game.

Lines 1910-1920 erase obsolete infor-

mation from the screen.

Lines 1930-2040 get the initial player input regarding instructions, opponent and level.

Lines 2050-2270 check for a win.

Lines 2280-2310 announce the winner.

Lines 2320-2430 give instructions.

Lines 2440-2570 provide tones after each move and a fanfare for victory.

I hope you will find this game a welcome break from arcade and adventure types. If you don't want to type in this program, send me your name, address and \$4, and I'll send you the program on disk. R



*Listing continued.*

```

88  IFN(5) < 3ORN(5) > 6 THEN 90  0
89  X=3:Y=N(5)-2:GOSUB27  0:Q=-Q:GOSUB27  0
90  IFN(5) < 2ORN(5) > 5 THEN 92  0
91  X=4:Y=N(5)-1:GOSUB27  0:Q=-Q:GOSUB27  0
92  IFN(5) > 4 THEN 94  0
93  X=2:Y=N(5)+3:GOSUB3  0  0:Q=-Q:GOSUB3  0  0
94  IFN(5) < 2ORN(5) > 5 THEN 96  0
95  X=3:Y=N(5)+2:GOSUB3  0  0:Q=-Q:GOSUB3  0  0
96  IFN(5) < 3ORN(5) > 6 THEN 98  0
97  X=4:Y=N(5)+1:GOSUB3  0  0:Q=-Q:GOSUB3  0  0
98  IFN(6) = 8 THEN V(6) = -1  0  0:GOTO 11  0  0
99  C=6:Y=N(6):FORX=3TO4:GOSUB18  0  0:NEXTX
100  Q=-Q:FORX=3TO4:GOSUB18  0  0:NEXTX
101  GOSUB22  0:Q=-Q:GOSUB22  0
102  IFN(6) < 4 THEN 1  0  4  0
103  X=3:Y=N(6)-3:GOSUB27  0:Q=-Q:GOSUB27  0
104  IFN(6) < 3ORN(6) > 6 THEN 1  0  6  0
105  X=4:Y=N(6)-2:GOSUB27  0:Q=-Q:GOSUB27  0
106  IFN(6) > 4 THEN 1  0  8  0
107  X=3:Y=N(6)+3:GOSUB3  0  0:Q=-Q:GOSUB3  0  0
108  IFN(6) < 2ORN(6) > 5 THEN 1  1  0  0
109  X=4:Y=N(6)+2:GOSUB3  0  0:Q=-Q:GOSUB3  0  0
110  IFN(7) = 8 THEN V(7) = -1  0  0:GOTO 11  0  0
111  C=7:X=4:Y=N(7):GOSUB18  0  0:Q=-Q:GOSUB18  0  0
112  GOSUB22  0:Q=-Q:GOSUB22  0
113  IFN(7) < 4 THEN 1  1  5  0
114  X=4:Y=N(7)-3:GOSUB27  0:Q=-Q:GOSUB27  0
115  IFN(7) > 4 THEN 1  1  7  0
116  X=4:Y=N(7)+3:GOSUB3  0  0:Q=-Q:GOSUB3  0  0
117  IFW < 0 THEN C=W:GOTO 132  0
118  IFB < 0 THEN C=B:GOTO 132  0
119  C=1:FORI=2TO7
120  IFV(I) > V(C) THEN C=I
121  NEXTI
122  IFV(C) < -9  0  0 OR LE$="A" ORN(C)=7 THEN 132  0

```

```

123  N(C)=N(C)+1:G(C,N(C))=-1:Q=-1
124  GOSUB211  0:G(C,N(C))=0:N(C)=N(C)-1
125  IFW=0 THEN 127  0
126  W=0:V(C)=-95:GOTO 119  0
127  IF LE$="P" THEN 132  0
128  N(C)=N(C)+1:G(C,N(C))=1:Q=1
129  GOSUB211  0:G(C,N(C))=0:N(C)=N(C)-1
130  IFW=0 THEN 132  0
131  W=0:V(C)=-91:GOTO 119  0
132  PRINT"{CTRL 1}{HOME}{2  0  CRSR DNs}{2  SP
      ACES}COMPUTER PLAYS";C
133  PRINT"{HOME}":FORI=1TO15-2*N(C):PRINT"
      {CRSR DN}";:NEXTI:PRINTTAB(C+C+1  0  0){CT
      RL 1}{CTRL 9} "
134  HF=5:GOSUB244  0
135  G(C,N(C))=1:N(C)=N(C)+1
136  IFW < 0 THEN GOSUB249  0
137  IFW < 0 THEN PRINT"{HOME}{2  0  CRSR DNs}":P
      RINT"{2  SPACES}COMPUTER WINS!!!":GOTO 1
      83  0
138  PRINT"{HOME}{17  CRSR DNs}":MOVE=MOVE+1
      :IFMOVE=49 THEN 182  0
139  GOTO 16  0  0  0
140  POKES3281,5:PRINT"{SHFT CLR}{CTRL 7}":
      GOSUB187  0
141  PRINT"{SHFT CLR}{CTRL 7}"
142  PRINTTAB(11)"{COMD A}{SHFT C}{COMD R}{
      SHFT C}{COMD R}{SHFT C}{COMD R}{SHFT C
      }{COMD R}{SHFT C}{COMD R}{SHFT C}{COMD
      R}{SHFT C}{COMD S}"
143  PRINTTAB(11)"{SHFT B}{SHFT W}{SHFT B}{
      SHFT W}{SHFT B}{SHFT W}{SHFT B}{SHFT W
      }{SHFT B}{SHFT W}{SHFT B}{SHFT W}{SHFT
      B}{SHFT W}{SHFT B}"
144  PRINTTAB(11)"{COMD Q}{SHFT C}{SHFT +}{
      SHFT C}{SHFT +}{SHFT C}{SHFT +}{SHFT C
      }{SHFT +}{SHFT C}{SHFT +}{SHFT C}{SHFT
      +}{SHFT C}{COMD W}"
145  PRINTTAB(11)"{SHFT B}{SHFT W}{SHFT B}{
      SHFT W}{SHFT B}{SHFT W}{SHFT B}{SHFT W
      }{SHFT B}{SHFT W}{SHFT B}{SHFT W}{SHFT
      B}{SHFT W}{SHFT B}"
146  PRINTTAB(11)"{COMD Q}{SHFT C}{SHFT +}{
      SHFT C}{SHFT +}{SHFT C}{SHFT +}{SHFT C
      }{SHFT +}{SHFT C}{SHFT +}{SHFT C}{SHFT
      +}{SHFT C}{COMD W}"
147  PRINTTAB(11)"{SHFT B}{SHFT W}{SHFT B}{
      SHFT W}{SHFT B}{SHFT W}{SHFT B}{SHFT W
      }{SHFT B}{SHFT W}{SHFT B}{SHFT W}{SHFT
      B}{SHFT W}{SHFT B}"

```

Commodore 64™

# DATABASE MANAGER

with Report Generator

“The search is finally over...Mirage Concepts has introduced the DATABASE MANAGER, a high power database management program for the Commodore 64.”

*United States Commodore Users Group*

**Features Include:**

- Free Form Design and Input • Sort On Any Field / To Any Level • Calculated Fields: 25 • Characters / Record: 2,000 • Fields / Record: 200 • Characters / Field: 250 • 80 Column Form Reports
- Summary Reports • Printer Commands • Save Report Formats • File Totals and Subtotals • Print Text Anywhere on Page • and more!

**\$99<sup>95</sup>**

**Mirage Holiday Pack**  
**DATABASE MANAGER & WORD PROCESSOR**  
with Report Generator  
Professional Version  
Get Both Programs in Specially Marked Packages and Save!

**\$30<sup>00</sup>**  
**OFF**  
Retail Price

**\$89<sup>95</sup>**

**Features Include:**

- 80 Columns w/o Additional Hardware • 30,000 Word Spelling Checker • 100% Machine Language • Over 70 Single Keystroke Commands
- Printer Command Files (Accommodates All Functions) • True Word Wrap (Whole Word)
- Printed Page / Line / Character Counter • Merge with Mirage Database • Global Search • and more!

“The Word Processor offers many practical features, some out of the ordinary, whose implementation is well planned and carried out.”

*Popular Computing Magazine*

# WORD PROCESSOR

Professional Version



**MIRAGE  
CONCEPTS**

4055 W. SHAW #108 • FRESNO, CA 93711

TM - Commodore 64 is a Registered Trade Mark of Commodore Electronics, Ltd.  
Circle 20 on Reader Service card.

*For More Information, Call:*

(800) 641-1441

*In California, Call:*

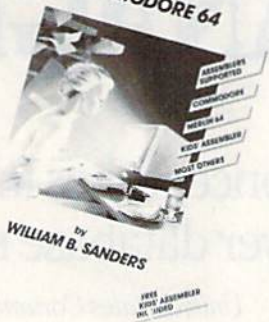
(800) 641-1442

**Program  
in the  
FAST LANE**



**Finally!**

**ASSEMBLY LANGUAGE  
FOR KIDS  
COMMODORE 64**



Learn  
Assembly  
Language  
Programming!

**L  
E  
A  
R  
N**

- Commodore's Assembler
- Merlin 64 Assembler
- Kid Assembler (included **FREE** in book!)
- Learn to use opcodes, operands and everything else to program in machine/assembly language.
- Watch your program run at warp **SPEED!**

Only \$14.95 at your favorite book or computer store or order direct (include \$1.50 for shipping and handling — California residents add 6% sales tax).

**Dealer Inquiries Invited**

MAIL TO:

**microcomscribe**

8982 Stimson Ct., San Diego, CA 92129  
(619) 484-3884

Listing continued.

```

148Ø PRINTTAB(11)"{COMD Q}{SHFT C}{SHFT +}{
SHFT C}{SHFT +}{SHFT C}{SHFT +}{SHFT C
}{SHFT +}{SHFT C}{SHFT +}{SHFT C}{SHFT
+}{SHFT C}{COMD W}"
149Ø PRINTTAB(11)"{SHFT B}{SHFT W}{SHFT B}{
SHFT W}{SHFT B}{SHFT W}{SHFT B}{SHFT W
}{SHFT B}{SHFT W}{SHFT B}{SHFT W}{SHFT
B}{SHFT W}{SHFT B}"
150Ø PRINTTAB(11)"{COMD Q}{SHFT C}{SHFT +}{
SHFT C}{SHFT +}{SHFT C}{SHFT +}{SHFT C
}{SHFT +}{SHFT C}{SHFT +}{SHFT C}{SHFT
+}{SHFT C}{COMD W}"
151Ø PRINTTAB(11)"{SHFT B}{SHFT W}{SHFT B}{
SHFT W}{SHFT B}{SHFT W}{SHFT B}{SHFT W
}{SHFT B}{SHFT W}{SHFT B}{SHFT W}{SHFT
B}{SHFT W}{SHFT B}"
152Ø PRINTTAB(11)"{COMD Q}{SHFT C}{SHFT +}{
SHFT C}{SHFT +}{SHFT C}{SHFT +}{SHFT C
}{SHFT +}{SHFT C}{SHFT +}{SHFT C}{SHFT
+}{SHFT C}{COMD W}"
153Ø PRINTTAB(11)"{SHFT B}{SHFT W}{SHFT B}{
SHFT W}{SHFT B}{SHFT W}{SHFT B}{SHFT W
}{SHFT B}{SHFT W}{SHFT B}{SHFT W}{SHFT
B}{SHFT W}{SHFT B}"
154Ø PRINTTAB(11)"{COMD Q}{SHFT C}{SHFT +}{
SHFT C}{SHFT +}{SHFT C}{SHFT +}{SHFT C
}{SHFT +}{SHFT C}{SHFT +}{SHFT C}{SHFT
+}{SHFT C}{COMD W}"
155Ø PRINTTAB(11)"{SHFT B}{SHFT W}{SHFT B}{
SHFT W}{SHFT B}{SHFT W}{SHFT B}{SHFT W
}{SHFT B}{SHFT W}{SHFT B}{SHFT W}{SHFT
B}{SHFT W}{SHFT B}"
156Ø PRINTTAB(11)"{COMD Z}{SHFT C}{COMD E}{
SHFT C}{COMD E}{SHFT C}{COMD E}{SHFT C
}{COMD E}{SHFT C}{COMD E}{SHFT C}{COMD
E}{SHFT C}{COMD X}"
157Ø PRINTTAB(11)" 1 2 3 4 5 6 7":PRINT
158Ø PLAYER=-PLAYER
159Ø IFPLAYER=1THEN170Ø
160Ø PRINT"{CTRL 3}{2 SPACES}RED, WHICH COL
UMN?{2 SPACES}{2 CRSR LFs}";
161Ø GETC$:IFC$<>" THEN161Ø
162Ø GETC$:IFC$<"1"ORC$>"7"THEN162Ø
163Ø C=VAL(C$):PRINTC:IFN(C)=8THENPRINT"THA
T COLUMN IS FULL!":GOSUB191Ø:GOTO160Ø
164Ø PRINT"{HOME}":FORI=1TO15-2*N(C):PRINT"
{CRSR DN}";:NEXTI:PRINTTAB(C+C+1Ø)"{CT
RL 3}{CTRL 9}"
165Ø HF=25:GOSUB244Ø
166Ø G(C,N(C))=-1
167Ø Q=-1:GOSUB205Ø:IFW=1THEN228Ø
168Ø N(C)=N(C)+1
169Ø PRINT"{HOME}{17 CRSR DNs}":MOVE=MOVE+1
:IFMOVE=49THEN182Ø
170Ø IFOP$="C"THEN33Ø
171Ø PRINT"{CTRL 1}BLACK, WHICH COLUMN?{2 S
PACES}{2 CRSR LFs}";
172Ø GETC$:IFC$<>" THEN172Ø
173Ø GETC$:IFC$<"1"ORC$>"7"THEN173Ø
174Ø C=VAL(C$):PRINTC:IFN(C)=8THENPRINT"THA
T COLUMN IS FULL!":GOSUB191Ø:GOTO171Ø
175Ø PRINT"{HOME}":FORI=1TO15-2*N(C):PRINT"
{CRSR DN}";:NEXTI:PRINTTAB(C+C+1Ø)"{CT
RL 1}{CTRL 9}"
176Ø HF=5:GOSUB244Ø
177Ø G(C,N(C))=1
178Ø Q=1:GOSUB205Ø:IFW=1THEN230Ø
179Ø N(C)=N(C)+1
180Ø PRINT"{HOME}{17 CRSR DNs}":MOVE=MOVE+1
:IFMOVE=49THEN182Ø
181Ø GOTO160Ø
182Ø PRINT"{CTRL 7}THE GAME IS A DRAW. NOBO
DY WINS."
    
```

**Program Your Own EPROMS**

**VIC 20  
C 64 \$99.50**

PLUGS INTO USER PORT.  
NOTHING ELSE NEEDED.  
EASY TO USE. VERSATILE.



**promenade™**

- Read or Program. One byte or 32K bytes!
- OR Use like a disk drive. LOAD, SAVE, GET, INPUT, PRINT, CMD, OPEN, CLOSE—**EPROM FILES!**
- Our software lets you use familiar BASIC commands to create, modify, scratch files on readily available EPROM chips. Adds a new dimension to your computing capability. Works with most ML Monitors too.
- Make Auto-Start Cartridges of your programs.
- The *promenade™* C1 gives you 4 programming voltages, 2 EPROM supply voltages, 3 intelligent programming algorithms, 15 bit chip addressing, 3 LED's and NO switches. Your computer controls everything from software!
- Textool socket. Anti-static aluminum housing.
- EPROMS, cartridge PC boards, etc. at extra charge.
- Some EPROM types you can use with the *promenade™*

2758	2532	462732P	27128	5133	X2816A*
2516	2732	2564	27256	5143	52813*
2716	27C32	2764	68764	2815*	48016P*
27C16	2732A	27C64	68766	2816*	

► \*Commodore Business Machines

\*Denotes electrically erasable types

Call Toll Free: 800-421-7731  
In California: 800-421-7748



**JASON-RANHEIM**  
580 Parrott St., San Jose, CA 95112



# A Printer For All Reasons

## Search For The Best High Quality Graphic Printer

If you have been looking very long, you have probably discovered that there are just too many claims and counter claims in the printer market today. There are printers that have some of the features you want, but do not have others. Some features you probably don't care about, others are vitally important to you. We understand. In fact, not long ago, we were in the same position. Deluged by claims and counter claims. Overburdened by rows and rows of specifications, we decided to separate all the facts — prove or disprove all the claims to our own satisfaction. So we bought printers. We bought samples of all major brands and tested them.

### Our Objective Was Simple

We wanted to find that printer which had all the features you could want and yet be sold directly to you at the lowest price. We wanted to give our customers the best printer on the market today at a bargain price.

### The Results Are In

The search is over. We have reduced the field to a single printer that meets all our goals (and more). The printer is the GP-550CD from Seikosha, a division of Seiko (manufacturers of everything from wrist watches to space hardware). We ran this printer through our battery of tests and it came out shining. This printer can do it all. Standard draft printing up to a respectable (and honest) 86 characters per second, and with a very readable 9 (horizontal) by 8 (vertical) character matrix. At this rate, you will get an average 30 line letter printed in only 28 seconds.

### "NLQ" Mode

One of our highest concerns was about print quality and readability. The GP-550CD has a print mode termed Near Letter Quality printing (NLQ mode). This is where the GP-550CD outshines all the competition. Hands down! The character matrix in NLQ mode is a very dense 9 (horizontal) by 16 (vertical). This equates to 14,400 addressable dots per square inch. Now we're talking *quality* printing. You can even do graphics in the high resolution mode. The results are the best we've ever seen. The only other printers currently available having resolution this high go for \$500 and more *without* the interface or cable needed to hook up to your Commodore!

### Features That Won't Quit

With the GP-550CD your computer can now print 40, 48, 68, 80, 96, or 136 characters per line. You can print in ANY of 18 font styles. You not only have the standard Pica, Elite, Condensed and Italics, but also true Superscripts and Subscripts. Never again will you have to worry about how to print H<sub>2</sub>O or X<sup>2</sup>. This fantastic machine will do it automatically, through easy software commands right from your keyboard. All fonts have true descenders.

One of the fonts we like best is "Proportional" because it looks most like typesetting. The spacing for thin characters like "i" and "l" are given less space which "tightens" the word making reading easier and faster. This is only one example of the careful planning put into the GP-550CD.



Do you sometimes want to emphasize a word? It's easy, just use **bold** (double strike) to make the words stand out. Or, if you wish to be even more emphatic, underline the words. Or do both. You may also wish to "headline" a title. Each basic font has a corresponding elongated (double-wide) version. You can combine any of these modes to make the variation almost endless. Do you want to express something that you can't do with words? Use graphics with your text — even on the same line.

You can now do virtually any line spacing you want. You may select 6, 8, 7½ or 12 lines per inch. PLUS you have variable line spacing of 1.2 lines per inch to infinity (no space at all) and 97 other software selectable settings in between. You control line spacing on a dot-by-dot basis. If you've ever had a letter or other document that was just a few lines too long to fit a page, you can see how handy this feature is. Simply reduce the line spacing slightly and... VOILA! The letter now fits on one page.

### Forms? Yes! Your Letterhead? Of Course!

Do you print forms? No problem. This unit will do them all. Any form up to 10 inches wide. The tractors are adjustable from 4½ to 10 inches. Yes, you can also use single sheets. Plain typing paper, your letterhead, short memo forms, anything you choose. Any size under 10" in width. Multiple copies? **Absolutely!** Put forms or individual sheets with carbons (up to 3 deep), and the last copy will be as readable as the first. Spread sheets with many columns? **Of course!** Just go to condensed mode printing and print a full 136 columns wide. Forget expensive wide-carriage printers and changing to wide carriage paper. You can now do it all on a standard 8½" page.

### Consistent Print Quality

Most printers have a continuous loop ribbon cartridge or a single spool ribbon which gives nice dark printing when new, but quickly starts to fade after a while. To keep the printers' output looking consistently dark, the ribbons must be changed more often than is healthy for the pocketbook. The GP-550CD solves this problem completely by using a replaceable, inexpensive ink cassette which is separately replaceable from the actual ribbon. It keeps

the ribbon loaded with ink at all times. You only replace the ribbon when it truly wears out, not when it starts to run low on ink. Just another example of the superb engineering applied to the GP-550CD. (When you finally do wear out your ribbon, replacement cost is only \$10.95. Ink cassette replacement cost is only \$5.95, both postpaid.)

### The Best Part

When shopping for a quality printer with all these features, you could expect to pay around \$500 or more. *Not any more!* We have done our homework. You don't have to worry about interfaces or cables. Everything is included. We are now able to sell this fantastic printer for **only \$259.95!** The GP-550CD is built especially for the Commodore 64, VIC-20, Plus 4 and C-16. All Commodore graphics are included. This printer does everything the Commodore printers do but has more features. **You need absolutely nothing else to start printing — just add paper.** We also have specific models for other computers. Call for details.

### No Risk Offer

We give you a 15-day satisfaction guarantee. If you are not completely satisfied for any reason we will refund the full purchase price. A 1-year warranty is included with your printer. The warranty repair policy is to repair or replace and reship to the buyer within 72 hours.

### The Bottom Dollar

The GP-550CD is only \$259.95. Shipping and insurance is \$8.00 — UPS within the continental USA. If you are in a hurry, UPS Blue (second day air) is \$18.00. Canada, Alaska, Mexico are \$25.00 (air). Other foreign is \$60.00 (air). California residents add 6% tax. These are cash prices — VISA and MC add 3% to total. We ship the next business day on money orders, cashiers' checks, and charge cards. A 14-day clearing period is required for checks.

### TO ORDER CALL TOLL FREE

1-(800) 962-5800 USA

or 1-(800) 962-3800 CALIF.

or send payment to:

### APROPOS TECHNOLOGY

1071-A Avenida Acaso  
Camarillo, CA 93010

Technical Info: 1-(805) 482-3604

© 1984 APROPOS TECHNOLOGY

Listing continued.

```

1830 PRINT"{CTRL 7}{3 SPACES}DO YOU WANT TO
    PLAY AGAIN?"
1840 GETA$:IF A$="Y"THEN1400
1850 IF A$="N"THENPRINT"{3 SPACES}LET'S PLAY
    AGAIN REAL SOON!":END
1860 GOTO1840
1870 FORI=1TO7:N(I)=1
1880 FORJ=1TO7:G(I,J)=0
1890 NEXTJ,I:MOVE=0:W=0
1900 RETURN
1910 FORI=1TO1500:NEXTI:PRINT"{2 CRSR UPS}{
    36 SPACES}"
1920 PRINT"{34 SPACES}":PRINT"{2 CRSR UPS}"
    ;RETURN
1930 PRINT"{SHFT CLR}{3 CRSR DNS}"
1940 PRINTTAB(13)"FOUR-IN-A-ROW{CRSR DN}"
1950 PRINT"DO YOU WANT INSTRUCTIONS?(CRSR U
    P)"
1960 GETOP$:IFOP$="Y"THEN2320
1970 IFOP$<>"N"THEN1960
1980 PRINT"DO YOU WANT TO PLAY AGAINST THE
    COMPUTEROR ANOTHER PLAYER (C OR P)?"
1990 GETOP$:IFOP$="P"THENRETURN
2000 IFOP$<>"C"THEN1990
2010 PRINT"{2 SPACES}COMPUTER"
2020 PRINT"{CRSR DN}LEVEL OF PLAY - AMATEUR
    , PRO OR WORLD{3 SPACES}CLASS (A,P OR
    W)?"
2030 GETLE$:IFLE$="A"ORLE$="P"ORLE$="W"THEN
    RETURN
2040 GOTO2030
2050 REM TEST FOR WIN BEFORE N(C) CHANGES
2060 W=0
2070 IFN(C)<4THEN2110
2080 J=0:FORI=0TO3
2090 J=J+G(C,N(C)-I)
2100 NEXTI:IFJ=4*QTHENW=1:RETURN
2110 J=0:FORI=1TO7
2120 IFG(I,N(C))=QTHENJ=J+1
2130 IFG(I,N(C))<>QTHENJ=0
2140 IFJ=4THENW=1
2150 NEXTI:IFW=1THENRETURN
2160 J=0:X=N(C)-C:FORI=1TO7
2170 IF(X+I)<1OR(X+I)>7THEN2210
2180 IFG(I,X+I)=QTHENJ=J+1
2190 IFG(I,X+I)<>QTHENJ=0
2200 IFJ=4THENW=1
2210 NEXTI:IFW=1THENRETURN
2220 J=0:X=N(C)+C:FORI=1TO7
2230 IF(X-I)<1OR(X-I)>7THEN2270
2240 IFG(I,X-I)=QTHENJ=J+1
2250 IFG(I,X-I)<>QTHENJ=0
2260 IFJ=4THENW=1
2270 NEXTI:RETURN
2280 PRINT"{HOME}{20 CRSR DNS}":PRINT"{7 SP
    ACES}RED WINS!!!"
2290 GOSUB2490:GOTO1830
2300 PRINT"{HOME}{20 CRSR DNS}":PRINT"{5 SP
    ACES}BLACK WINS!!!"
2310 GOSUB2490:GOTO1830
2320 PRINT"{3 CRSR DNS}THIS IS THE SAME AS
    THE GAME CALLED"
2330 PRINT"CONNECT-FOUR. IT IS LIKE TIC-TAC
    -TOE,"
2340 PRINT"BUT YOU MUST GET 4 IN A ROW. EAC
    H PLAY"
2350 PRINT"MUST BE THE LOWEST AVAILABLE ROW
    IN A"

```

Circle 320 on Reader Service card.

# SUPERTAX™ Get Supertax now and relax on April 15th ...

## THIRD SUCCESSFUL YEAR! • THOUSANDS ALREADY IN USE!

Use SUPERTAX personal income tax programs to calculate your tax liability now and have plenty of time to make year-end investment decisions to improve your position. SUPERTAX was created for Commodore 64 users by a practicing CPA with a Master's degree in tax accounting. Highly acclaimed by tax pros, CPAs and tax preparers, SUPERTAX is easy to understand and a pleasure to work with. SUPERTAX is also available for TRS-80 (2 drives), Apple II+, IBM-PC, Kaypro II and Sanyo MBC-550.

- SUPERTAX is fully screen-prompted and includes a manual loaded with valuable tax information, instruction and guidance.
- SUPERTAX instantly recalculates your entire return when you change any item.
- SUPERTAX prints directly on IRS forms.
- SUPERTAX DATA can be stored on a diskette.
- SUPERTAX updates are available at 50% discount to registered SUPERTAX owners.
- SUPERTAX is an essential addition to your personal software library—best of all it's tax deductible.

### FOR TAX PLANNING

Using either screen or printer output, SUPERTAX generates clear and concise summaries of Page 1 and 2 and Schedule A of FORM 1040 allowing you to see at a glance and to quickly comprehend your tax situation. This program also prints an OVERALL SUMMARY of the return showing Adjusted Gross Income, Itemized Deductions, Taxable Income, Regular Tax and Payment Due or Refund—all of which are calculated by the program. SUPERTAX also calculates the moving expense deduction, investment credit, taxable capital gains, political and child care credits, medical limitations, and much more. Input is fast and easy and changes can be made in seconds. This program actually makes tax planning a breeze.

### FOR RETURN PREPARATION

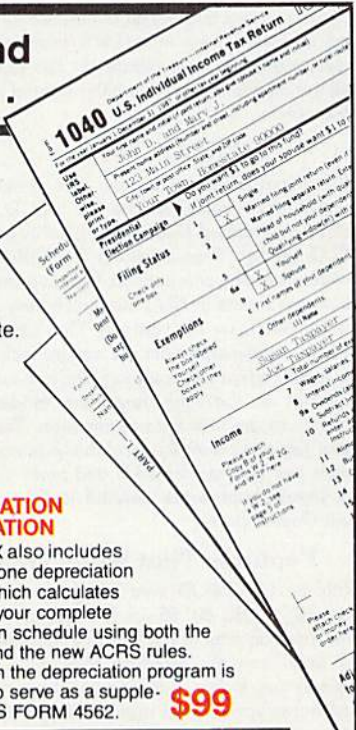
**SUPERTAX PRINTS THE INCOME TAX RETURN:** This program prints page 1, page 2 of the FORM 1040, Schedules A, B, C, W and G (income averaging) of the FORM 1040 as well as FORM 3468 (investment tax credit) on standard IRS government forms or on blank computer paper for use with transparencies. Any item of input can be changed in seconds and the entire return is automatically recalculated to instantly reflect the change.

Commodore 64, TRS-80, Apple II+, IBM-PC, Kaypro and Sanyo are trademarks of Commodore Business Machines, Tandy, Corp., Apple Computer, Inc., International Business Machines, Non-Linear Systems, Inc. and Sanyo Business Systems Corp. respectively.

### FOR DEPRECIATION CALCULATION

SUPERTAX also includes a stand alone depreciation program which calculates and prints your complete depreciation schedule using both the old rules and the new ACRS rules. Output from the depreciation program is designed to serve as a supplement to IRS FORM 4562. **\$99**

**New—PREPARER'S EDITION:** In addition to the above, the PREPARER'S EDITION prints Schedules D, E, SE and FORM 6251. It also prints preparer data at the bottom of pg. 2 of FORM 1040. **\$149**



**TO ORDER** Call Toll Free 1-800-527-4171 In Texas Call 214-739-1100  
MasterCard, VISA, Money Orders, Bank Checks and COD Orders Accepted  
(add 3% surcharge for credit card processing) (add \$5.00 for COD) (\$3.00 Shipping)

For Brochure WRITE  
**Financial Services Marketing Corp.**  
10525 Barrywood Dr. Dallas, Texas 75230



Listing continued.

```
2360 PRINT"COLUMN. IN THE PARKER BROS. VERS
ION,"
2370 PRINT"THE GAME IS PLAYED WITH CHECKERS
THAT"
2380 PRINT"SLIDE DOWN A SEVEN COLUMN DEVICE
AND"
2390 PRINT"THE COLOR OF THE CHECKERS SHOWS
THROUGH"
2400 PRINT"HOLES IN THE DEVICE."
2410 PRINT:PRINT"{11 SPACES}PRESS ANY KEY"
2420 GETOP$:IFOP$=""THEN2420
2430 PRINT"{SHFT CLR}{3 CRSR DNs}":GOTO1980
2440 SO=54272:FORCL=SOTOSO+24:POKECL,0:NEXT
2450 POKESO+24,15:POKESO+5,48:POKESO+6,248:
POKESO+1,HF:POKESO+4,33
2460 FORCL=1TO200:NEXTCL
2470 POKESO+24,0:POKESO+4,32
2480 RETURN
2490 SO=54272:FORCL=SOTOSO+24:POKECL,0:NEXT
CL
2500 POKESO+5,85:POKESO+6,85:POKESO+12,85:P
OKESO+13,85:POKESO+24,15
2510 POKESO+4,33:POKESO+11,17
2520 FORI=1TO6:READH1,L1,H2,L2:POKESO+1,H1:
POKESO,L1:POKESO+8,H2:POKESO+7,L2
2530 IFH1=50THENFORCL=1TO200:NEXTCL
2540 FORCL=1TO100:NEXTCL:NEXTI
2550 POKESO+4,32:POKESO+11,16:FORCL=1TO500:
NEXTCL:RESTORE:RETURN
2560 DATA25,30,18,209,33,135,25,30,42,62,31
,165,50,60,37,162,42,62,31,165,50,60
2570 DATA37,162
```

Circle 63 on Reader Service card.

Circle 264 on Reader Service card.

*Nobody copies better !!*

You deserve to protect your software investment.  
You can with the first (and only)  
**BIT-FOR-BIT DISK COPIER** for the C-64,  
1541 Disk Drive and now MSD!



Introducing...

**MR. NIBBLE™**

The next generation in archival  
methods is here today!

- No better disk copier at any price
- Easy-to-use — no complicated instructions
- Totally automatic — no knowledge of DOS required
- You'll LOVE MR. NIBBLE™ — if not, return within 10 days for full refund



FULL CIRCLE SOFTWARE, INC.  
P.O. Box 1373  
Dayton, Ohio 45401  
Phone (513) 223-2102

**\$49.95** includes shipping & handling  
(Ohio residents add 6% sales tax)



10 day return privilege

"When cloning and dissecting fail, turn to MR. NIBBLE!™"

# DI-SECTOR

Version 2.0

**EVERYTHING YOU EVER WANTED IN A DISK UTILITY... AND MORE!!  
FOR THE COMMODORE 64\***

- ★ Fully automatic back-up of almost any protected disk.
- ★ Copy files [PRG, SEQ, RND] with full screen editing.
- ★ Three minute back-up of standard disks [even many protected disks].
- ★ Format a disk in ten seconds.
- ★ View and alter sector headers.
- ★ Remove errors from any track/sector.
- ★ Edit sectors in HEX, ASCII — even assembler.
- ★ Create errors on any track/sector [20, 21, 22, 23, 27, 29] instantly.
- ★ Drive/64 MON, even lets you write programs inside your 1541.
- ★ All features are fully documented and easy to use.
- ★ None of our copy routines ever makes the drive head "kick."

**Yes, you get all of this on one disk for this low price! ————— \$39.95**

... Continuing Customer Support and Update Policy ...

... WRITE OR PHONE ...

**STARPOINT SOFTWARE**

Star Route 10

Gazelle, CA 96034

[916] 435-2371

All orders add \$2.00 shipping/handling.  
California residents add 6% sales tax.  
COD orders add an add'l. \$3.00 shipping.  
Check, Money Order, VISA, and Master  
card accepted.

\*Commodore 64 is a  
registered trademark of  
Commodore Business Machines

www.Commodore.ca  
May Not Reprint Without Permission

RUN JANUARY 1985 / 47

# Don't Forget!

By RICHARD LOVETT

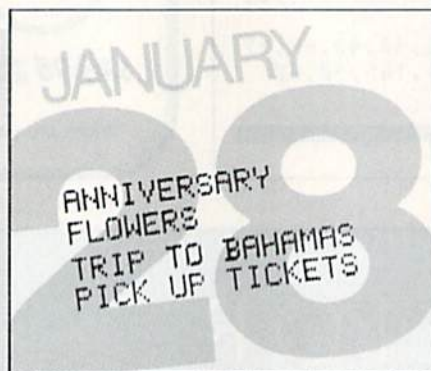
*Here's the perfect program for people with a busy schedule and a bad memory. It lets you create an appointment file and has a built-in calendar as well.*

Instant Memo allows you to enter up to three reminder memos for any day of the year, review or change them, and, if you have a printer, make a hard copy of one or more months' worth of entries. The program can also display an accurate calendar for any month between the years 1700 and 3099. Any day for which you've entered a memo will be highlighted in reverse video on the calendar, and you can print a hard copy of the calendar itself. (Free wall calendars are getting harder and harder to come by.)

## Getting Started

After you type in and run Instant Memo, you will first see an introductory menu allowing you to load an existing file from disk or tape, create a new file or simply view a month's calendar. If you choose the calendar option, you will be returned to this menu after viewing the desired month.

Selecting the "new file" option sends you to the main Input routine in lines 150-360. Here you specify a day, and then view, enter or delete any desired memos for that date. (Memos can be up to 77 characters long, although they will display more neatly if kept under 40 characters. Don't use any commas, colons, semicolons or quote marks.) To select a day, you first enter the month as a number between 1 and 12, then the day and year. Use all four digits of the year.



Actually, specifying the year does not prevent a memo entered for, say, July 4, 1984, from also being displayed if you call up July 4 of some other year. Making each day of several years entirely separate would have required dimensioning the arrays in line 10 several times larger, thus quickly exhausting the computer's memory. Putting an "84," "85" or other designation at the end of entries from different years is an easy way to overcome any confusion. Entering the year *does* govern whether or not you can enter or

Line	Description
5-45	Dimension arrays, print title page
50-100	Load an existing file
105-145	Main menu
150-190	Input desired date
195	Determines Julian value (1-366) of date
200	Reserves 60th day of year for Feb. 29
205-260	Display a date and memos, ask for choice of action
265-335	Routine to enter a memo
340-360	Routine to delete a memo
365-380	Subroutine to determine part of formula for printing calendar
385-710	Calculate and display a month's calendar
715-785	Print out a month's memos
790-855	Review a month's memos on screen
860-925	Save the file
940-1005	Screen dump to print copy of calendar

Table 1. Instant Memo program description.

**RUN It Right**

Commodore 64  
Printer (optional)

**GREAT BEFORE,  
NOW EVEN BETTER!!**  
Improved with new options, additional  
instruments, new navigation aids, and more!!

# SOLO FLIGHT SIMULATOR

**REAL LIFE CHALLENGES FOR THE AIR FORCE MAJOR —  
GREAT FUN AND LEARNING — FOR HIS 10 YEAR OLD SON!!!**

"... Solo Flight ... has so many features that it may take months to master the program. It is an excellent buy, and a real joy for novices and old pro's alike."  
— Jim Stephens, RUN

"The word that best describes Solo Flight is Fun ... it's (for those who) don't wish to spend a lot of time reading, but would rather be flying."  
— David Florence, COMPUTE'S Gazette

"Solo Flight ... is a flight simulator designed with fun in mind ... it is easier to fly than Sublogic's Flight Simulator and ... it is more fun to play."  
— John Anderson, Creative Computing

"Solo Flight is the BEST flight simulator I've seen for any micro-computer. And I include the Microsoft simulator for the IBM-PC ... it will be tough to top this one!"  
— Jim Bumpas, BUMPAS REVIEWS



Major Bill has over 3000 hours of flying. He loves the sophistication of the SOLO FLIGHT simulation and its real life challenges of deteriorating weather, failing instruments, and overheating engines!! He knows the reality of flight — with SOLO FLIGHT he can bring it home!!

Bill Jr. has no real flying hours, but just moments after he plugs in his joystick, he's airborne, experiencing the fun and learning of flight. He loves the great 3-D graphics, the takeoffs, the touch and go's, and the NEW "INSTRUCTOR PILOT" option which enables the computer to give him flight instruction just like his fighter pilot Dad would!! Bill Jr. loves the fun of flying — with SOLO FLIGHT he has it!!

SOLO FLIGHT is a real flight simulator that includes VOR's, ILS, 21 different airports, VFR, and IFR flying. SOLO FLIGHT is easy to get started with, but you will get hooked on its Fun and Excitement!! Try to master

all the challenges of SOLO FLIGHT. But be careful, because that may take many more flying hours than a Major has!!

SOLO FLIGHT is available for Commodore-64, APPLE, IBM, and ATARI computers. Suggested retail price is only \$34.95. Find SOLO FLIGHT at your local retailer, or call or write for MC/VISA, Money Order, or COD orders. Add \$2.50 for postage and handling (Int'l, add \$4.00 USD). MD residents add 5% sales tax.

**Experience the reality of these other great simulations from MicroProse:**



Challenging and Exciting Air Combat from the Modern Electronic Cockpit!!

Heart Pounding, Accelerated Real-Time Defense of Europe Against Soviet Invasion!!!

Exciting 3-Dimensional Aerial Combat Over Europe in World War III!

**MicroProse Software** 10616 Beaver Dam Road, Hunt Valley, MD 21030  
The Action is Simulated — the Excitement is REAL!! (301) 667-1151  
www.comprose.ca  
May Not Reprint Without Permission

Commodore-64, ATARI, APPLE, and IBM are registered trademarks of Commodore Business Machines Inc., ATARI Inc., APPLE Computer Inc., and International Business Machines Inc., respectively.

view a memo for Feb. 29, which only occurs in leap years.

The main menu in lines 105-145, accessible from most other modes of the program, includes options to view a month's entries on the screen, view more calendar pages or save the file to tape or disk.

### Is Today the 6th?

Lines 385-710 compute and display the calendar. Line 420 reads in the name of the month and its length in days.

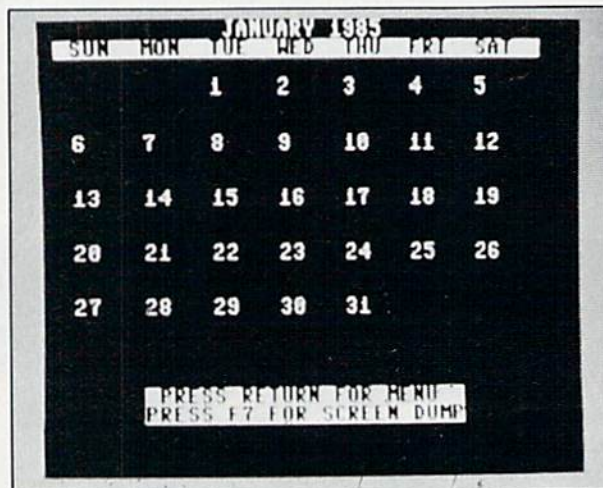
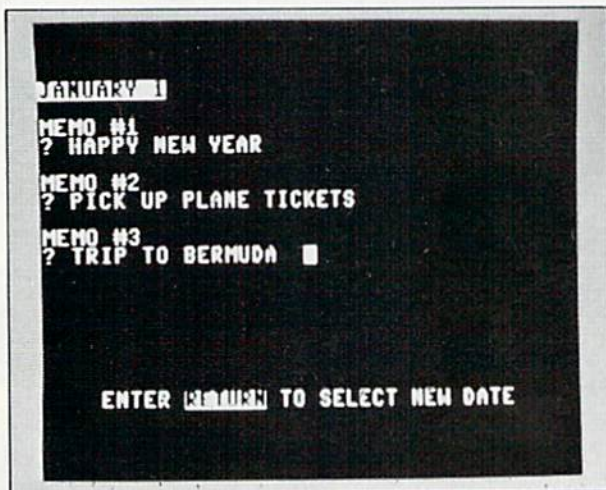
Then the formula in lines 430-480 determines which day of the week the first of that month falls on. Using that day as the starting point, lines 500-670 Poke the dates on the screen and highlight any days containing memos.

A modified screen dump in lines 940-1005 prints a hard copy of the calendar. A screen dump is a routine that sends the contents of the screen to a printer or other device. Because the upper limit of LI in line 950 is 19, however, the routine will reproduce only the

top 19 screen lines. This avoids cluttering up the printout with the prompts at the bottom of the screen.

If you'd rather not type in the listing, send me a blank disk or cassette, \$3 and a self-addressed, stamped mailer, and I'll send you a copy of the program. ®

*Address all author correspondence to Richard Lovett, 6649 Oak St., Kansas City, MO 64113.*



### Listing 1. Instant Memo program for the C-64.

```

5 POKE53281,0:PRINT"{CTRL 8}":REM SETS SCRE
EN, TEXT COLORS
10 DIMA1$(366),A2$(366),A3$(366)
15 PRINT"{SHFT CLR}":FORI=1TO40:PRINT"{SHFT
R}";:NEXT:FORI=1TO50:PRINT"{CTRL 9} ";:
NEXT
20 PRINT"{CTRL 9}** INSTANT MEMO **";
25 FORI=1TO52:PRINT"{CTRL 9} ";:NEXT:FORI=1
TO40:PRINT"{CTRL 0}{SHFT E}";:NEXT
30 PRINT"{CTRL 0}{3 SPACES}{3 CSR DN}SELE
CT ONE:"Z=1:PRINT"{3 SPACES}{10 COMD Ts
}"
35 PRINTTAB(5)"{CSR DN}{CTRL 9}1{CTRL 0} L
OAD OLD FILE":PRINTTAB(5)"{CSR DN}{CTRL
9}2{CTRL 0} CREATE NEW FILE
40 PRINTTAB(5)"{CSR DN}{CTRL 9}3{CTRL 0} V
IEW CALENDAR
45 INPUT"{2 CSR DN}";A:ONAGOTO50,150,385
50 PRINT"{SHFT CLR}{3 CSR DN} FROM {CTRL
9}T{CTRL 0}APE OR {CTRL 9}D{CTRL 0}ISK";
:INPUTAN$:IFAN$="D"THEN65
55 IFAN$<"T"THEN50
60 PRINT"{2 CSR DN}INSERT FILE TAPE.":OPE
N4,1,0,"MEMO FILE":GOTO80
65 PRINT"{2 CSR DN}INSERT SEQUENTIAL FILE
DISK.":PRINT"PRESS A KEY WHEN READY."
70 GETJ$:IFJ$=""THEN70
75 PRINT"{SHFT CLR}{2 CSR DN}LOADING FILE
.":OPEN4,8,8,"0:MEMO FILE,S,R"
80 FORD=1TO366:INPUT#4,A1$(D):INPUT#4,A2$(D
):INPUT#4,A3$(D)
85 IFA1$(D)="{PI}"THENA1$(D)=""
90 IFA2$(D)="{PI}"THENA2$(D)=""
95 IFA3$(D)="{PI}"THENA3$(D)=""
100 NEXT:CLOSE4
105 REM MAIN MENU
110 Z=0:PRINT"{SHFT CLR}{3 SPACES}{3 CSR D

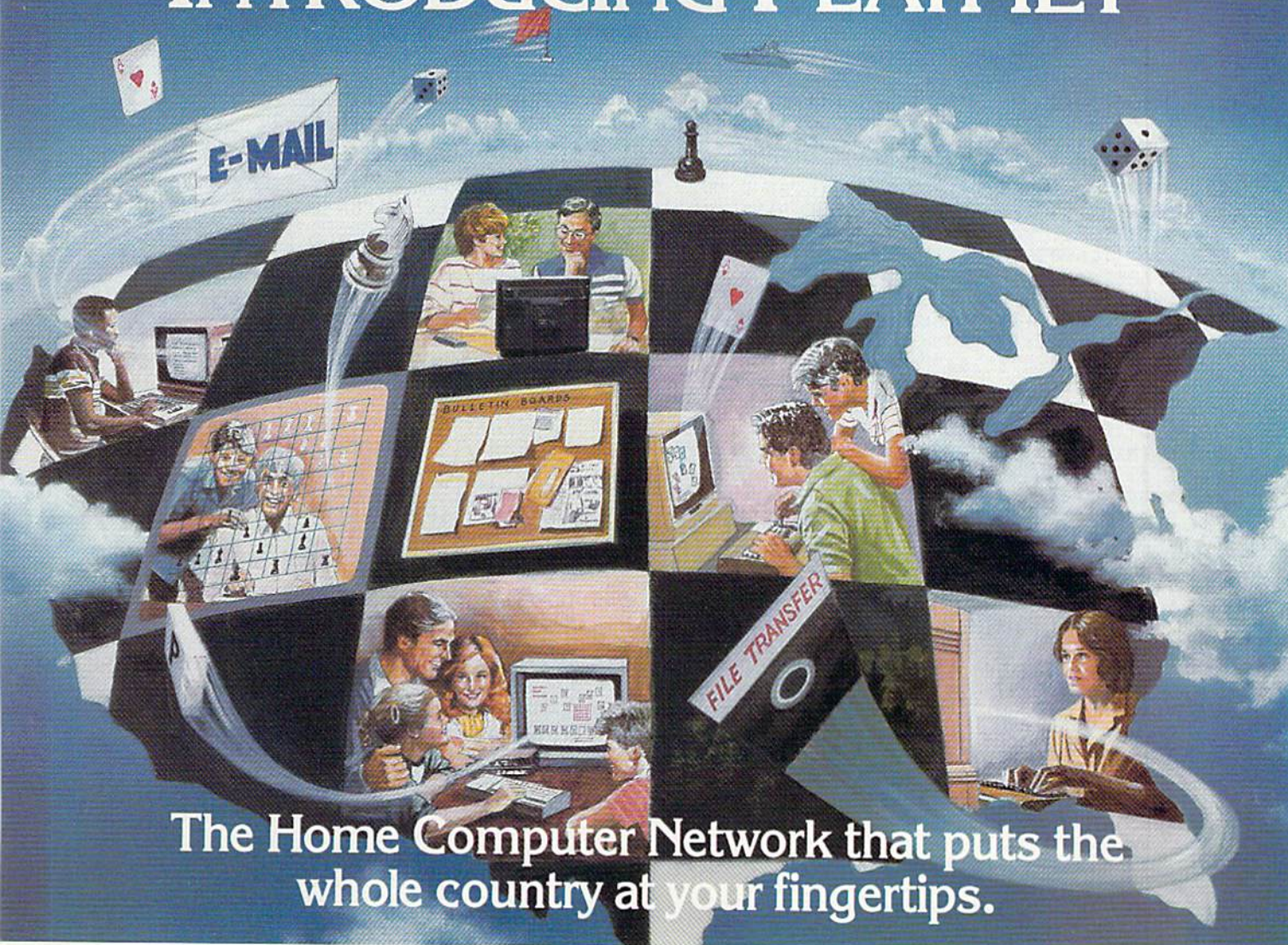
```

```

Ns)SELECT ONE:"PRINT"{3 SPACES}{10 COM
D Ts}"
115 PRINTTAB(5)"{CSR DN}{CTRL 9}1{CTRL 0}
VIEW THE CALENDAR
120 PRINTTAB(5)"{CSR DN}{CTRL 9}2{CTRL 0}
VIEW/ADD/DELETE A MEMO
125 PRINTTAB(5)"{CSR DN}{CTRL 9}3{CTRL 0}
VIEW A MONTH
130 PRINTTAB(5)"{CSR DN}{CTRL 9}4{CTRL 0}
PRINT OUT A MONTH
135 PRINTTAB(5)"{CSR DN}{CTRL 9}5{CTRL 0}
SAVE FILE
140 PRINTTAB(5)"{CSR DN}{CTRL 9}6{CTRL 0}
END PROGRAM
145 INPUT"{CSR DN}";T:ONTGOTO385,150,790,7
15,860,930:IFT>6THEN145
150 M1$=""Z=0:RESTORE:PRINT"{SHFT CLR}{2 C
RSR DN}{CTRL 9} VIEW, ADD OR DELETE A
MEMO {CTRL 0}
155 PRINT"{3 CSR DN}(ENTER {CTRL 9}RETURN
{CTRL 0} FOR MENU)
160 PRINT"(ENTER 'C' FOR CALENDAR)":INPUT"{
2 CSR DN}MONTH (1 TO 12)";M1$
165 IFM1$=""THEN105
170 IFM1$="C"THEN385
175 M1=VAL(M1$)
180 IFM1>12ORM1<1THENPRINT"{CSR DN}INVALID
. TRY AGAIN.":FORI=1TO1200:NEXT:GOTO150
185 INPUT"{CSR DN}DAY";D1:INPUT"{CSR DN}Y
EAR";Y:Y$=STR$(Y):IFLEN(Y$)=5THEN195
190 PRINT"{CSR DN}USE ALL 4 DIGITS":GOTO18
5
195 D=INT((M1-1)*30.42)-(M1=2)+(M1>2ANDM1<8
)-(M1>2ANDINT(Y/4)*4=Y)+D1
200 IFY/4<>INT(Y/4)ANDD>59THEND=D+1
205 FORI=1TO12:READMO$,MJ,M,R:IFI=M1THEN215
210 NEXT
215 IFY/4-INT(Y/4)=0ANDD1<30THEN225
220 IFD1>MTHENPRINT"{CSR DN}NOT THAT MANY

```

# INTRODUCING PLAYNET™



The Home Computer Network that puts the whole country at your fingertips.

© Playnet, Inc. 1984

## PlayNet™ Brings People Together!

PlayNet brings you the excitement you've been waiting for your computer to deliver. With PlayNet's unique system, you can communicate with people all over the country.

Meet fascinating people, make new friends, exchange private messages, post public announcements, and play all our exciting games with people from coast-to-coast!

## You've Never Played Anything Like It!

PlayNet has many terrific games with full color graphics, and they're all interactive, including: Four-in-a-Row, Backgammon, Chess, Sea Strike, Checkers, Bridge, Capture the Flag, and more games coming all the time.

## Join The Telecommunications Revolution! Only \$2.00 An Hour On Line!

Now if you own a Commodore 64\*, a disc drive, and any compatible modem, like The Commodore VICMODEM\*, you can access PlayNet's wide range of services—Games, Bulletin Boards, Electronic Mail, File Transfer and more. Here's all it costs:

- \$2.00 an hour on-line—less than a long distance phone call.
- \$34.95 for the PlayNet Software Package which includes games and program disks, user's manual, monthly newsletter and 90 minutes on-line free.
- \$6.00 monthly service charge.

Let PlayNet put the whole country at your fingertips, every night from 6 PM to 7 AM and 24 hours a day Saturday, Sunday, and Holidays.

**PLAYNET**  
www.commodore.ca  
The network that has people talking.

Circle 221 on Reader Service card.

Call PlayNet at  
**1-800-PLAYNET**

SEND TO PLAYNET, INC.  
P.O. BOX 596,  
WYNANTSKILL, N.Y. 12198-0607

29

**YES! I WANT PLAYNET TO PUT THE WHOLE COUNTRY AT MY FINGERTIPS. I UNDERSTAND THAT MY SATISFACTION IS GUARANTEED FOR 30 DAYS. (or my full subscription price will be refunded upon return of the package) I may cancel my membership at any time by writing PlayNet.**

Bill me on my charge card for \$34.95. No checks, cash or money orders accepted. Please send me the PlayNet Software, user manual, and 90 minutes of free on-line time.

Please print.

Name \_\_\_\_\_

Address \_\_\_\_\_

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

Phone \_\_\_\_\_

Check one:  MasterCard  Visa

Card # \_\_\_\_\_ Expiration date \_\_\_\_\_

Signature \_\_\_\_\_

\*Commodore 64 and VICMODEM are trademarks of Commodore Business Machines Inc.

Listing Continued

```

DAYS IN THE MONTH":FORI=1TO1500:NEXT:GO
TO150
225 PRINT"{SHFT CLR}{3 CRSR DNs}{CTRL 9}"MO
$;D1"{2 CRSR DNs}"
230 PRINT"{CTRL 9}1{CTRL 0} "+A1$(D)+CHR$(1
3)+"{CRSR DN}{CTRL 9}2{CTRL 0} "+A2$(D)
+CHR$(13)+"{CRSR DN}{CTRL 9}3{CTRL 0} "
+A3$(D)
235 PRINT"{2 CRSR DNs}{CTRL 9}A{CTRL 0}DD,
{CTRL 9}D{CTRL 0}ELETE, {CTRL 9}N{CTRL
0}EXT OR {CTRL 9}M{CTRL 0}ENU";
240 D$="":INPUTD$:IFD$=""THEN150
245 IFLEFT$(D$,1)="M"THEN105
250 IFLEFT$(D$,1)="N"THEN150
255 IFLEFT$(D$,1)="D"THEN340
260 IFLEFT$(D$,1)<>"A"THEN235
265 I1$="":I2$="":I3$="":IFA1$(D)="":THEN275
270 GOTO295
275 PRINT"{SHFT CLR}{3 CRSR DNs}{CTRL 9}"MO
$;D1";{CTRL 0}":POKE211,4:POKE214,21
280 PRINT"{CRSR UP}ENTER {CTRL 9}RETURN{CTR
L 0} TO SELECT NEW DATE"
285 POKE211,0:POKE214,6:INPUT"{CRSR UP}MEMO
#1{CRSR DN}{7 CRSR LFs}";I1$:IFI1$<>"
THENA1$(D)=I1$
290 IFI1$=""THEN150
295 IFA2$(D)="":THEN305
300 GOTO315
305 INPUT"{CRSR DN}MEMO #2{CRSR DN}{7 CRSR
LFs}";I2$:IFI2$<>"THENA2$(D)=I2$
310 IFI2$=""THEN150
315 IFA3$(D)="":THEN325
320 PRINT"{CRSR DN}THIS DATE FULL. {CTRL 9}
D{CTRL 0}ELETE, {CTRL 9}N{CTRL 0}EXT, O
R":PRINT"{CTRL 9}M{CTRL 0}ENU";:GOTO240
325 INPUT"{CRSR DN}MEMO #3{CRSR DN}{7 CRSR
LFs}";I3$:IFI3$<>"THENA3$(D)=I3$
330 IFI3$=""THEN150
335 GOTO320
340 PRINT"{2 CRSR DNs}WHICH MEMO":INPUT"(1,
2,3, OR {CTRL 9}N{CTRL 0}ONE)";X$
345 IFX$="1"THENA1$(D)="":GOTO225
350 IFX$="2"THENA2$(D)="":GOTO225
355 IFX$="3"THENA3$(D)="":GOTO225
360 IFLEFT$(X$,1)="N"THEN105
365 C=Y1-YB:IFC=180ORC=220ORC=260ORC=300
0THENCC=0:RETURN
370 IFC=170ORC=210ORC=250ORC=2900THENCC=
2:RETURN
375 IFC=200ORC=240ORC=2800THENCC=4:RETURN
380 IFC=190ORC=230ORC=2700THENCC=5:RETURN
385 PRINT"{SHFT CLR}{2 CRSR DNs}{CTRL 9} DI
SPLAY A CALENDAR {CTRL 0}"
390 RESTORE:INPUT"{2 CRSR DNs}WHAT MONTH (1
TO 12){2 SPACES}";MO
395 IFMO>12THEN385
400 INPUT"{CRSR DN}YEAR";Y1:YR$=STR$(Y1):S=
0
405 IFLEN(YR$)<>5THENPRINT"{CRSR DN}ENTER A
LL 4 DIGITS.":GOTO400
410 IFY1<1700THENPRINT"{CRSR DN}I CAN'T GO
THAT FAR{3 SPACES}INTO THE PAST.":GOTO4
00
415 IFY1>3099THENPRINT"{CRSR DN}I CAN'T GO
THAT FAR{3 SPACES}INTO THE FUTURE.":GOT
O400
420 FORI=1TO12:READMO$,MJ,M,R:IFI=MOTHEN430
425 NEXT
430 REM COMPUTE WHERE 1ST DAY FALLS
435 IFY1/4=INT(Y1/4)THEN640
440 BB$=STR$(Y1):YB=VAL(RIGHT$(BB$,2)):GOSU
B365
445 YY=(INT(YB*10/8)+(CC+1+R))/7:VV=YY-INT(
YY)
450 IFVV<.15ANDVV>.13THENS=0
455 IFVV<.30ANDVV>.28THENS=5
460 IFVV<.44ANDVV>.42THENS=10
465 IFVV<.58ANDVV>.56THENS=15
470 IFVV<.72ANDVV>.70THENS=20
475 IFVV<.87ANDVV>.85THENS=25
480 IFVV=0THENS=30
485 REM CALENDAR HEADING
490 PRINT"{SHFT CLR}"TAB(13)MO$;Y1
495 PRINT"{CTRL 9} SUN{2 SPACES}MON{2 SPAC
Es}TUE{2 SPACES}WED{2 SPACES}THU{2 SPAC
Es}FRI{2 SPACES}SAT{2 SPACES}{CTRL 0}"
500 REM POKE DATES ON SCREEN
505 N=1146:C=55418:NN=49:E=MJ+1:A=128:FORE=
ETOE+8:POKEN+S,NN:POKEC+S,7
510 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S,NN+A:POKEC+S,7
515 GOSUB665:NN=NN+1:NEXT:NN=48:E=MJ+10:FOR
E=ETOE+9:POKEN+S,49:POKEC+S,7
520 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S,177:POKEC+S,7
525 POKEN+S+1,NN:POKEC+S+1,7
530 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S+1,NN+A:POKEC+S+1,7
535 GOSUB665:NN=NN+1:NEXT
540 E=MJ+20:NN=48:FORE=ETOE+8:POKEN+S,50:PO
KEC+S,7
545 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S,178:POKEC+S,7
550 POKEN+S+1,NN:POKEC+S+1,7
555 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S+1,NN+A:POKEC+S+1,7
560 GOSUB665:NN=NN+1:NEXT:IFM=28THEN675
565 E=MJ+29:POKEN+S,50:POKEC+S,7
570 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S,178:POKEC+S,7
575 POKEN+S+1,57:POKEC+S+1,7
580 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S+1,185:POKEC+S+1,7
585 GOSUB665:IFM=29THEN675
590 E=MJ+30:POKEN+S,51:POKEC+S,7
595 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S,179:POKEC+S,7
600 POKEN+S+1,48:POKEC+S+1,7
605 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S+1,176:POKEC+S+1,7
610 GOSUB665:IFM=30THEN675
615 E=MJ+31:POKEN+S,51:POKEC+S,7
620 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S,179:POKEC+S,7
625 POKEN+S+1,49:POKEC+S+1,7
630 IFA1$(E)<>"ORA2$(E)<>"ORA3$(E)<>"THE
NPOKEN+S+1,177:POKEC+S+1,7
635 GOSUB665:GOTO675
640 IFY1/100<>INT(Y1/100)THEN650
645 IFY1/400<>INT(Y1/400)THEN440
650 IFMO=1THENM=31:R=R-1:GOTO440
655 IFMO=2THENM=29:R=R-1:GOTO440
660 GOTO440
665 S=S+5:IFN+S=1181ORN+S=1301ORN+S=1421ORN
+S=1541ORN+S=1661THENS=S+85
670 RETURN
675 POKE211,7:POKE214,21:PRINT"{CRSR UP}{CTR
L 9} PRESS RETURN FOR MENU{2 SPACES}"
680 IFZ<>1THENPRINTTAB(7)"{CTRL 9}PRESS F1
TO ENTER MEMO{2 SPACES}{CTRL 0}
685 PRINTTAB(7)"{CTRL 9}PRESS F7 FOR SCREEN
DUMP{CTRL 0}
690 GETJ$:IFJ$=""THEN690
695 IFASC(J$)=133THEN150
700 IFASC(J$)=136THEN940
705 IFZ=1THEN15

```

# YOUR COMMODORE 64™ CAN NOW USE STANDARD APPLE™ II+ HARDWARE AND SOFTWARE



## WITH THIS

At Mimic we believe that you and your computer should dictate the choices of hardware and software you can use.

The Spartan™ was developed to allow you to choose the hardware and software that best suits your needs.

Our goal in designing the Spartan™ was simple. To take what you already have and give you more.

Mimic Systems is proud to give you the Spartan™  
The Apple™ II+ emulator for the Commodore 64™

Spartan™ Suggested Retail Prices:

The Spartan™ (includes BUSS, CPU, and DOS cards) \$599.00  
BUSS card \$299.00

CPU card (requires BUSS card) \$199.00

DOS card (requires BUSS and CPU card) \$199.00

(All prices in U.S. Funds. Freight not included.)  
American Express, Visa and MasterCard accepted.

Commodore 64 and Commodore logo are trademarks of Commodore Electronics Ltd. and/or Commodore Business Machines, Inc. Apple II+ is a trademark of Apple Computer, Inc. Spartan™ is a trademark of Mimic Systems Inc., and has no association with Commodore Electronics or Apple Computer, Inc. The Spartan is manufactured by Mimic Systems Inc. under license granted by ATG Electronics Inc. of Victoria, B.C., Canada.



## MIMIC

FOR INFORMATION WRITE:

MIMIC SYSTEMS INC.  
1112 FORT ST., FL. 6A  
VICTORIA, B.C.  
CANADA V8V 4V2

Circle 43 on Reader Service card.

To Order Call:

**1-800-MODULAR**  
(663-8527)

Listing Continued

```


710 GOTO105
715 RESTORE:PRINT"{SHFT CLR}{2 CRSR DNs}{CTRL 9}PRINT OUT A MONTH {CTRL 0}
720 INPUT"{2 CRSR DNs}WHAT MONTH (1 TO 12)"
;MO
725 FORI=1TO12:READMO$,MJ,M,R:IFI=MOTHEN735
730 NEXT
735 PRINT"{3 CRSR DNs}TURN ON PRINTER.":PRINT"{CRSR DN}HIT A KEY WHEN READY.
740 PRINT"{2 CRSR DNs}PRESS {CTRL 9}RETURN{CTRL 0} TO RETURN TO MENU.
745 GETJ$:IFJ$=""THEN745
750 IFJ$=CHR$(13)THEN105
755 OPEN4,4:PRINT#4,CHR$(14)"MEMOS FOR ";MO
$:PRINT#4,CHR$(15):E=MJ+1:F=1
760 FORE=ETOE+M-1
765 IFA1$(E)<>""ORA2$(E)<>""ORA3$(E)<>""THENPRINT#4:PRINT#4,MO$;F;"--"
770 IFA1$(E)<>""THENPRINT#4,"{2 SPACES}* "+A1$(E)
775 IFA2$(E)<>""THENPRINT#4,"{2 SPACES}* "+A2$(E)
780 IFA3$(E)<>""THENPRINT#4,"{2 SPACES}* "+A3$(E)
785 F=F+1:NEXT:FORI=1TO4:PRINT#4:NEXT:CLOSE4:GOTO105
790 RESTORE:PRINT"{SHFT CLR}{CTRL 9}{2 CRSR DNs}VIEW A MONTH {CTRL 0}
795 INPUT"{2 CRSR DNs}WHAT MONTH (1 TO 12)"
;MO
    
```

```

800 FORI=1TO12:READMO$,MJ,M,R:IFI=MOTHEN810
805 NEXT
810 G=0:E=MJ+1:F=1:IFM=28THENM=29
815 PRINT"{SHFT CLR}":FORE=ETOE+M-1
820 IFA1$(E)<>""ORA2$(E)<>""ORA3$(E)<>""THENPRINT"{3 CRSR DNs}{CTRL 9}"MO$;F"{CTRL 0}":PRINT:G=1
825 IFA1$(E)<>""THENPRINT" "+A1$(E)
830 IFA2$(E)<>""THENPRINT" "+A2$(E)
835 IFA3$(E)<>""THENPRINT" "+A3$(E)
840 F=F+1:IFG=0THEN855
845 PRINT"{2 CRSR DNs}"TAB(9)"{CTRL 9}HIT A NY KEY TO PROCEED{CTRL 0}":G=0
850 GETJ$:IFJ$=""THEN850
855 PRINT"{SHFT CLR}":NEXT:GOTO105
860 PRINT"{SHFT CLR}{2 CRSR DNs}{CTRL 9}SAVE FILE {CTRL 0}
865 PRINT"{2 CRSR DNs} SAVE TO {CTRL 9}T{CTRL 0}APE OR {CTRL 9}D{CTRL 0}ISK";:INPUTAN$:IFAN$="D"THEN880
870 IFAN$<>"T"THEN860
875 PRINT"{2 CRSR DNs}INSERT FILE TAPE.{CRSR DN}":OPEN4,1,1,"MEMO FILE":GOTO900
880 PRINT"{2 CRSR DNs}INSERT SEQUENTIAL FILE DISK.":PRINT"PRESS A KEY WHEN READY."
885 GETJ$:IFJ$=""THEN885
890 PRINT"{SHFT CLR}{2 CRSR DNs}SAVING FILE.":OPEN15,8,15:PRINT#15,"S0:MEMO FILE"
895 CLOSE15:OPEN4,8,8,"0:MEMO FILE,S,W"
900 FORD=1TO366:IFA1$(D)=""THENA1$(D)="{PI}"
905 PRINT#4,A1$(D):IFA2$(D)=""THENA2$(D)="{PI}"
910 PRINT#4,A2$(D):IFA3$(D)=""THENA3$(D)="{PI}"
915 PRINT#4,A3$(D):NEXT
920 PRINT"{2 CRSR DNs}ONE MORE MINUTE, PLEASE."
925 PRINT#4:CLOSE4:FORD=1TO366:GOTO85
930 INPUT"{SHFT CLR}{2 CRSR DNs}DID YOU SAVE YOUR DATA (Y/N)";AN$:IFAN$<>"Y"THEN860
935 END
940 REM SCREEN DUMP ROUTINE
945 G1$=CHR$(145):OPEN 4,4:PRINT#4:G1=984
950 FORLI=1TO19:G0$=G1$:G1=G1+40:REM LI=NO. OF SCREEN LINES TO BE PRINTED
955 FORG2=G1 TO G1+40:G3=PEEK(G2)
960 IFG3>128THENG3=G3-128:G4=1:G0$=G0$+CHR$(18)
965 IF(G3>0)*(G3<32)THENG3=G3+64:GOTO 985
970 IF (G3>31)*(G3<64)THEN 985
975 IF (G3>63)*(G3<96)THEN G3=G3+128:GOTO 985
980 IF (G3>95)*(G3<128)THEN G3=G3+64:GOTO 985
985 G0$=G0$+CHR$(G3)
990 IF G4=1THEN G0$=G0$+CHR$(146):G4=0
995 NEXT:PRINT#4,G0$:NEXT
1000 PRINT#4:CLOSE4:IFZ=1THEN15
1005 GOTO105
1010 DATA JANUARY,0,31,3,FEBRUARY,31,28,6,MARCH,60,31,6,APRIL,91,30,2
1015 DATA MAY,121,31,4,JUNE,152,30,0,JULY,182,31,2,AUGUST,213,31,5
1020 DATA SEPTEMBER,244,30,1,OCTOBER,274,31,3,NOVEMBER,305,30,6
1025 DATA DECEMBER,335,31,1
    
```

Circle 170 on Reader Service card.

**COMMODORE**  
64™



<p><b>CALL FOR INFORMATION REGARDING DEMONSTRATION CATALOG DISK WHICH INCLUDES UTILITIES PROGRAM DEMOS AND OUR EXPANDED DISCOUNT CATALOG.</b></p>	<p><b>SUPERBASE</b> 65<sup>00</sup> <small>CREATE MENU-DRIVEN DATABASES ACCESS UP TO 15 FILES PER BASE 1541 &amp; 4040 COMPATIBLE WRITE MULTIPLE PROGRAMS TO DRIVE DATABASES. HELP SCREENS LABEL PROGRAM</small></p> <p><b>INSTASPEED -</b> 99<sup>95</sup> <small>COMPILER FLOATING POINT &amp; INTERGER BASIC</small></p> <p><b>SYSRES -</b> 79<sup>95</sup> <small>BASIC EDITOR COMPLETE RENUMBERING DEFINE KEYS FUNCTIONS. SCREEN DUMP FINDS, CHANGES RELOCATABLE. WORKS EVEN AFTER RESET.</small></p> <p><b>SMART 64 -</b> 33<sup>95</sup> <small>TERMINAL PROGRAM SUPPORT FULL UPLOAD/DOWNLOAD TO DISK. MENU DRIVEN. HELP SCREENS</small></p> <p><b>FLEXFILE 2.2</b> 59<sup>95</sup></p> <p><b>MW350w/4K BUFFER</b> 130<sup>00</sup></p>	<p>65<sup>00</sup></p> <p>99<sup>95</sup></p> <p>79<sup>95</sup></p> <p>33<sup>95</sup></p> <p>59<sup>95</sup></p> <p>130<sup>00</sup></p>
---	--	--



To order: CALL or WRITE

**SOFTWARE LINK** 914-683-2512

P.O. Box 391 White Plains, NY 10602

TERMS: Send check or money order for total purchase price, plus \$2.75 for shipping via UPS. \$4.00 for shipping non UPS. Personal checks (allow 10 days to clear).

NY RESIDENTS ADD APPLICABLE TAXES

**SOFTWARE LINK**  
283 Mamaroneck Ave. White Plains, NY  
914-683-2512 (retail outlet)



# Attention Commodore<sup>®</sup> Computer Owners



Looking for a versatile disk drive that efficiently interfaces with your Commodore<sup>®</sup> personal or business computer? Then look no further. MSD offers not just one drive, but two — the SD-1 and the SD-2 Super Disk Drives.

With the SD-1 Super Disk's 4K buffer memory, you can open more files at any one time. Its rapid internal operations allow you to execute utility commands in a minimal amount of time and to format disks in only 17 seconds. If you demand more and thus faster duplication, however, then the SD-2 is for you. You can format, copy and verify in less than 2 minutes — twenty times faster than if you used two single drives together.

Both drives feature state-of-the-art design for exceptional durability and longer life. Both feature unique vertical loading for greater space savings. And neither will ever overheat.

Call MSD today for more information or the location of the dealer or distributor nearest you.

**MSD**

SYSTEMS, INC.

10031 Monroe, Suite 206 Dallas, Texas 75229

Circle 253 on Reader Service card.

(214) 357-4434

# Selecting The Right Printer

By JIM STRASMA

*You can't always tell which printer is right for you simply by its shape or color. This article takes a look at some of the available printers and their accessories, so you'll be better informed to choose the equipment that best meets your needs.*

A printer is perhaps the most useful peripheral you can own. In a few minutes, it can generate a printout (often called hard copy) of information you have entered onto the screen. However, making such a convenient device work with your computer can be a real headache if you don't choose the proper printer/interface combination to work with your computer.

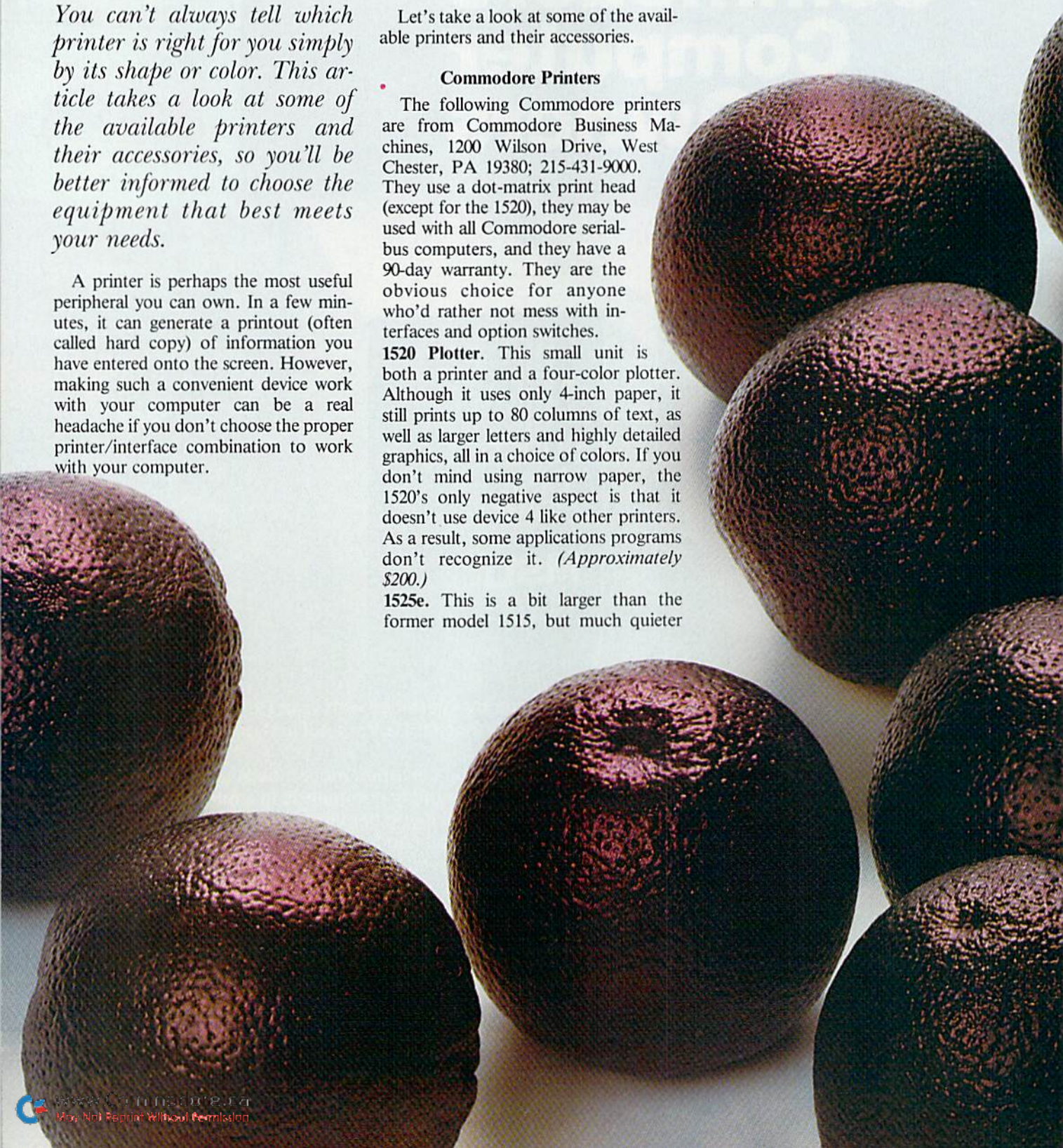
Let's take a look at some of the available printers and their accessories.

## Commodore Printers

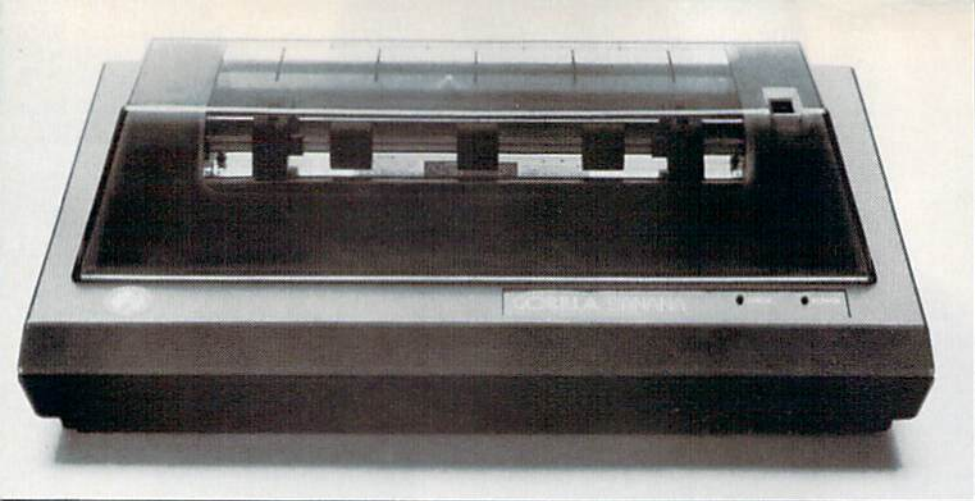
The following Commodore printers are from Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380; 215-431-9000. They use a dot-matrix print head (except for the 1520), they may be used with all Commodore serial-bus computers, and they have a 90-day warranty. They are the obvious choice for anyone who'd rather not mess with interfaces and option switches.

**1520 Plotter.** This small unit is both a printer and a four-color plotter. Although it uses only 4-inch paper, it still prints up to 80 columns of text, as well as larger letters and highly detailed graphics, all in a choice of colors. If you don't mind using narrow paper, the 1520's only negative aspect is that it doesn't use device 4 like other printers. As a result, some applications programs don't recognize it. (Approximately \$200.)

**1525e.** This is a bit larger than the former model 1515, but much quieter







and more attractive. Unlike its predecessor, it handles normal size (9½ × 11) computer paper, as long as the paper lies directly behind the printer and not below it. It will not, however, handle anything heavier, not even fan-fold checks, despite its adjustable pin feed.

The print quality is surprisingly good, considering the printer has only a single print hammer, but it proceeds at a slow 30 cps and is quite noisy. The 7 × 6 dot matrix prints all Commodore graphics, but lacks descenders. It also lacks the formatted print of the 1526 below, but adds a nice graphics bit-mapping option (480 dots/line). A switch sets the printer to either device 4 or 5, but there is no connector for another printer. Construction is lightweight, to say the least, but it's still a good printer for the price.

Those without a red "E" on the side of the box won't work with the 64. Recommended for VIC owners. (*Approximately \$225.*)

**1526.** This printer has been a mixed bag for Commodore. On the one hand, it is clearly faster than the 1525, at 60 cps with bidirectional printing. It includes true descenders (the long letters like y, g and q drop below the print line properly), uses an 8 × 8 dot matrix and has both friction feed and rear tractors. It is rumored to be an Epson MX-70 with different electronics, which speaks fairly well for its construction.

On the other hand, the 1526 is *not* software compatible with the 1525 and does *not* work with applications programs that use all the features of the 1525. A few now explicitly include a 1526 option, but many still don't. Also, if it has any graphics capabilities, they are well hidden. The film ribbon gives good print quality, but has a short life. There also still seem to be some residual incompatibilities with older systems that use multiple disk drives, despite a recall last year.

It is surprising to note everything the 1526 *cannot* do, including underlining, italics, subscripts, superscripts, bold-face, condensed print and custom character sets. At least it can do expanded characters and variable spacing between lines. It also includes the formatted print option of the larger Commodore printers, which can somewhat replace the Print Using command on those models that lack it.

On balance, the 1526 does more of what I need than the 1525 and the 801, and it's more suited to heavy use than Commodore's other serial-bus printers, but I'd be less likely to buy it than either an MPS 801 or a full-featured non-Commodore printer. (*Approximately \$250.*)

**MPS-801.** This is an upgraded 1525, with a much sleeker case, a cartridge ribbon and higher print speed. I've been tempted to buy one several times over the past few months, merely to have an official Commodore printer again, but haven't quite put the money down. It is a good dollar value—one of the cheapest "real" printers on the market, though still clearly designed for light home use, not continuous operation or multipart forms at the office. Its manual is also clear, concise and accurate, a pleasant change for Commodore. Its only unexpected problem is slight incompatibility with the VIC, a problem VIC owners have avoided by saving programs to disk before listing them. Recommended for all but VIC owners. (*Approximately \$250.*)

Also in this issue, *RUN* takes a look at Commodore's newest printers—the DPS 1101 and the 803.

#### Dot-Matrix Printers

Several leading printers have been evaluated by Cardco Inc. for use with their "+G" graphics printer interface. Ed Lippert, president of Cardco, sup-

plied these ratings to the *Midnite Software Gazette* (listed in order of his preference):

**Prowriter.** It is sold as the C. Itoh 8510 and NEC 8023 (best overall). *Good points:* Fast graphics, excellent print quality, very reliable, rear tractor feed. *Bad points:* Complicated internal DIP switches.

**Mannesmann Tally Spirit** (best buy). *Good points:* Excellent print quality, rear tractor, Epson-code compatible. *Bad points:* Tractor mechanism binds occasionally.

**Okidata**, 82 and 92 series. *Good points:* Good print quality, very reliable. *Bad points:* Non-standard printer codes, 7-bit graphics (prefer 8-bit).

**Epson**, MX, RX and FX series. *Good points:* Good reliability, good print quality, standardized special printer codes. *Bad points:* Non-standard width graphics characters, slow graphics printing unless a print buffer is used.

**Gorilla Banana** (good value, but may be hard to locate). *Good points:* Exactly duplicates Commodore 1525, 40% faster than the 1525. *Bad points:* 30% slower than most printers, fair print quality, no descenders, 7-bit graphics (prefer 8-bit), fair reliability.

**Star Gemini 10X/15X.** *Good points:* Good print quality, Epson compatible. *Bad points:* Fair reliability, slow graphics printing unless a print buffer is used, non-standard width graphics characters.

The following printers work with the "+G" but were not rated by Cardco: Panasonic, Inforunner Riteman, Star Delta 10, BMC and Mannesmann Tally 160.

Following are reviews of two of the above printers that I have used. Both are available with either a Centronics parallel or an RS-232 interface, and both connect to Commodore printers via an interface.

**Gemini 10X.** This is one of the best Epson clones, using the same command set and matching the FX series feature by feature, but at a lower price.

My personal favorite feature is not universally appreciated; the Gemini uses standard Underwood spool ribbons that can be bought at office-supply stores everywhere for about \$2, instead of the typical \$14 you'd pay for an Epson cartridge. On the other hand, installing the spool is a messy and memorable experience, whereas cartridges just snap in. Mechanically, the Gemini shares the Epson's 9 × 9 dot matrix and has a similar (but cheaper) disposable print head.

# TRIVIA PLUS™

**NEW**



- ◆ Over 3,500 questions
- ◆ 8 fascinating categories
- ◆ No typing required
- ◆ Excellent graphics and sound (includes over 100 songs!)
- ◆ For 1 to 6 players
- ◆ In 'Trivia Plus' a good bluff may be the next best thing to the right answer

Commodore 64™  
Disk \$24.95



## REALISTIC AIRCRAFT RESPONSE

"Has a quality of realism which sets it apart from others, even those I've tested in flight school."  
**Compute's Gazette**

"Great program!" **INFO-64**

"It is tremendous fun."  
**Compute's Gazette**

"Flight tested by an air traffic controller, two skilled pilots and an elementary school class. Highly recommended by all."  
**Midnite Gazette**

"This is an unbelievably realistic simulation of the difficulties facing a pilot in instrument fly-

ing. I'm a 747 pilot and I think that this simulation could do a lot to improve the reactions and instrument scan habits of even very experienced pilots." **747 pilot**

### IFR (FLIGHT SIMULATOR)

Commodore 64™ . . . . . Tape or Disk \$29.95  
VIC 20™ (unexpanded) . . . . . Cartridge \$39.95  
JOYSTICK REQUIRED



## REVIEWERS SAY:

"This is the best typing tutor we have seen yet; ★★★★★"  
**INFO-64**

"Computer aided instruction at its best."  
**Commander**

"This is an excellent program that makes typing practice an enjoyable pastime instead of boring drudgery."  
**DILITHIUM PRESS**

Rated the BEST educational program for the VIC 20  
**Creative Computing**

## CUSTOMERS SAY:

"... delighted with my son's progress... he is the only one in his second grade class who touch types at the computer."

"Your Typing Tutor is an excellent program... our 4 children literally wait in line to use it."

"Thoroughly satisfied, can't believe how fast I've learned to type. I've never typed before."

In daily use by schools across the USA.

### TYPING TUTOR + WORD INVADERS

NEW Commodore Plus/4 or 16™ ... Tape \$21.95 Disk \$24.95  
Commodore 64 ... Tape \$21.95 Disk \$24.95  
VIC 20 (unexpanded) ... Tape \$21.95

**ACADEMY SOFTWARE**



Shipping and handling \$1.00 per order. CA residents add 6% tax.



Other attractive features include a completely user-definable character set, a 1K built-in print buffer and bidirectional, logic-seeking printing at 120 cps (although it doesn't seem that fast in actual use). It also includes a friction feed that works without skewing the paper, as well as a removable tractor feed. Although the 10X has a 10-inch carriage, a similar 15X model is available with a wider carriage. Those needing higher speed may want to try Gemini's Delta models, which offer 180 cps. Earlier models (without the "X") are unable to mix text and graphics on the same line.

The 10X's print features include everything you'd expect: pica, elite and condensed type; boldface and emphasized print; italics; true descenders and underlining; and high-resolution graphics.

I've used the 10X on two book projects and found it quite adequate for our needs, with good print quality. Its only negative feature is that, like the Epson, it slows down markedly on graphics output, unless connected via an interface with a built-in print buffer. Fortunately, such interfaces are now readily available. Recommended. (*Approximately \$350 from Star Micronics, 200 Park Ave., New York, NY 10166. Six-month warranty.*)

**Prowriter 8510**, also sold as the NEC 8023. This is my personal printer, the one I use daily. Nearly any printer can turn out attractive text with a fresh ribbon, but the Prowriter continues to do so months later. After a year of use, it's only on its third ribbon cartridge, and the first two are still usable.

Compared to the Gemini 10X, reviewed above, the Prowriter has the same 120 cps speed, but seems to have a higher actual print speed. It lacks the ability to download a complete character set and to do italics, but it includes full Greek and Japanese character sets and true proportional spacing. To minimize paper waste, the printer's adjustable pin feed is mounted in the rear, a minor convenience. We've had no problems with slippage from the rear tractors, although the friction feed seems a bit weak. The Prowriter is compact and cleanly designed, and strong enough to print cards and multipart forms.

Other features are, as in the Gemini: a 9x9 dot matrix; bidirectional logic-seeking printing; a 2K print buffer; boldface and expanded print; true descenders and underlining; pica, elite and condensed type and excellent high-resolution graphics. Those needing either a

wider carriage than the standard 10½ inches or a higher print speed will find C. Itoh has other suitable models available, including a new color printer (not tested).

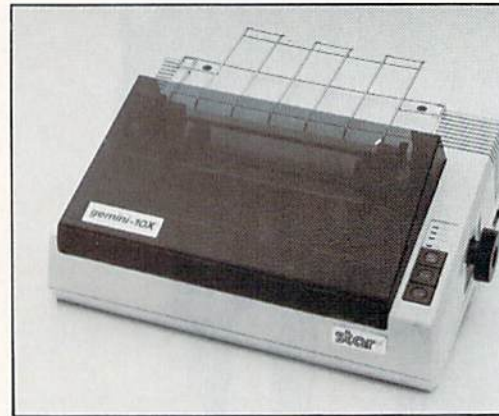
The Prowriter comes with two manuals—one typical complex manual that describes *everything* and fairly well, and another that almost anyone can read.

The lack of a user-definable character set and the unfortunate placement of 16 tiny but important switches deep inside the print compartment are the only negative features I've noticed about this printer. You can reach the switches by lifting off the front cover, but seeing them may require a flashlight. Although some will be bothered by its having control codes and graphics that differ from the many Epson clones, I have easily found quality programs that explicitly support the 8510. Highly recommended. (*Approximately \$400 from C. Itoh 5301 Beethoven St., Los Angeles, CA 90066; 213-306-6700; one-year warranty.*)

**Hush 80**. This 80-column portable thermal dot-matrix printer operates at 80 cps (bidirectional printing). It is only 25 ounces, making it the lightest portable printer. It has a 6x7 dot matrix.

The printer is offered in three models, each of which can be equipped with a built-in, rechargeable nickel-cadmium battery pack as an option. The model Hush 80CD (\$139.99 complete with interface and cable) provides direct interfacing to Commodore computers. The Hush 80P (\$139.99 without cable) is a Centronics-type parallel interface version, while the Hush 80S (\$139.99 without cable) provides a serial RS-232 interface.

All Hush 80 models include a 100-foot roll of thermal paper loaded ready for use and a 9-volt ac wall transformer with power cable. (*Ergo Systems Inc., 26254 Eaton Landing Road, Hayward, CA 94545. Six-month limited warranty.*)



### Daisywheel Printers

The field of daisywheel printers is changing rapidly; the following two reviews are only a tiny sample of the range available.

**Dynax DX-15**. This low-cost daisywheel printer, available in parallel and RS-232 versions, uses widely available Diablo ribbon cartridges. It also does underlining, superscripts and subscripts and boldface, and it prints bidirectionally at 12 cps. Its \$250 optional single-sheet feeder works well, as does the \$250 dual tractor feed and an optional \$200 remote keyboard. The Dynax is big (15-inch carriage) and solidly built—it can run all day without trouble. Recommended. (*Reviewed by Jim Oldfield. Approximately \$500 from Brother Electronics; one-year warranty.*)

**Printmaster**. This is a 55-cps version of the popular Starwriter F-10 daisywheel. Sheet feeder optional. A stencil option allows printing six (instead of three) copies at once. It also adds two-color ribbon capability and has room for a 2K print buffer on board by adding an \$11 chip. The RS-232 version allows up to 9600 baud. It is far lighter, quieter while printing and less expensive than the Starwriter 25 it replaced.

It includes a whisper fan, which is

## Santa Cruz, CA

The Commodore User's Group of Santa Cruz meets on the third Tuesday of every month from 7:00-9:00 PM, at the Loudon Nelson Center in Santa Cruz.

The club helps new users of Commodore computers and offers advice on any member's hardware or software problems. At present, the group requires no membership dues.

For information, contact the Commodore User's Group of Santa Cruz, PO Box 8068, Santa Cruz, CA 95061-8068, 408-335-2082 or 408-476-0294.

## Lueneburg, Germany

Interface Computer Club is a German organization for VIC-20 and C-64 users. The group, which is based in Lueneburg, Germany, would like to contact Commodore clubs in other countries for software and information exchange.

For more information, contact Interface Computer Club, c/o Uwe Wenk, Hindenburgstr 98, D-2120 Lueneburg, West Germany.

## Brooksville, FL

Anyone living in the Brooksville or Spring Hill areas and interested in Commodore computers can join the Commodore Brooksville User's Group (C\*BUG), PO Box 1261, Brooksville, FL 33512, 904-799-5292.

## Eldon, MO

The Commodore User's Club of the Ozarks can be reached through Morris Williams, 211 N. Aurora, Eldon, MO 65026, 314-392-4248.

## New Castle, PA

The Castle Commodore Computer Club, serving VIC-20, C-64 and PET users, meets on the third Thursday of

each month in New Castle, PA. For more information, contact Castle Commodore Computer Club, c/o Dean Thomas, RD #1, Box 210A, Edinburg, PA 16116, 412-652-3352.

## Sierra Vista, AZ

Thunder Mountain Commodore Computer User Group is made up of more than 70 families and is open to anyone who is interested.

For more details, write Thunder Mountain Commodore Computer User Group, PO Box 1796, Sierra Vista, AZ 85636. The group may also be contacted on CompuServe, user ID #75115,41.

## Altoona, PA

The Bellwood-Altoona Swappers in Commodore (Basic) recently formed. Meetings are held on the first Sunday of each month at 2:00 PM, at 1433 13th Ave., Altoona, PA.

For information, contact Dimitri Dantos, 515 E. 26th Ave., Altoona, PA 16601, 814-942-9565.

## South Plains User Group

The South Plains 64 User Group can be contacted through John Bottoms Sr., 7709 Ave. W., Lubbock, TX 79423, 806-745-4381.

## Compumania

Based in Saco, ME, Compumania was formed in March 1983 to promote computer literacy and generally to provide support for computer users.

The group, which is a general computer user's club, has a strong C-64 membership. Compumania offers members a public domain library and maintains a list of persons who offer support to members who need assistance with their computers.

For more information about the group, contact Compumania, c/o Richard Nadeau, 81 North St., Saco, ME 04072, 207-282-7418.

## Akron, OH

Commodore Users in Akron, a recently formed Commodore user's group, offers open, biweekly meetings. For more information, write Commodore Users in Akron, PO Box 9243, Akron, OH 44305.

## Chicago, IL

C-64 enthusiasts living in the Chicago area can join the C-64 User's Group, Inc. Each chapter meets monthly and members are invited to attend any or all of the meetings.

The group offers members a software library containing more than 500 programs, a newsletter and bulletin-board system.

Anyone interested can write the C-64 User's Group, Inc., PO Box 46464, Lincolnwood, IL 60646, or call Darrell Hancock, 312-588-0334, or David Tamkin, 312-583-4629.

## Englewood, FL

Ram Rom 84 can be contacted through Nancy Kenneally, 1620 Morning Dove Lane, Englewood, FL 33533, 813-474-9450.

## Wheeling, WV

Commodore Home User's Group (CHUG) was formed in January 1984. If you live in the Wheeling area and are interested, contact CHUG, c/o Alice Shipley, 81 Lynwood Ave., Wheeling, WV 26003, 304-242-8362, or call David Hoskins, 302-242-2605.

## Uintah Basin, UT

The Uintah Basin Commodore User's Club meets on the second and fourth Thursdays of the month, in the Roosevelt City Police Building.

Any interested C-64 user can write Terry Hall, PO Box 1102, Roosevelt, UT 84066.

somewhat disturbing but covers up the power-supply noise that bothered me on the F-10. The dual tractor feed, a \$200 extra, is very well done. There is also a bottom paper-feed slot, though I don't use it. The option switches are now accessible near the front of the unit. However, the cover no longer simply swings up, as on the 25; removing it takes a good tug, and an interlock won't allow use without it. Also, changing from pica to elite is now done with a little DIP switch rather than the large switch on the 25. Fortunately, it is easy to add toggle switches for often-used functions.

The Printmaster is attractive and very well made. The preliminary manual omits the switch settings, but the dis-

tributor provided these immediately over a toll-free line. It presumably includes all the F-10 features, which are too numerous to list. (A trivial example: It includes not one but three Test modes, depending on which front-panel switch is pushed at start-up.) The printer uses Qume control codes and Diablo ribbons and print wheels, making it an industry-standard printer.

It would be hard to find a better daisywheel printer today at any price. The only reason to get a lesser printer for word processing is to save money. Highly recommended for all commercial uses, and home users may want to look into the two slower and cheaper models in the Starwriter line. Commercial users may also want the optional

sheet feeder. (Approximately \$1500 from C. Itoh; one-year warranty.)

### Combination Typewriter/Printers

If you need a typewriter, some can now be connected to your computer. Here are reviews of two combination units.

**AP400.** This unit, which is fairly large and heavy, is fast (20 cps) when compared to other printer/typewriters, though slow when compared to printer-only daisywheels of equal cost. It has an excellent easy-to-use, heavy-duty keyboard (with dozens of keys) and uses a self-correcting lift-off tape for errors. Correction memory is 500 characters long, and pitches include 10, 12 and 15.

It includes format settings for forms, boldface and underlining, subscripts and superscripts, plus special characters, even centering and automatic carriage returns at word ends as you approach the right margin. Recommended, once you learn to use it. (Reviewed by Karleen Dude. Approximately \$1200 from Canon Electronics; 90-day warranty.)

**Selectone Typewriter.** It's actually an Olivetti Praxis 30 typewriter, modified to interface to a computer via a Centronics parallel connector. Modifications are entirely hidden inside the typewriter, with only a 10-conductor cable peeking out the rear cooling vents.

The Selectone is fairly compact and lightweight, while still being a full KSR (keyboard send/receive) daisywheel printer. It includes a self-correcting lift-off ribbon with ten-character memory and extra characters for other languages. For \$50 extra, you may substitute the Praxis 35, adding dual pitch and a bit more memory. As a typewriter, the Selectone performs somewhere between my old electric Smith-Corona and an old IBM Selectric. In features, it outdoes both, though a new Selectric would outclass it—for triple the price.

As a computer printer, it is entirely functional, though slow (6 cps). Backspacing and underlining are supported, but not boldface. Ribbons last 40,000 characters—about 1/5 as long as on larger daisywheels, and cost nearly as much. Print wheels are available in the usual array of typefaces, but they're no easier to change than on other brands. It's an excellent choice if you need a low-cost typewriter/printer. (About \$695 from Selectone Computer Products, 28301 Industrial Blvd., Hayward, CA 94545. \$195 without typewriter.)

### Serial-Bus Parallel Interfaces

Without an interface, only Commo-

AD-R1-5



**610 MIDDLE STREET  
FAIRBORN, OH 45324**

**ASK FOR  
FREE CATALOG**

**ATARI/SAFT SALE  
FOR C-64 AND VIC-20**

All C-64 Titles ..... \$10.00!  
All VIC-20 Titles ..... \$ 3.00!  
Choose from: Pac-Man, Centipede, Defender, Dig Dug, Donkey Kong, Robotron: 2084, Pole Position, and Galaxian. Also, Ms. Pac-Man and Battlezone for C64 only. ROM Cartridge (R)

**OUTSTANDING PRICES  
ON THESE TOP HOME  
AND EDUCATION TITLES**

**ACCESS**

Beachhead (D) (C)	..... \$29
Raid over Moscow (D) (C)	..... \$29
Spritmaster (D)	..... \$29
The Scrolls of Abaddon (D)	..... \$29

**STRATEGIC  
SIMULATIONS, INC.**

Field of Fire (D)	..... CALL
Baltic 1985 (D)	..... CALL
Carrier Force (D)	..... CALL
Broadsides (D)	..... CALL
Geopolitique 1990	..... \$29

Other SSI Titles Always Available

**OTHER GREAT TITLES**

Flight Simulator II (Sublogic) (D)	..... \$37
Sargon III (Hayden) (D)	..... \$39
Ultima III (Origin Systems) (D)	..... \$44
Trivia Fever (Professional Software) (D)	..... CALL
Doodle (D)	..... \$26
VIP Terminal (D)	..... \$39.95
Murder by the Dozen (CBS) (D)	..... \$27
Mastertype (Scarborough) (D) (R)	..... \$24
Bruce Lee (Datamost) (D)	..... CALL
Chart Pack (Abacus) (D)	..... \$36
Pascal (Abacus) (D)	..... \$34

**SAVE ON VEREX DISKS  
BY VERBATIM**

SSDD ..... \$14.00  
DSD ..... \$19.00  
**Box of 10**

**INFOCOM**

The Hitchhiker's  
Guide To The  
Galaxy (D)  
Call For Price



Other Titles Always Available

**HARDWARE  
PRINTERS**

Gemini 10X	..... \$259
Gemini 15X	..... \$359
NEC 8027	..... CALL
Okimate 10	..... CALL

**DISK DRIVES**

MSD Dual Drive	..... \$579
Indus GT Disk Drive (Includes word processor, spreadsheet, data base, DOS). Call for Price	

**MISCELLANEOUS**

Koala Pad	..... \$69
Dust Cover	..... From \$6
Muppet Pad	..... CALL

**WE ARE A FULL LINE DEALER. CALL FOR PRICES ON FINE PRODUCTS  
LIKE SPINNAKER'S TRILIUM, FISHER-PRICE AND WINDHAM CLASSICS SERIES**

(C) Cassette Tape                      (D) Disk                      (R) ROM Cartridge

**ORDERS ONLY: 1-(800)-282-0333  
INFORMATION LINE: 1-(513)-879-9699**




Software orders over \$30 free shipping UPS, continental U.S. only. Add \$2 shipping orders under \$30. C.O.D. \$5 extra. Ask for hardware freight charges. Ohio residents add 5.5% sales tax. All items subject to availability and price change. We sell items guaranteed by manufacturer. Due to our low prices, we will not honor unauthorized returns. (Call info. line for authorization.)

Circle 39 on Reader Service card.

www.computers.ca  
627 RUN JANUARY 1983  
May Not Reprint Without Permission



dore printers can be used. The following are among the best interfaces I've tested for parallel printers. (For more information about printer interfaces, see "Bridging the Gap," p. 92, November 1984 RUN.)

**Card/?B.** Cardco's interfaces have changed the rules of the interface game. At half the cost of earlier interfaces, they do more than connect a Commodore to a parallel printer and translate PETSCII to ASCII. They also provide "pretty print" listings, converting unprintable Commodore graphics characters into meaningful symbols all printers can handle.

One improvement in the new "B" model over the original "A" model is a line-feed switch, to ease use with some printers. The only obvious problem is in powering the interface. On Centronics printers, interface power is supposed to be supplied by the printer. Since some don't, a cassette-port connector and wire is included to do the job, but there is no cassette connector on the SX64, and on the Cardco the cassette connector is required, even for printers that do supply power themselves.

The Card/?B is an excellent value for those with daisywheel printers. Recommended. (\$59.95 from Cardco, 313 Mathewson, Wichita, KS 67214; 316-267-6525. Lifetime warranty.)

**Card/?+G.** To the many features of the other Cardco interfaces, the "+G" adds one new and important feature—full emulation of Commodore printers on several non-Commodore models. This includes all graphics characters, cursor controls and special features, not just on one brand of printer, but on four major brands and all their clones at once.

To set any of the supported printers to emulate a Commodore 1525 is a matter of throwing a few switches. The only hard part is cutting a hole in the cover so you can get at them without removing four screws. You need access to these switches to turn off the emulation when running programs that don't need it, so you can use features your printer has that the 1525 lacks. Apart from this one design oversight, the "+G" is an excellent value. (\$99.95 from Cardco, 313 Mathewson, Wichita, KS 67214; 316-267-6525. Lifetime warranty.)

**The Connection.** This is a lot like the Cardco "+G" (though they were developed separately), but with one important advantage and one potential disadvantage.

The advantage is the built-in 2K print buffer. This speeds graphics printouts on Epson-compatible printers and

holds up to about a full page of normal text, freeing your computer more quickly for other tasks after a printout. The disadvantage is that it must be ordered for a particular printer, and its ROM chip must be swapped if you change to a different type of printer.

Other advantages include automatic page advance, so listings don't extend over the tear line between pages, and an optional wider left margin for printouts you'll put in a notebook. Unfortunately, like the "+G," the Connection hides two of its important switches under the lower right corner of its label. Uncover them by removing the label from that corner. (\$119 from Tymac Controls, 129 Main St., Franklin, NJ 07416; 201-827-4050.)

**Micrografix MW 350.** Take everything you like about the Cardco/?+G and Tymac's Connection interfaces (reviewed above), and put them together in a new interface from the Connection's former distributors.

Besides apparently including all the features of its predecessors, the 350 also has a larger 4K print buffer, visible switches, a built-in reset, the best-built serial-bus connector I've ever seen, even helpful printed instructions right on the cover. I'm also fond of the single line feed the interface generates at power-up; it serves as a sure confirmation that all is well. The only thing I didn't like was the all-green manual, but Micro W assured me that that was a fluke, and current manuals are printed with black



*New Technological Breakthrough!*

## ULTRABYTE DISK NIBBLER

The Ultimate Bit by Bit Disk Duplicator  
For The Commodore 64 and 1541 Disk Drive

**ULTRABYTE DISK NIBBLER COPIES  
ALL SOFTWARE EXCEPT ITSELF**

**SATISFACTION GUARANTEED**

Return for refund within 10 days  
if not completely satisfied

**\$ 39.95**

Introductory Price

plus \$3.00 Shipping and Handling  
MASTERCARD, VISA, CHECK, or M.O.,  
Foreign Orders or COD Add \$2.00  
Calif. Add 6.5% (\$2.60) Sales Tax  
BACKUP COPIES \$20.00 PLUS \$3.00 SHIPPING

Based on new proprietary Disk Operating System (DOS) that reads and writes bits on the disk independent of format. This process, called nibbling, treats disk errors, extra sectors, renumbered tracks and other protection schemes exactly the same as ordinary data.

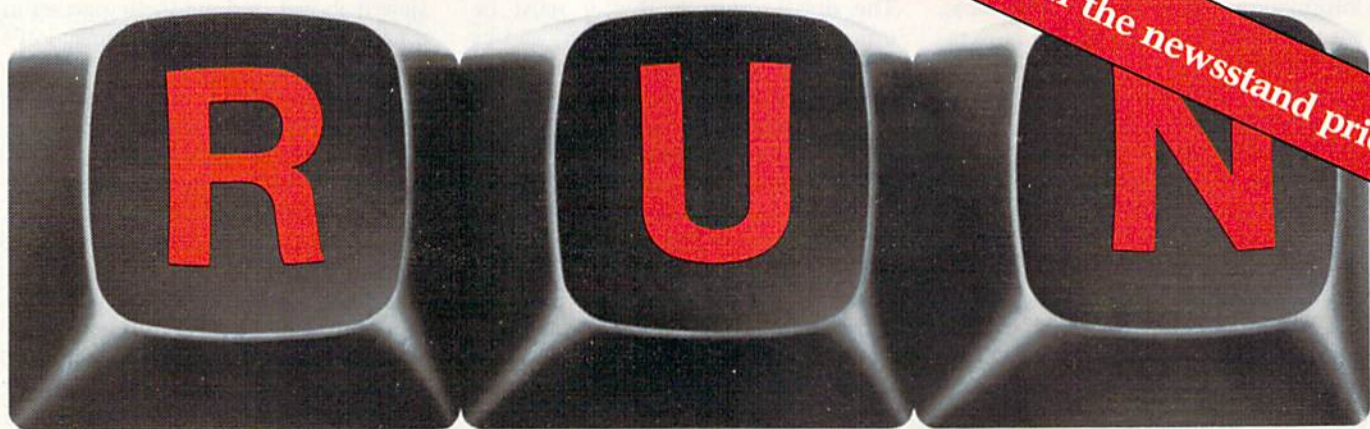
- Simple to use. Just load and run
- Fast. Copies entire disk on single 1541 in 8 minutes
- One easy step. No separate analysis or error production
- Uses revolutionary Track Scan Technology to make an exact replica of the original disk.

Write or Call 24 Hour Order Line

**ULTRABYTE (818) 796-0576**  
**P.O. Box 789 La Canada, CA 91011**

**SOFTWARE AUTHORS PLEASE WRITE**

Save 44% off the newsstand price!



# THESE COULD BE THE KEYS TO YOUR FUTURE

Unlock *all* the potential of your Commodore 64 and VIC-20\* with **RUN**.

Explore... Experiment... Enjoy... Beginner and expert alike will be taken beyond the manual to the limits of their abilities. Enter your own game programs. Construct a simple hardware add-on. Broaden your scope with unique applications... And... get a 13th issue FREE!

Enjoy key features like these:

- Games for fun & strategy.
- Programming tips help you learn short cuts.
- Candid reviews help you make money-saving decisions.
- Programs to add to your library.
- Instructions & tutorials to increase your skills.
- Hardware & software modifications help your machine work smart.
- Unique applications broaden your scope.

Here's a system-specific magazine written with you in mind. Written by and for the reader to give time-saving, money-saving hints. You'll get instructions and tutorials to increase your skills, and candid reviews to help you make the right decisions. Most of all though, you'll have fun.



Commodore 64 and VIC-20 owners are one of the largest groups of computerists today. Enjoy the benefits of this with your own magazine. Be in control like never before. Order *RUN* today and get 12 issues for only \$19.97. Send in the coupon or call toll free 1-800-258-5473. In N.H. call 1-924-9471.

Send me a subscription to *RUN* for the regular subscription price of only \$19.97 per year. I'll save 44% off the newsstand price.

Check/MO  MC  AE  VISA  Bill me \$19.97 for 12 issues

card # \_\_\_\_\_ exp. date \_\_\_\_\_

signature \_\_\_\_\_

name \_\_\_\_\_

address \_\_\_\_\_

city \_\_\_\_\_ state \_\_\_\_\_ zip \_\_\_\_\_

Canada & Mexico \$22.97; Foreign Surface \$39.97, 1 year only. US funds drawn on US bank. Foreign airmail, please inquire. Please allow 6 to 8 weeks for delivery.

**RUN • Box 954 • Farmingdale, NY 11737**

351B3

\*Commodore 64 and VIC-20 are registered trademarks of Commodore Business Machines, Inc.





ink. Yes, it costs a bit more than others, but it may well be worth it. Highly recommended. (\$130 from Micro W., 1342 B Rt. 23, Butler, NJ 07405; 201-838-9027. 90-day warranty. Also sold by Micro World Electronics.)

#### Serial-Bus RS-232 Interface

And now, here's an interface for those using RS-232.

**Interpod.** Although primarily an IEEE-488 interface, the Interpod is the only RS-232 interface I've found that connects to the serial bus of Commodore computers. Although limited to the speed of the serial bus, it is the only IEEE-488 interface that works on the Plus/4 and C-16. This is because it is connected only via the serial bus, making it utterly independent of the computer.

Interpod's best feature may be its ease in connecting to RS-232 printers via the serial bus. Too few commercial programs support serial printers via the user port to risk buying one that connects there.

When the computer addresses a device, Interpod pauses to see if any device on the serial bus will answer. If not, the call is transferred to the IEEE bus,

for a device to answer there. If not, and the device number is 4, it tries the RS-232 port. It ignores the IEEE device when a serial device is on and sharing the same device, or it can arrange another address for the RS-232 device.

The RS-232 port has all the usual setup options, plus unusual ones, like a true break, a delay after carriage returns and PETSII-to-ASCII code conversion, controlled by sending commands to a command channel (secondary address 31). The command channel also sends an error status on request.

I found two problems. First, Interpod locks up if you turn the computer off and on without also turning off Interpod (a multi-plug switch solves this). Second, when rechecking IEEE disk status, Interpod adds garbage after the valid information. This causes some problems in data-handling programs. The cure is to send a Clear command to Interpod's command channel before each disk access.

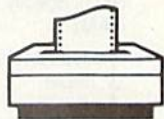
Highly recommended to those with RS-232 printers. (\$150 from Limbic Systems, 1056 Elwell Court, Palo Alto, CA 94303. Guaranteed compatible with all programs.)

Circle 298 on Reader Service card.

# C.S.P.

All programs on DISK except as noted.

Bank Street Writer	\$40
Creative Write, File or Calc (price each)	38
Consultant (Delphi's Oracle)	67
HomePak (Batteries Included)	38
Insta-Writer (cart)	39
Insta-Calc	31
Insta-Vestor (requires Calc)	31
Insta-Graph (requires Calc)	24
Insta-File (requires Writer)	46
Swift Tax	38
Charley Brown's ABC's	32
Evelyn Wood's Dynamic Reader	47
Koala Muppet Learning Keys	60
Mind Prober	37
Peanuts Maze Marathon	32
Peanuts Picture Puzzles	32
Snoopy to the Rescue	32
Typing Tutor III	37



B.I. 80 column display	\$144
Easy Disk	22
Grappler CD	123
Insta-Speed (basic compiler)	98
Koala Light Pen	78
Movie Maker	35
S.A.M. (software voice)	41
Simons Basic (cart)	26



Amazon	\$26
Aztec	23
Beyond Castle Wolfenstein	24
Computer Stocks & Bonds	19
Fahrenheit 451	26
Flight Simulator II	36
Frogger	23
Frogger II (cart)	39
Golden Flutes & Great Escapes	25
Gyruss (cart)	39
Millionaire	35
Montezuma's Revenge	29
Nato Commander	26
Robots of Dawn	29
Sargon III	35
Seastalker	25
Starfire/Fire one	29
Starwars	39
Transylvania	29
Trivia Fever	27
Ultima III	40

**Compusoft Plus**  
P.O. Box 91155, LA, CA 90009-1155

Call our pre-recorded order line:  
(213) 216-0104 open 24 hrs. every day.

ORDER INFO: Add \$3.00 shipping per order (\$5 AK, HI, APO, FPO). No foreign orders. No COD. CA residents add 6.5% sales tax. We accept VISA, MC (include name, card #, exp. date), M.O., cashier's check. Personal checks delay shipping 4 weeks while clearing. All sales final. Defective items replaced if return authorization requested within 2 weeks of shipping date. No returns without RA#. Prices and availability subject to change without notice.  
NO ADDITIONAL CHARGE FOR VISA OR MC.

RUN JANUARY 1985 / 65

SATISFACTION GUARANTEED  
OR MONEY BACK

## 1984 TAX RETURN HELPER

Fast and easy  
income tax preparation.

- Form 1040 and Schedules A,B,C, D,E,G,SE,W and Form 2441
- Plus TAX DBASE - a data base program for tax related records that can be directly used in any of the forms (disk only)
- Enter and modify data on a screen copy of the form.
- Works like a spreadsheet - all the lines affected by a change are instantly updated.
- Automatic tax computation.
- Forms can be printed or saved.
- Price is tax deductible.  
Tape \$23 Disk \$33 (+ \$1.50 S&H). Specify C64 or VIC 20 (16K RAM).
- Previous users discount \$11 (disk), \$7 (tape).

### KSOFT CO.

845 WELLNER RD.  
NAPERVILLE, IL 60540  
(312) 961-1250



Dealer inquiries welcome

Circle 218 on Reader Service card.

# FREE

Yourselves from tiring  
tax calculations with

## COMTAX

the tax preparation  
program for the  
**COMMODORE 64™**.

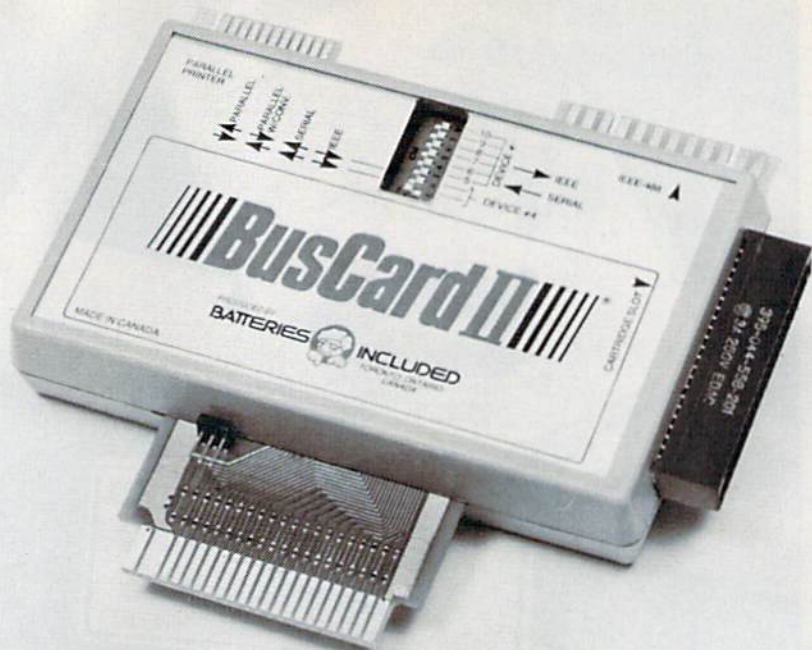
COMTAX will compile  
and (with printer) print  
complete IRS Forms 1040  
A, B, C, D, E, G, W  
and 2441.

Get COMTAX from your  
local computer store  
or send \$39.95 to:

**MILO Software**  
Dept. R14  
P.O. Box 569  
Boston, MA 02130



Specify disk or cassette.  
Mass. residents add 5%.  
Dealer inquiries invited.



### Other Interfaces

If you need an IEEE-488 interface for your disk drive, the following two have features for your printer as well.

**The Bus Card II.** Transparent IEEE-488 and parallel interface, monitor and Basic 4 for the 64.

Although primarily an excellent IEEE-488 interface, the Bus Card includes an optional interface cable to a parallel printer that can convert PETSCII to ASCII if needed. The printer cable comes out of the Bus Card itself and doesn't require any connection elsewhere on the 64. Both the code translation and the printer connection itself are controlled by small but easily accessible switches on the front of the interface. I find Bus Card's printer interface adequate for most of my needs.

Highly recommended for those with an IEEE-488 disk drive. (\$200 from Batteries Included, 186 Queen St. W., Toronto, Ontario M5V 1Z1, Canada; 416-596-1405. Transparent IEEE-488 and parallel interface, monitor and Basic 4 for the C-64.)

**C-64 Link.** IEEE, RS-232, serial, parallel adapter with Basic 4 for 64; similar unit available for VIC.

The C-64 link is a capable IEEE-488 interface that offers optional cables to support RS-232 and parallel printers via the user port (for \$50 each). It is hampered primarily by its inability to bank itself in and out of memory like the Bus Card above. This makes the Link incompatible with many of the fancier machine language programs, although it can sometimes be manually

relocated with an included program to work with such products. An improved version that avoids this problem is rumored. Meanwhile, it remains the best choice for VIC owners, who buy it as the "V-Link." (\$100 from Richvale Telecommunications, 10610 Bayview, Richmond Hill, Ontario L4C 3N8, Canada.)

### Accessories

No printer system would be complete without a few accessories. Here are reviews of a few I've found helpful.

**Centronics 4-Position Transfer Switch.** If you have several computers but only one printer, or several printers and one computer, this switch can help. It is a large rotary switch with one Centronics parallel input connector, enough contacts to handle all of its 36 pins and four output connectors to which the input connector can be linked, one at a time. It will prevent the wear that is normally caused from constant plugging and unplugging of cables and interfaces, and it will allow you to quickly connect any of four interfaces to your printer. The switch seemed overpriced at first, but I wouldn't solder together the maze of wires inside for less myself.

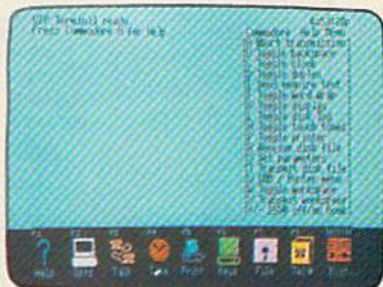
For those with other needs, Quill Corporation also sells a \$115 version with only two output connectors, and both 2- and 4-output RS-232 transfer switches (\$106 and \$165, respectively). Unless you have a spare one lying around, don't forget to include an extension cable in your order; you'll need one to get from the transfer switch to the printer. A 5-foot Centronics cable

# Unlimited Free Programs - Unlimited Fun! With **VIP Terminal**<sup>TM</sup>

## A Powerful 80 Column Communication Program!

VIP Terminal is what you need to talk to the world! Communicate with friends, work, school, bulletin boards, even information services like CompuServe. Share programs, news, pictures, stock quotes - anything in writing. With your C64, any modem and VIP Terminal, you can master the information revolution — professionally!

VIP Terminal is power packed to get the job done! It features a professional 80 column display (40, 64 & 106 columns too!) to bring your C64 up to the industry standard - without any hardware modification! It works with all popular modems, and, with those that allow it, VIP Terminal will auto dial, and redial if the line is busy. It also will auto answer - even take messages! Of course you can send and receive programs and the like. And you can print what is coming on the screen. It has a 16-entry phone book for those often used numbers, and a 20-entry message file for frequently sent messages. It also has a powerful editor so that you can write messages to send later, or edit ones you have received. You can even save and use files as large as your disk!



## VIP Terminal Is Easy and Fun to Use!

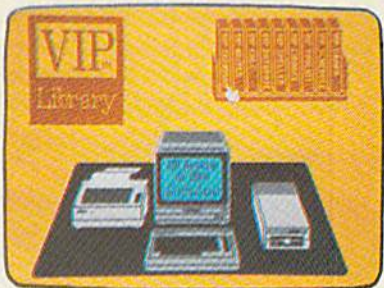
VIP Terminal makes full use of the potential of your C64 - you get color, graphics and sound. VIP Terminal uses menus and "icons," pictures of the tasks to be done. In fact, VIP Terminal can almost be totally controlled with a joystick. You can switch menus, change screen colors, change parameters, even dial your phone without ever touching your keyboard! Just move the hand to point to the colored icon, or the entry, press the fire button, and the change is made. Of course, it all can be done from the keyboard too!

Help is built right into the program so you can't get lost or confused. The manual is even capsulized on the disk for reference from the program when you need it. VIP Terminal also has a chiming clock for the quarter hour and the hour, and an alarm you can set. There's even a musical alarm to let you know when you have a call. VIP Terminal has put it all together to make the perfect communication program!



## Integration With VIP Desktop

VIP Terminal is connected to the whole VIP Library<sup>TM</sup> of programs through VIP Desktop<sup>TM</sup>. From VIP Desktop, you may access any of the other VIP Library programs that you own. The rest of VIP Library will meet your word processing, financial planning, data management and other essential home and business information management needs. All VIP Library programs feature high resolution graphics to give 80 columns on the screen without any hardware modification. They also give you icons and plenty of help. Quality and affordability are our number one concern!



## VIP Terminal ONLY \$59.95

Circle 138 on Reader Service card.

Available at Dealers everywhere. If your Dealer is out of stock **ORDER DIRECT!**

**1-800-328-2737**

Order Status and Software Questions  
call (805) 968-4364

MAIL ORDERS: Shipping: \$3.00 U.S.; \$5.00 CANADA;  
\$15.00 OVERSEAS; Personal checks allow 3 weeks.

*SoftLaw*

132 Aero Camino  
Goleta, California 93117



BEFORE LOADING YOUR SOFTWARE  
MAKE A PERFECT BACKUP WITH

# DiskMaker



with  
MasterKey™

**99%  
EFFECTIVE**

**THE AUTOMATIC DISK BACKUP  
SYSTEM FOR YOUR 64 & 1541 DRIVE!**

- Actually copies a FULL disk in only 4 MINUTES!
- Easiest to use – TOTALLY automatic copy utility
- State of the "ARTS" copy capability!
- UNLOCKS protected disks for backup copying
- Breaks through LATEST protection schemes
- Includes FAST copier, "ARTS" copier and TRUE Nibbler: you get 3 copiers for the price of 1
- HALF-TRACKING up to & including track 40!
- 100% machine code for fast, RELIABLE operation
- 4 min. copier AUTOMATICALLY puts "errors" on copy
- Fastest & most advanced copier you can buy
- Writes errors 20,21,22,23,27,& 29 WHILE COPYING!
- Transforms your 1541 into a SUPER-FAST copy drive!
- NO analysis required, just swap disks & NO damaging drive knock during errors or format
- Formats AS IT COPIES, detects & reproduces NON-STANDARD formats & I.D. mismatch, DOS flags
- PRODUCT SUPPORT tel. #, revisions, & upgrades

**OVER 500% FASTER THAN OTHER COPIERS!**



ONLY

**\$49.95**

To order CALL **805-687-1541 ext. 84**  
Technical line 805-682-4000 ext. 66



for entire system



For rush service call 24 hr. order line or send cashiers check/money order. Visa, MasterCard, & American Express include card# and exp. date. CA residents add 6% tax. Allow 2 weeks for clearance of personal & co. checks. Add \$3.50 shipping & handling for continental U.S./\$5.50 for UPS air. AK, HI, APO, FPO, CANADA add \$7.50. Other Foreign orders add \$8.50. All APO, FPO, & orders outside 48 states must be paid by certified U.S. funds. C.O.D.'s shipped to U.S. addresses only, add \$4.00. School orders welcome.

**DISKMAKER PAYS FOR ITSELF THE FIRST TIME YOU USE IT!**

basix

costs \$29 from Quill, and a 5-foot RS-232 25-pin cable costs \$22. (\$153 from Quill Corp., 100 S. Schelter Road, Lincolnshire, IL 60069; 312-634-4800. 30-day refund offer.)

**Model 5812 Printer Stand.** A printer stand needs these simple features: a place to put the printer, a place to put the paper supply and something to catch the printer's output. Amazingly, Royal is the only company I've found that meets these requirements. Others let either the paper supply or the output lie on the floor.

The 5812-S, Royal's cheapest general-purpose stand, has a bottom feed slot and can feed from the rear. I added the 0640 facility compartment (to supply the paper), the 0885 mini-forms rack (to catch the output) and the 0099 locking casters. Assembly was easy. It's available in many looks; we chose black steel with a walnut-formica top. Ask a local dealer to order it. Mine was delivered in a week. Highly recommended. (Approximately \$165 [as set up above] from Royal Seating Corporation, Box 753, Cameron, TX 76520; 817-697-6421. For all printers. Price varies widely with options chosen.)

**Paper Tractor.** This is a product of obvious value to those who possess printers that lack friction-feed and need to print single 8½-inch wide sheets of paper. It is a long sheet of flexible and durable clear plastic, with sprocket holes on the sides and slots for a sheet of paper on the front. It will hold sheets up to 14 inches long without difficulty, although it may not be long enough to keep the paper-out switch on some printers from triggering with 14-inch paper. If you need it, you'll be willing to pay the lofty asking price. Recommended. (\$12 single-sheet holder for pin- and tractor-feed printers. From Paper Tractor, 1 S. Fairview, Goleta, CA 93117; 805-683-2851.)

**Serial-Bus Cable.** This 6-pin DIN plug to 6-pin DIN plug cable (by Pfantone) is reasonably priced, and, unlike Commodore's own, is shielded. Its 6-foot length is generous compared to the approximately 3-foot standard ones, and shouldn't tax the driving power of the computer. (Fran Donovan at Warren Radio reports he's tested cables up to 35 feet long, and will sell them if needed.) This is another of those obvious products that many people need but no one seems to offer. Highly recommended. (\$7 from Warren Radio, 800 SW Jefferson, Peoria, IL 61605; 309-674-5998.)

**TRS-80 Line Filter.** I recommend hooking all of your computer's accessories into a single switch box and turning

## Printer Features and Accessories

Most of today's printers are impact printers, that is, they produce printouts by striking an inked ribbon so that it hits (impacts) a piece of paper. Impact printers fall into one of two main groups—dot matrix and daisywheel—which differ in their means of ink distribution. Several other non-impact printers are also worthy of mention, including laser, ink jet, thermal transfer, thermal and electrostatic.

### Dot-Matrix Printers

Dot-matrix printers are the most common. They are often cheap and fast, with readable, if unimpressive, output.

An electromagnet hammers a small pin into the end of a tiny wire, which in turn strikes an inked ribbon and the paper behind it. There is usually a whole row of these hammers and wires, lined up vertically. The row moves across the paper during printing, and each hammer may fire any time it passes a spot where a dot is needed. To keep track of things, all the locations in a single character are organized into a rectangular grid (matrix). The more dots there are within this matrix, the better will be the resulting print.

At a minimum, a 7×5 dot matrix is needed just to distinguish between characters, and most printers now use more dots. Each character on your computer screen is made up of an 8×8 dot matrix, and many of the better printers have even more, up to as many as 18×40 on some costly models. A 9×9 dot matrix gives a pleasing appearance, especially if the printer allows the same character to be struck twice for emphasis. Those printers offering such an option often refer to it as Correspondence mode, as opposed to their faster but less readable Draft mode. A few costly printers redo each line four times in a Near-Letter-Quality mode.

In ordinary use, a dot-matrix printer can print from 50–400 characters per second (cps), although these speeds may be somewhat misleading. As usually quoted, these are the best possible speeds the printer can reach, not its average output over several lines of ordinary text. Actual output depends on more than printing speed.

Faster printers also print in both directions (bidirectional), have a high-speed tab to jump past blanks on a line (logic-seeking), and sometimes even a high-speed vertical tab (vertical skew) to jump past blank lines. I recently watched a 50 cps printer with all these features outrun a 120 cps printer that lacked them. If speed matters, look at more than a printer's maximum cps.

One other important characteristic of dot-matrix printers is their graphics capability. Since the dots can be placed anywhere on the paper, in any combination, they are perfect for copying intricate high-resolution drawings from your computer screen. A few such printers can even print in full color, allowing you to capture the full beauty of the images on your screen.

However, no printer can do this without the help of a compatible program running in the computer, and graphics are handled in many different ways on the various printers. Do not assume a graphics printer will work with a particular graphics program just because both are for Commodore computers. Unless the program explicitly mentions your particular model of printer, they probably won't work together.

Expect to pay anywhere from \$250 to \$2000 for a dot-matrix printer, although few home users need one that costs over \$700. Most are available in versions with narrow 10-inch carriages and wider 15–18-inch carriages. Wider carriages take up more space on the desk and cost more, but they're the only way to print on paper turned sideways, on stencils (be sure they are film-covered) or on the wide paper often used by larger computers.

### Daisywheel Printers


On a daisywheel printer, full-formed letters are arranged on thin stalks (which resemble the petals of a flower) around the hub of a plastic or metal wheel. This daisywheel rotates in front of a hammer. When the proper letter is in position, an electromagnet fires the hammer against that letter. Some letter-quality printers do not use daisywheels; instead, they arrange their letters around the sides of a drum or over the surface of a thimble or ball. The latter, popularly known as golf balls, are descended from the famous IBM Selectric office typewriter, still the recognized standard of top-quality printing.

While all of these printers produce what is generally called "letter-quality," the quality of the output varies. It can range from excellent to something that appears done on a child's typewriter.

Daisywheel printers are generally slower and more expensive than dot-matrix printers. They range from 7 cps to about 55 cps, and from \$350 to \$2000 or more. Add to this \$200–\$350 for a tractor-feed mechanism (included in the price of most dot-matrix printers). This is a special set of rollers and ribbed treads that allow the printer to use continuous sheets of computer paper with perforated side margins. Unless you will always hand-feed your paper a sheet at a time, you will want this option. Sometimes it comes in two versions—a simpler version with one set of tractors, and a fancier version with dual tractors. The latter

# The Master Handicapper™

Series by Professor Jones



## EVALUATES FROM RACING FORM!

Age	Gender	Post (Today)
Class	Jockey (Today)	Post (Last)
Condition	Jockey (Last)	Speed
Consistency	Length	Trainer
Earnings	Time of Year	Workouts

And gives you GRAPHIC REPRESENTATION of finish

## PROGRAM

### GLD. Thoroughbred "Gold" Edition™

A "Full" featured thoroughbred analysis designed for the professional and serious novice. **\$159.95** complete

### EGLD. Enhanced "Gold" Edition™

"Gold" Edition with complete Master Bettor™ system integrated onto the same disk. This powerful program will transfer all horses and scores to the bet analysis with a "single keystroke."

(Master Bettor™ included) **\$199.95** complete

### GLTD. Limited "Gold"™

Enables Professional Handicappers to assign specific values to the racing variables "they" feel are important.

#### PROFESSIONAL HANDICAPPING SYSTEMS

Age 5	Consistency 15	Speed 10
Class 15	Jockey 15	Workouts 0
Condition 10	Trainer 5	Time of Year 0
Earnings 5	Post 10	Consistency 5
100%	Is Everything OK (Y/N)	

Create program weight based on a particular track and fine tune it for maximum win percentage. This program is designed for "ease of use". The user needs **no programming experience**.

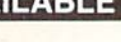
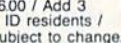
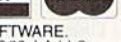
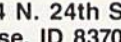
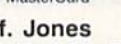
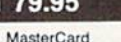
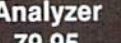
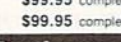
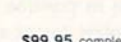
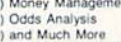
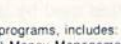
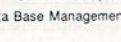
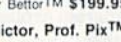
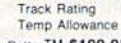
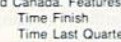
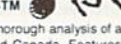
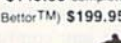
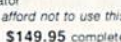
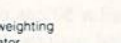
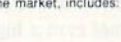
(contains integrated Bettor™) **\$299.95** complete

### GD. Gold Dog Analysis™

The only professional dog handicapper on the market, includes:

- |               |                               |
|---------------|-------------------------------|
| 1) Speed      | 6) Condition                  |
| 2) Post Today | 7) Running Style              |
| 3) Kennel     | 8) Weight                     |
| 4) Post Last  | 9) All new internal weighting |
| 5) Distance   | 10) NEW class indicator       |

If you are near a greyhound track, you can't afford not to use this program.



(with integrated Master Bettor™) **\$199.95**

### Limited DOG analysis™ 299.95

### MHH. Master Harness Handicapper™

Professional software designed to provide a thorough analysis of all trotter and pacer races in North America and Canada. Features:

Class	Post Positions	Time Finish
Driver	Track Conditions	Time Last Quarter
Days Since Last	Trainer	Track Rating
Gender	Time ¼	Temp Allowance

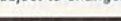
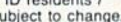
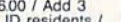
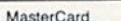
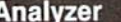
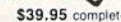
**\$159.95** complete w/integrated Master Bettor™ **\$199.95**

### PPX. Professor Jones' Football Predictor, Prof. Pix™

Complete Football Analysis with Data-Base.

- |                  |                      |
|------------------|----------------------|
| 1) Overlays      | 4) "Over/Under" bets |
| 2) Point Spreads | 5) Data Base Stats   |
| 3) "Super Plays" | 6) Holds "100" teams |

Highest percentage of winners 1983



**\$39.95** complete

**\$99.95** with Data Base Management

### \$\$\$ MB. Master Bettor™

A compliment to ALL Master Handicapper programs, includes:

- |                   |                 |                     |
|-------------------|-----------------|---------------------|
| 1) Win/Place/Show | 4) Trifecta     | 7) Money Management |
| 2) Quinella       | 5) Pick Six     | 8) Odds Analysis    |
| 3) Exacta         | 6) Daily Double | 9) and Much More    |

A perfect program designed to use results from all Master Programs to generate "best bet". **\$59.95** complete

### Model 100 Portable Systems

TP1-Thoroughbred/Pace™ (24K)

**\$99.95** complete

DG1-Master Dog Analysis™ (24K)

**\$99.95** complete

## Prof's Basketball Analyzer Complete Program 79.95

Send check / money order / VISA / MasterCard (Include expiration date) to:



TELEPHONE  
(208) 342-6939

Prof. Jones  
1114 N. 24th St.  
Boise, ID 83702



TERMS: FREE SHIPPING ALL SOFTWARE.  
Add \$6.00 hardware / C.O.D. Add \$6.00 / Add 3 weeks personal checks / Add 4.5% ID residents / Add \$6.00 outside U.S.A. / Prices subject to change.

**Brochure Available**

can wind the paper backwards through the printer, allowing you to print superscripts and subscripts (letters above and below the normal print line).

For the very well-endowed, some daisywheel printers can also be equipped with costly single and dual sheet feeders and envelope feeders that automatically print whole reams of letterhead paper and envelopes. Unless you're into personalized bulk mail, you probably won't need these accessories.

Although many daisywheel printers advertise graphics capability, this is based on using the period as a dot and drawing entire pictures with it, one dot at a time. Although the method works, it is rarely used and not supported by paint (graphics) programs I've tested.

The trend over the past few years has been for dot-matrix printers to improve the appearance of their text and for daisywheel printers to become cheaper. In the past, you could decide which type of printer to buy on the basis of price and print quality, but there are now models of each type in all price ranges. The remaining differences are in speed, graphics and appearance.

The best solution may be to buy one of each type, since a fast dot-matrix printer and a cheap daisywheel together provide both high quality and high speed when needed—and for less money than a high-speed daisywheel printer. If you also need graphics, this is an especially good solution. On the other hand, if your time is worth anything to you, any extra money you spend on a faster printer of either type will be well repaid.

### Laser Printers

The most interesting new type of printer is the laser printer, loosely based on the office copier. Instead of photographing pages to be copied, laser printers paint their characters directly on the light-sensitive drum inside the copier. This results in a copy as good and as fast as those of any other copier.

Instead of characters per second, these printers are rated in pages per minute. The slowest one available prints eight pages per minute (about 270 cps). Unfortunately, it also costs from \$3500-\$10,000, depending on options, making it an unlikely partner in a Commodore home computer system.

### Ink Jet Printers

This printer is interesting in theory, but disappointing in practice. It sprays ink onto the paper from a nozzle. There are very few moving parts and almost no noise as the printer operates. These printers have also become fairly inexpensive this year; both of the ones I've seen cost under \$500.

On the other hand, the sprayed ink has a tendency to smudge, and it's relatively faint compared to other dot-matrix printers, unless you use special, highly absorbent paper. When adjusted for darkest print, ink jets may also give off an unpleasant odor. Their speeds are also merely average for dot-matrix printers—about 60 cps. However, they do a better job of printing in color than any other printer I've seen, because there is no way for the colors to foul a nonexistent ribbon.

### Thermal and Thermal-Transfer Printers

Thermal printers are based on the same principle as the old 3M Thermofax machine, which created an image in heat-sensitive paper. Those thermal printers still on the market are quiet and quick, up to 200 cps. They are also cheap, sometimes under \$200. However, their paper is not like ordinary paper and is quite expensive, not widely available and remains sensitive to heat. (I recently had to recopy all my old Thermofax documents, because after ten years they had nearly faded away.)

Thermal-transfer printers are a variation on this technology, using a ribbon made of thermal material but printing on ordinary paper. These machines are new and could be quite an improvement over traditional thermal printers.

### Electrostatic Printers

Electrostatic printers are a variation on thermal printers. They use a special paper with a layer of aluminum over a black sheet. When printed, the desired characters are created by burning through the aluminum layer, exposing the black sheet below. The resulting print-out is permanent, though subject to creases. The printers themselves are cheap, but the paper is quite expensive, not widely available and must be photocopied if an ordinary-looking printout is desired.

### Making Connections

In actual practice, your choice of printer may be dictated by other choices. Only a few of the most popular printers are fully supported by widely sold printer interfaces and application programs. If you already know which word processor, spreadsheet or other application program you want to use, you may be able to choose a printer by simply scanning through program manuals to see what works. If a printer is not listed there, you must assume it will *not* work with that program until the company tells you otherwise. I can't emphasize this enough. Just because two products are both for the Commodore *does not* mean they will work together.

Most word processors, for example, only perform their best tricks with a few specified printers, and the favored printers vary from word processor to word processor. Similarly,



even favored printers may not work unless connected to the computer via an approved cable or interface.

#### Serial Bus

Commodore designs its home computers, from the VIC to the Plus/4, to connect with printers through the serial bus. Although they all also support an RS-232 port, via the Commodore 1011A interface on the user port, and can interface a printer via the cartridge port, the great majority of commercial programs expect to find the printer on the serial bus, like Commodore's own printers.

#### Centronics Parallel

Serial bus printers come in two types—Commodore's own and those connected via parallel interfaces. Surprising though it seems, almost no one has made a serial interface to work on the serial bus (except for the Interpod and Cardco's new parallel plus serial model). Instead, nearly all the companies that make such products translate from the serial bus to a Centronics parallel connector, because the majority of available printers are connected via a Centronics connector.

Commodore's serial bus computers, with the exception of the new C-16, also support RS-232 printers connected via the user port, as though they were modems. Most such printers require Commodore's VIC 1011A RS-232 interface (or an equivalent from another maker) to modify signals at the user port to match the RS-232 standard. Although using an RS-232 device connected this way is theoretically as simple as opening a file to any other printer, many programs neglect to support RS-232 printers connected this way.

#### User Port Parallel Interfaces

A few companies have also taken advantage of the parallel data signals available at the user port to provide a Centronics parallel interface via the user port. Since using the port this way requires some software changes inside the computer, such interfaces are often incompatible with commercial programs that require the full resources of the computer.

#### PETSCII and ASCII

Unfortunately, being connected to a printer via one interface or another isn't enough. Commodore long ago decided to make slight changes in the industry-standard ASCII (American Standard Code for Information Interchange) codes for various characters.

Ever since, Commodore computers have needed added translation abilities before they can print on non-Commodore printers. Most interfaces now include the necessary intelligence to do the needed translations, and many now go further, even sending the special codes necessary to make a non-Commodore printer emulate a Commodore printer's special graphics characters and other special features. Some also include pretty-print options, which convert unprintable graphics into descriptive words in printed listings.

Impressive though such feats are, remember that only a few interfaces can do them all, and only when combined with a few of the most popular printers. If Commodore graphics are important to you, either buy a Commodore printer or one of the small list of interfaces that fully support Commodore graphics, along with a printer that fully works with that interface.

#### Switches and More Switches

Once your computer, interface, printer and applications program are all connected together, odds are they still won't work. A couple of years ago, a dealer told me he had never had a computer/printer/interface combination work correctly right out of the box. That situation has improved since, but not nearly enough.

One very good reason for buying Commodore's own printers is that they need no interface and generally *do* work right out of the box, with the possible exception of the 1526, which has different commands from the other printers in the line.

Those who buy a 1525e or MPS 801 can rest assured that programs they buy for their Commodore computer will nearly always support these printers. If those two printers possessed more speed and better print quality, there would be little need for other printers (and articles like this one). However, Commodore's printers are better known for good prices than beautiful or rapid output, leaving a large market for other firms and endless problems for users and columnists.

The most troublesome aspect of using an *alien* (non-Commodore) printer is getting the switches set properly. Most printers come with a dozen or more tiny switches that need to be set. Each is important, and failure to set them properly can cause the printer to refuse to print at all. Add to these the switches and software commands of the interface and the software commands of the computer, and it's a wonder anything ever works.

The solution to switch problems is your dealer. If you can find a competent dealer, he or she can properly set all the switches on both the printer and interface before you take either home. That simple step can save you hours of anguish. No matter how much more the printer, interface, and applications programs cost when bought from a single knowledgeable dealer, it's worth it to have everything work properly the first time.

## SYMBOL MASTER™ MULTI-PASS SYMBOLIC DISASSEMBLER FOR THE COMMODORE 64\* disassembles any 6502/6510 machine code program into beautiful source

- Learn to program like the experts!
- Adapt existing programs to your needs!
- Automatic LABEL generation.
- Outputs source code files to disk fully compatible with your MAE,\* PAL,\* CBM\* or Develop-64\* assembler, ready for re-assembly and editing!
- Outputs formatted listing to screen and printer.
- Automatically uses NAMES of Kernal jump table routines and all operating system variables.
- Generates list of equates for external addresses.
- Generates complete cross-referenced symbol table.
- Recognizes instructions hidden under BIT instructions.
- 100% machine code for speed.

(Symbol Master™ is not copy protected.)  
ORDER NOW! Available on disk only. Introductory price \$49.95 postpaid USA.

\*MAE is a trademark of Eastern House.

PAL is a trademark of Pro-Line.

Commodore 64 is a trademark and CBM is a registered trademark of Commodore.

Develop-64 is a trademark of French Silk.



## UNLEASH THE POWER OF YOUR COMMODORE 64 WITH THE ULTIMATE INTERFACE

- Control & monitor your home—appliances, lights & security system
- Intelligently control almost any device
- Connect to Analog-to-Digital Converters
- Control Robots
- Perform automated testing
- Acquire data for laboratory & other instrumentation applications
- Many other uses.

Don't make the mistake of buying a limited capability interface. Investigate our universally applicable Dual 6522 Versatile Interface Adapter (VIA) Board, which plugs into the expansion connector and provides:

- Four 8-bit fully bidirectional I/O ports & eight hand-shake lines
- Four 16-bit timer/counters
- Full IRQ interrupt capability
- Four convenient 16-pin DIP socket interface connections
- Expandability up to four boards & sixteen ports.

ORDER NOW! Price \$169, postpaid USA. Extensive documentation included. Each additional board \$149.

## COMMODORE 64™ SOURCE CODE! "What's Really Inside the Commodore 64"

- Most complete available reconstructed assembly language source code for the C-64's Basic and Kernal ROMs, all 16K.
  - You will fully understand calls to undocumented ROM routines, and be able to effectively use them in your own programs.
  - Uses LABELS. Not a mere one-line disassembly. All branch targets and sub-routine entry points are shown.
  - TABLES are fully sorted out and derived.
  - Completely commented, no gaps whatsoever. You will see and understand the purpose of every routine and every line of code!
  - Complete listing of equates to external label references.
  - Invaluable fully cross-referenced symbol table.
- Order C-64 Source. \$29.95 postpaid USA.

All orders shipped from stock within 24 hours via UPS. VISA/MasterCard welcomed.

### SCHNEDLER SYSTEMS

1501 N. Ivanhoe, Dept. R1, Arlington, VA 22205  
Information/Telephone Orders (703) 237-4796

# Software That Works For Generations

6 Types of Charts and Sheets  
Indices  
User Fields  
Notes, Footnotes and Sources  
No Limits  
Adapts to Your Hardware  
Comprehensive  
Easy to Use  
And Much, Much More

Send for brochure and sample printouts.  
Family Roots includes detailed manual and 2 full diskettes of programs for your Apple II, IBM PC, Commodore 64 and CP/M.\*  
Other genealogy software also available.  
Price \$185. Satisfaction Guaranteed.  
American Express, Visa & Mastercard Accepted

\* Trademarks for Apple Computer, Inc., International



Business Machines, CBM, Inc., & Digital Research.

QUINSEPT, INC.

P.O. Box 216, Lexington, MA 02173  
(617) 641-2930

## Tired . . . ?

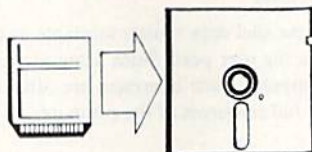
. . . of having to swap cartridges in and out whenever you wish to play a new game? Want to store up to 17 cartridges on a single diskette? If the answer is YES, then CBUS is for you.

- CBUS I - Make backup copies of C64 cartridges to disk, includes circuit board and manual with software listings. **\$ 34.95**
- CBUS I Deluxe - as above, with all necessary programs on disk **\$ 49.95**
- CBUS II - 16 Kbyte RAM Cartridge Emulator with write protection. Allows you to run copy-protected cartridges from disk, or develop your own cartridge software. Includes circuit board and manual with software listings **\$ 84.95**
- CBUS II Deluxe - as above, with all necessary programs on disk **\$ 99.95**
- CBUS Combo - includes CBUS I and CBUS II with diskette **\$119.95**

Please add \$3.00 for shipping: VISA, MasterCard, check, money order

# CBUS™

CARTRIDGE BACKUP SYSTEM



R.J. Brachman Associates, Inc.  
P.O. Box 1077, Havertown, PA 19083  
(215) 622-5495

Commodore 64 is a registered trademark of Commodore Electronics, Ltd.

# Things I Want!!!

Commodore Computer Covers with Pizzazz

### MATCH YOUR ROOM DECOR

Vibrant Colors  
Extra Heavy Domestic Premium Grade Cotton Canvas  
Washable & Color Fast  
Tailored To Fit

### PROTECT DELICATE EQUIPMENT FROM DUST

Anti Static  
Water Repellant

### 5 STANDARD COLORS TO CHOOSE FROM

Natural, Rust, Grey, Dk. Brown, Navy  
(other colors available upon request)  
Edged with Natural Color Heavy Binding

VIC 20/C-64	\$15.95
1541 Disk Cover	\$15.95
1702 Monitor Cover	\$41.95
Dataset Cover	\$10.95
Gemini 10/10X	
Printer Cover	\$21.95
1525 Printer Cover	\$21.95

Please add \$3.00 per order shipping & handling. (Florida residents add 5% sales tax) Shipment within 3-4 weeks.

ORDER FROM:

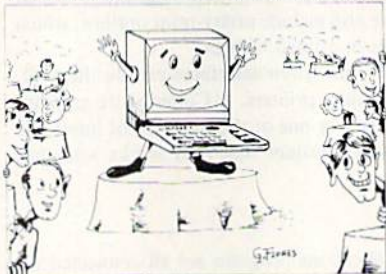
**Things I Want!!!**

P.O. BOX 2727  
BOCA RATON, FL 33427  
(305) 487-9037 (24 hr. phone)

Check, Money Order,  
Visa and MasterCard Accepted

COMMODORE IS A REGISTERED TRADEMARK OF COMMODORE BUSINESS MACHINES, INC.

## WHEN VIC TALKS....



Add a new dimension to your VIC-20 with the VIC-TALKER cartridge, providing voice synthesis through the TV. Unlimited vocabulary with advanced English text pronunciation rules and user-expandable exception dictionary. Works with numbers, abbreviations and punctuation too. Pronounces text output from BASIC PRINT statements, just like you send to the printer. Use built-in inflection rules or control pitch and volume with simple commands from BASIC. Mixes audio from the VIC-20 sound chip with VIC-TALKER's synthesized voice. Completely self-contained cartridge doesn't steal user memory from BASIC. EEPROM saves user-expanded exceptions dictionary when power is off — all exceptions you create are there when power is turned on again! Create different voices and sound effects. Make voices ranging from baritone to chipmunks with the powerful synthesis chip.



**t talktronics inc.**

3188-B Airway Ave. ★ Costa Mesa, CA 92626  
(714) 957-1019 VISA/MC accepted

them on and off together. Unless you have multiple disk drives in an older 64 system, this will work well. If power surges are a problem in your area, a good multiple-outlet filtered switch is offered by Radio Shack. I use three of them and have had only one problem—a switch that had to be replaced after a year.

For those with multiple disks that hang up when switched on together, Radio Shack also offers a more costly sequencing switch that will supply power to each device in the correct order. (\$50 from Radio Shack. For all computers.)

**VICSwitch.** To use several serial-bus computers with the same printer or printers, you can use the VICSwitch as a networking system. Up to eight devices can be used together. Just be careful not to turn any of them off and on again while the network is on, and watch out for files left open after use. (\$150 from Handic Software, 520 Fellowship Road, B 206, Mt. Laurel, NJ 08054; 609-663-0660.)

### Supplies

Many of my printer supplies come from Quill Corporation in Chicago. Here is a review of one of their many products for computer users.

**Personalized Mail Labels.** These are 3- x 4-inch one-up, self-stick mailing labels with tractor-feed holes on the backing paper. They are a colorful red and blue on white, with a four-line return address in large black letters. You can choose to have "First Class" or some other saying at the bottom of each label.

We find these labels very easy to use both for handwritten and typed labels. They look far better than the self-inking return address stamp we used last year, are just as easy to use and don't dry out with large mailings. Recommended. (\$20 plus shipping per 1000 self-sticking mail labels. From Quill Corp., 100 S. Schelter Road, Lincolnshire, IL 60069; 312-634-4800. 30-day refund offer.)

*The previous reviews (with the exception of Hush 80) originally appeared in the Midnight Software Gazette, a review magazine edited by Jim and Ellen Strasma.*

Address all author correspondence to Jim Strasma, Commodore Clinic, 1238 Richland Ave., Lincoln, IL 62656.

**EASTCOAST SOFTWARE***ECS...inflation-fighting prices.**No hidden charges! No credit card fees!***COMMODORE**

CAT #	LIST	SALE
2741	Acct Pay Mgmt/Checks D	59 95 41 50
1443	Adventure Writer (D)	60 00 42 35
0064	Alien Addition D	34 00 23 55
0335	Alligator Mix D	34 00 23 55
2713	Alphabet Zoo D	29 95 20 75
2714	Alphabet Zoo R	34 95 24 20
2913	Archon D	40 00 30 75
1342	Archon II - Adept (D)	40 00 30 75
2914	Axis Assassin D	35 00 26 95
1750	B-1 Nuclear Bomber C	16 00 11 10
1764	Bank Street Writer D	69 95 48 35
1512	BASF Disks SS/DD (10)	35 00 19 00
1424	Basic Grammar I (D)	34 95 26 90
1355	B.I.-80/80 Column Display	208 00 160 25
0820	Barron's Study for SAT (D)	89 95 62 30
2667	BC's Quest For Tires D	34 95 24 20
0262	Beachhead D	34 95 26 00
0087	Beyond Castle Wolfen (D)	34 95 24 20
0358	Boulder Dash (D)	34 95 25 55
2873	Calc Result-Easy R	79 95 55 35
1167	Canada A/M (D)	39 95 32 45
2959	Cardco Cardprint/+G	109 95 83 75
2835	Castle Wolfenstein D	29 95 20 70
1395	Challenge Math 11 (D)	34 95 26 90
2702	Checkers D	49 95 34 60
2701	Chess D	69 95 48 45
1761	Choplifter R	44 95 31 05
1154	Codewriter (D)	99 95 76 95
2223	Combat Leader (D)	39 95 27 65
0443	Comm 64 User Encyclopedia	14 95 10 50
0416	Compuuser Starter Kit	39 95 24 35
2337	Computer Sat D-Harcourt	79 95 62 85
2885	Congo Bongo R	39 95 27 65
2917	Cut & Paste D	50 00 38 50
1080	Dallas Quest (D)	34 95 25 55
1765	David's Midnight Magic D	34 95 24 15
1880	Deadline D	49 95 34 60
2204	Death In The Caribbean D	35 00 24 25
2716	Delta Drawing R	39 95 27 65
0103	Demolition Division D	34 00 23 55
1893	Dino Eggs D	40 00 27 70
1722	Disk Boxes (5 Color Coded)	25 00 12 50
2984	Disk Boxes - Individual	5 00 2 50
2158	Diskey D	49 95 34 60
2254	Doodle D	49 95 30 75
2179	Dragonriders Of Pern D	40 00 27 70
2320	Dust Cover - 1541 Disk Drv	7 99 5 30
2321	Dust Cover - Commodore 64	7 99 5 30
2340	Early Games Children D	29 95 20 75
2674	Early Games Fractions D	29 95 20 75
2677	Early Games Matchmaker D	29 95 20 75
2672	Early Games Music D	29 95 20 75
2670	Early Games Piece Cake D	29 95 20 75
0546	Elementary Commodore	14 95 11 50
0092	Elephant Disks SS/DD (10)	37 00 18 20
1337	Elephant Disks SS/SD (10)	34 00 17 95
0107	Epson MX-80 Ribbon	14 00 6 30
2215	Facemaker R	34 95 24 20
2973	Flight Simulator 2 D	49 95 38 05
2918	Flip & File W/Lock (50)	39 95 23 85
1440	Flip-N-File (50 Disks)	19 95 11 30
2136	Floyd Of The Jungle D	29 95 23 05

CAT #	LIST	SALE
1950	Fort Apocalypse D	34 95 24 20
1905	Frogger D	34 95 24 15
1260	Fuji SS/DD Disks (10)	46 00 19 25
1811	Games Commodore 64 Play	14 95 10 35
2183	Gateway To Asphalt R	40 00 27 70
2739	General Ledger D	59 95 41 50
0905	Geopolitique D	39 95 27 65
2815	Getting Most From Your C64	14 95 12 85
1098	Graphic Basic (D)	29 95 21 90
1847	Gridrunner R	29 95 20 70
2911	Hardhat Mac D	35 00 26 95
1437	Head Cleaning Kit	29 95 17 30
2137	Helicat Ace D	29 95 23 05
0334	Hesmond 2 (D)	119 97 97 40
1936	Hey Diddle Diddle D	29 95 20 70
1782	Home Accountant D	74 95 48 05
2297	Homework D	69 95 48 30
2789	How To Use Commodore 64	3 95 3 30
2868	In Search Of/Amazing D	39 95 27 65
2953	Infidel (D)	39 95 26 65
1839	Jumpman D	40 00 27 70
1320	Kids And The Commodore 64	19 95 15 05
2712	Kids On Keys D	29 95 20 75
2218	Kids On Keys R	34 95 24 20
2315	Kidwriter D	34 95 24 20
2214	Kindercomp D	29 95 20 70
2216	Kindercomp R	29 95 20 70
2222	Knights Of The Desert D	39 95 27 65
1333	Koala Graphic Table-CMD64	99 95 75 00
1883	Kraft Joystick (At. Type)	16 95 13 45
0633	Kwik-Load (D)	19 95 13 85
2972	Labels - 1" White (1000)	9 95 6 75
0828	Learning Bridge-Goren (D)	79 95 55 35
2989	Lode Runner D	34 95 24 20
2855	Lode Runner R	39 95 27 70
1343	Mail Order Monsters (D)	35 00 26 95
1886	Master Type D	39 95 27 65
2970	Math Blaster D	49 95 34 60
0089	Maxell MD1 Disks-SS/DD (10)	46 50 21 55
0692	Microline 92-P Printer	599 00 CALL
1509	Microline Ribbon	3 20 2 20
2601	Millionaire (D)	59 95 41 50
2875	Miner 2049er R	39 95 30 75
0671	Mirage Data Base Mgr D	89 95 63 70
0666	Mirage Word Processor D	89 95 63 70
2735	Money Manager D	24 95 17 30
2916	Mule D	40 00 30 75
2870	Multiplan D	99 95 69 20
2242	Murder By The Dozen D	34 95 24 20
2912	Music Const. Set D	40 00 30 75
2134	Nato Commander D	34 95 26 90
1216	NEC 1205 Amber Mntnr w/Aud	190 00 168 15
0101	NEC 1215 Color Monitor	399 00 333 35
0273	NEC 8023 Ribbon	10 00 6 65
1469	Net Worth (D)	79 95 55 35
0263	Neutral Zone (D)	34 95 26 00
1756	Nukewar C	15 00 10 40
2703	Odin D	49 95 34 60
1361	Omniwriter/Omnispell (D)	69 95 51 15
2844	Oxford Pascal (D)	50 00 41 70
0821	Paper Clip w/Spell Pak (D)	119 95 83 05
2893	Paral' Printer Ext. Cable 6'	34 95 21 80
1953	Pharaoh's Curse D	34 95 24 20
2834	Pinball D	29 95 20 70
2915	Pinball Const. Set D	40 00 30 75
0381	Pitfall II (D)	34 95 26 90
2184	Pitstop R	40 00 27 70
2201	Planetfall D	34 95 23 30
2177	Pooyan C/D	29 95 20 70
2983	Powerfile D	89 95 69 20
2820	Practicalc D	55 95 38 0
1344	Racing Destruction Set (D)	35 00 26 95
1392	Raid on Bungeling Bay (D)	29 95 20 75
1297	Raid Over Moscow (D)	39 95 29 20
1348	Realm Of Impossibility (D)	35 00 26 95
2711	Rhymes & Riddles D	29 95 20 75
0503	Riteman Plus Printer	399 00 312 80
2993	Sargon 2 D	34 95 24 20
0221	Scotter Surge Prot Strip-6	48 35 37 20
1473	Scrolls of Abaddon (D)	34 95 25 60
1948	Shamus D	34 95 24 20
1416	Smith Corona TPI Ribbon	7 95 6 35
1937	Snooper Troops #1 D	39 95 27 60
2710	Snooper Troops #2 D	39 95 27 65
2837	Software Automouth D	59 95 41 45
2952	Solo Flight D	34 95 26 90
2968	Spider Eater D	29 95 20 80

CAT #	LIST	SALE
2725	Star Battle D	24 95 17 30
2935	Star Trek R	39 95 27 60
1881	Starcross D	39 95 27 65
1277	Starwriter Film Ribbon	5 50 4 50
1278	Starwriter Nylon Ribbon	5 75 4 65
2715	Story Machine R	39 95 27 65
1109	Summer Games (D)	39 95 27 70
1188	Superbase 64 (D)	99 95 76 90
0759	Superlense w/Unguard (D)	49 95 38 45
2250	Supertext Pro D	49 95 66 00
1952	Survivor D	34 95 24 20
1877	Suspended D	49 95 34 50
1838	Sword Of Fargoal D	30 00 20 80
0346	Tax Advantage D	69 95 44 85
1259	Taxan 12 in Amber Monitor	189 00 138 65
1258	Taxan 12 in Green Monitor	179 00 131 60
1528	Taxan Color Mntnr W/Audio	399 00 305 50
1758	Telegard C	23 00 15 95
0444	Telengard D	28 00 19 40
1836	Temple of Asphai D	40 00 27 70
2874	The Consultant (D)	99 95 69 20
0913	Trains (D)	39 95 27 65
0237	Trivia Fever (D)	39 95 29 20
1281	Trunk Floppy Storage	29 95 21 50
2195	Turtle Graphics II R	59 95 41 50
0679	Type Tutor/Word Invade D	24 95 17 30
0884	Ultima 3 D	54 95 38 05
1837	Upper Reaches Asphai D	20 00 13 25
1721	Verbatim SS/DD Hardpack	35 00 23 35
0093	Verbatim SS/DD Softpack	34 00 18 00
1072	VIP Terminal D	49 95 41 65
0394	Wabash Disks SS/DS (10)	19 95 17 35
1217	Westridge Auto-Dial Modem	109 00 83 25
0002	Wico Joystick	29 95 21 95
0015	Wico Redball Joystick	34 95 24 40
0008	Wico The Boss Joystick	19 95 14 10
1885	Witness D	34 95 23 20
1293	Wizard (D)	39 95 30 75
2889	Wordpro 3+ W/Spell D	99 95 75 00
0264	Worms D	40 00 30 75
2871	Your Commodore 64	14 95 12 50
0577	Zaxxon D	39 95 27 65
1878	Zork I D	39 95 27 65
1879	Zork II D	39 95 27 65
1882	Zork III D	39 95 27 65

**Key**  
(D) Disk Program  
(R) Rom Cartridge  
(C) Cassette Program

**Many More Titles Available!**

Commodore® is a registered trademark of  
COMMODORE ELECTRONICS, LTD

CHECK ONE:  VISA  MASTERCARD

Card# \_\_\_\_\_ Exp. \_\_\_\_\_

Telephone \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

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

Please enter my order for: \_\_\_\_\_

\_\_\_\_\_

Please specify machine: \_\_\_\_\_

 Please send free catalog**EASTCOAST SOFTWARE**

49 Derrytown Mall  
Hershey, PA 17033

MAIL YOUR ORDER OR CALL

(717) 533-8125

**800-233-3237**

We Ship UPS—Shipping 1% (\$2.50 min.)

C.O.D. Add An Additional \$2.50

Hardware (Printers/Monitors)

Shipping is \$2.50 + 4% (U.P.S.)

For Air Mail, Canadian, APO/FPO Orders,

Shipping \$2.50 + 4% of Total Order (US Funds)

PA Residents Add 6% Tax

No Minimum Order

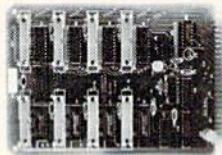
Visa-Mastercard-C.O.D.-Check

Prices Subject To Change  
Sorry, No Foreign Orders

**800-233-3237**  
**In PA 717-533-8125**

This Ad Prepared October, 1984

## FOR THE VIC-20\*



- Four 8-Bit Input Ports
- Interrupt Capability
- Four 8-Bit Output Ports
- Watch Dog Timer

## 1010 CONTROL INTERFACE BOARD

The 1010 Control Interface is a small board which plugs into the VIC-20's expansion port and provides 32 input bits and 32 output bits. It allows the VIC to interface with the real world for measurement and control applications.

The 1010 Interface allows very cost effective systems to be configured for data acquisition, energy measurement & control, automated test, and laboratory automation. The VIC, with the 1010 Interface, can now be used to automate many tasks that were previously cost prohibited.

Order yours today!

\*VIC-20 is a registered trademark of Commodore Business Machines Inc.  
 1010 Control Interface ..... \$169.00  
 1901 Double Ended 36" Cable ..... \$7.50  
 1902 Single Ended 36" Cable ..... \$5.00  
 Terms: Check, MO, VISA, or MC. In US and Canada add \$4 per order for shipping. Others add \$8 per order. US funds only. TX add 5% tax. Shipped from stock to two weeks.

INNOVATIVE TECHNOLOGY  
 510 Oxford Park  
 Garland, TX 75043 (214) 270-8393

Circle 243 on Reader Service card.

## VIC-20 COMMODORE 64 THE RECIPE BOX

Now you can easily store and recall your favorite recipes on your Commodore computer. THE RECIPE BOX is a complete menu-driven disk system that comes with these additional features:

**SEARCH BY INGREDIENT** — Only have a pound of hamburger in the freezer? Let THE RECIPE BOX show you all the recipes that you have on file that use hamburger, or any other ingredient you choose.

**SEARCH BY CATEGORY** — Code your recipes as to breakfast, lunch, dinner, snacks, etc.

**SEARCH BY CATEGORY/INGREDIENT** — Any combination of the above.

**AUTOMATIC MEASUREMENT** — THE RECIPE BOX will automatically scale up or down the amount of ingredients you need according to how many servings you want.

**SCREEN OR PRINTED OUTPUT** — Have printed copies to use in the kitchen or give to friends.

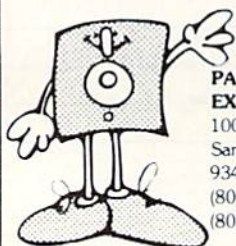
THE RECIPE BOX requires one disk drive and will run on a 5K VIC-20, Commodore 64. Please specify. Send check or money order for \$19.95 to:

**Aries Marketing Co.**  
**P.O. Box 4196**  
**4200 Shannon Drive**  
**Baltimore, Md. 21205**  
 Md. residents add 5% sales tax

Circle 235 on Reader Service card.

## MEMOREX FLEXIBLE DISCS

**WE WILL NOT BE UNDER-  
SOLD!!** Call Free (800)235-4137  
 for prices and information. Dealer  
 inquiries invited and C.O.D.'s  
 accepted.



**PACIFIC  
EXCHANGES**  
 100 Foothill Blvd.  
 San Luis Obispo, CA  
 93401. In Cal. call  
 (800)592-5935 or  
 (805)543-1037

## Print Features

If you have a suitably interfaced computer and applications program, here are some of the features with which a good printer can provide you:

**Justification** is the process of inserting extra spaces throughout a line to make the printed results align at both the left and right margins. Better printers also support *micro-justification*, in which the extra spaces are spread within each word, not just between them. A few printers and word processors also support *proportional spacing*, a scheme in which the space between letters is kept constant, regardless of whether they are narrow or wide.

**Underlining** is done either simultaneously with the underlined text or in a second pass over the same line. A few printers, including the Commodore 1525 and 801, can't underline at all without special tricks.

**Boldface, shadow print and emphasized print** are all ways of drawing added attention to special text, such as headlines, either by double-striking it or by making the characters wider than usual, or both.

**Superscripts and subscripts** are used in technical writing. They usually involve moving the paper a half line above or below the normal print line and then back.

**Italics and custom characters** allow you to print some of the text with a different appearance, either by using an alternative character set, designing a custom character or character set, or by changing print wheels on a daisywheel printer.

These options are useless in your printer unless they are also supported by the interface and applications program you are using. Fortunately, some programs now permit you to set up custom printer commands to fit your equipment, and others allow you to send special printer commands within ordinary text.

## Other Features

If you do many listings, the ability to automatically skip over the perforations at the bottom of a page, rather than print across them, is a very desirable feature. Another good feature is an easily changeable and inexpensive print head, as print heads are subject to clogging and other problems after long use. Being able to replace it quickly and easily yourself is a plus.

In a dot-matrix printer, having tractors behind the platen (the place where the paper goes around a roller to meet the print head) is a mixed blessing. Although it avoids the common problem of wasting a sheet of paper every time a printout is started, the curl imparted by the platen may require you to dispose of that sheet anyway, and rear tractors are not very effective in doing subscripts and superscripts.

The alternatives to tractor feeds are pin feeds and friction feeds. Pin feeds are basically cheap tractors. Instead of a band full of knobs contacting the sheet of paper at several holes at once, a pin feed only contacts the paper at one point. Sometimes the pins are built into the platen itself, which assures better contact with more pins, but also means the pins can't be adjusted for paper of various widths, such as tractor-fed postcards.

Friction feed is the simplest of all; it works like the familiar typewriter, relying on pressure to keep the paper in line. Due to the way most paper ends up with more printing on the left side than the right, most friction-feed mechanisms are unable to keep their paper from skewing badly to the side after a few sheets are printed. Unless you will print only single sheets, friction feed is ineffective.

If you will be printing special papers, such as postcards, multipart forms or stencils, make sure your printer can handle them. Many printers are unable to generate enough force to pull heavy cardboard from the floor up into and through their mechanism. Others lack enough force in the print hammer(s) to print through a multipart form or properly print a stencil. When you shop for a printer, bring samples of what you'll be using, and test them with any prospective printer.

## Accessories and Supplies

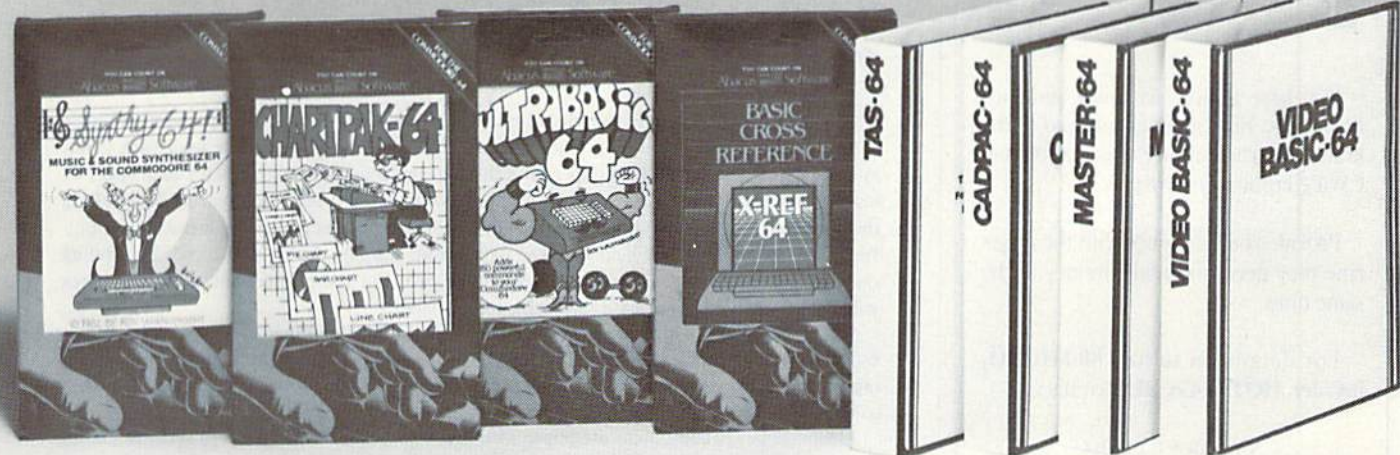
### Print Buffers

Some printer interfaces also do other chores. One of the best includes a 4K print buffer. This special memory area inside the interface receives up to 4096 characters from the computer at high speed, and prints them as fast as the printer can accept them—generally much slower.

If you print many high-resolution graphics drawings, such a buffer can speed up your printouts considerably, by quickly dumping a full line of high-resolution graphics data to the printer the moment the printer can accept it. They are also useful when printing documents up to about two pages long. The buffer allows the computer to go on to the next task, and even use the disk drive, while the printer finishes on its own.

If this ability is important to you, but you need more than a two-page buffer, various companies sell larger buffers, typically 64K and up, for about \$300. These buffers plug into either a Centronics parallel connector or an RS-232 serial connector, depending on the model, and may be used with suitably interfaced Commodore computers. The best of them also include logic to avoid being filled up with redundant spaces, thus making more effective use of their storage space, and allowing more memory to be added later as needed.

# GET THE MOST OUT OF YOUR COMMODORE-64 WITH ABACUS SOFTWARE



## XREF-64 BASIC CROSS REFERENCE

This tool allows you to locate those hard-to-find variables in your programs. Cross-references all tokens (key words), variables and constants in sorted order. You can even add you own tokens from other software such as ULTRABASIC or VICTREE. Listings to screen or all ASCII printers.

DISK \$17.95

## SYNTHY-64

This is renowned as the finest music synthesizers available at any price. Others may have a lot of onscreen frills, but SYNTHY-64 makes music better than them all. Nothing comes close to the performance of this package. Includes manual with tutorial, sample music.

DISK \$27.95 TAPE \$24.95

## ULTRABASIC-64

This package adds 50 powerful commands (many found in VIDEO BASIC, above) - HIRES, MULTI, DOT, DRAW, CIRCLE, BOX, FILL, JOY, TURTLE, MOVE, TURN, HARD, SOUND, SPRITE, ROTATE, more. All commands are easy to use. Includes manual with two-part tutorial and demo.

DISK \$27.95 TAPE \$24.95

## CHARTPAK-64

This finest charting package draws pie, bar and line charts and graphs from your data or DIF, Multiplan and Basiccalc files. Charts are drawn in any of 2 formats. Change format and build another chart immediately. Hardcopy to MPS801, Epson, Okidata, Prowriter. Includes manual and tutorial.

DISK \$42.95

## CHARTPLOT-64

Same as CHARTPAK-64 for highest quality output to most popular pen plotters.

DISK \$84.95

DEALER INQUIRIES ARE INVITED

**FREE CATALOG** Ask for a listing of other Abacus Software for Commodore-64 or Vic-20

DISTRIBUTORS

**Great Britain:** ADAMSOFT  
18 Norwich Ave.  
Rochdale, Lancs.  
706-524304

**Belgium:** Inter. Services  
AVGuillaume 30  
Brussel 1180, Belgium  
2-660-1447

**France:** MICRO APPLICATION  
147 Avenue Paul-Doumer  
Rueil Malmaison, France  
1732-9254

**New Zealand:** VISCOUNT ELECTRONICS  
306-308 Church Street  
Palmerston North  
63-86-696

**West Germany:** DATA BECKER  
Merivindener Str. 10  
4000 Düsseldorf, Germany  
0211/312085

**Sweden:** TIAL TRADING  
PO Box 1716  
S-201 16 Stockholm  
08-43360

**Australia:** CW ELECTRONICS  
416 Logan Road  
Brisbane, Queensland  
07-397-0808

## CADPAK-64

This advanced design package has outstanding features - two Hires screens; draw LINES, RAYS, CIRCLES, BOXES; freehand DRAW; FILL with patterns; COPY areas; SAVE/RECALL pictures; define and use intricate OBJECTS; insert text on screen; UNDO last function. Requires high quality lightpen. We recommend McPen. Includes manual with tutorial.

DISK \$49.95 McPen lightpen \$49.95

## MASTER 64

This professional application development package adds 100 powerful commands to BASIC including fast ISAM indexed files; simplified yet sophisticated screen and printer management; programmer's aid; BASIC 4.0 commands; 22-digit arithmetic; machine language monitor. Runtime package for royalty-free distribution of your programs. Includes 150pp. manual.

DISK \$84.95

## VIDEO BASIC-64

This superb graphics and sound development package lets you write software for distribution without royalties. Has hires, multicolor, sprite and turtle graphics; audio commands for simple or complex music and sound effects; two sizes of hardcopy to most dot matrix printers; game features such as sprite collision detection, lightpen, game paddle; memory management for multiple graphics screens, screen copy, etc.


DISK \$59.95

## TAS-64 FOR SERIOUS INVESTORS

This sophisticated charting system plots more than 15 technical indicators on split screen; moving averages; oscillators; trading brands; least squares; trend lines; superimpose graphs; five volume indicators; relative strength; volumes; more. Online data collection DJNR/S or Warner. 175pp. manual. Tutorial.

DISK \$84.95

AVAILABLE AT COMPUTER STORES, OR WRITE:

Abacus  Software

Circle 185 on Reader Service card.

P.O. BOX 7211 GRAND RAPIDS, MICH. 49510

For postage & handling, add \$4.00 (U.S. and Canada), add \$6.00 for foreign. Make payment in U.S. dollars by check, money order or charge card. (Michigan Residents add 4% sales tax).



FOR QUICK SERVICE PHONE 616-241-5510

# ATTENTION

Foreign Computer Stores  
Magazine Dealers

You have a large technical audience that speaks English and is in need of the kind of microcomputer information that CWPeterborough provides.

Provide your audience with the magazine they need and make money at the same time.

For details on selling 80 MICRO, inCider, HOT CoCo, RUN contact:

SANDRA JOSEPH  
WORLD WIDE MEDIA  
386 PARK AVE., SOUTH  
NEW YORK, NY 10016  
PHONE (212) 686-1520  
TELEX—620430

## Ribbons

In the old days, printer ribbons came on spools and were quite cheap, about \$2 each. More recently, they have come in convenient cartridges that won't smudge your fingers, but cost \$14 each when you can find them at all. Even more recently, some ribbons have switched from the traditional ink-soaked nylon, which works until it gradually fades away, to carbon-film ribbons, which give an outstanding appearance while they last, but have very limited lives and can't be reinked. One new printer of this type is said to be good for only eight pages of full-color printing before needing a new ribbon.

In considering the cost of a printer, be sure to include the cost of its ribbons. There's a lot to be said for a printer that still uses \$2 ribbon spools, as long as you don't mind the mess of changing them. Short of this, you can reink some cartridge ribbons by using a special tool and ink offered by other companies.

## Paper

Computer paper comes in various widths, thicknesses and colors. It also comes in single sheets, rolls and fan-folded continuous sheets. The most common variety used with Commodore computers is fan-fold paper, in either 16- or 20-pound weights, with each sheet 11 inches long by 9½ inches wide. Each sheet is bordered by a half-inch row of holes along the sides that can be torn off after printing. The holes serve as guides for a tractor- or pin-feed mechanism, and they help keep the paper from slipping during a printout. Depending on the printer, the paper may feed from behind or below the printer, and your work area will need to include room for a fair-sized box of paper.

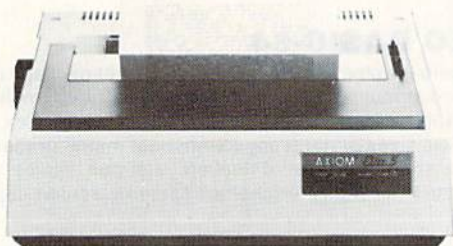
Most computer paper comes in boxes of individual fan-folded sheets loosely held together by partial perforations along all four edges. Micro-perf paper, which is becoming increasingly popular, simply makes more and smaller perforations along each edge, making it easier to tear and leaving a neater margin when you do tear the perfs.

Although larger computers use paper with green bars across each sheet to serve as guides in reading a listing, plain white paper is more popular with home computer users, many of whom never make program listings. As for quantity, paper can be purchased in boxes as small as 200 sheets. However, it is far more economical in larger quantities. A full box is 2500-3500 sheets. That seems like a huge supply, but if you use your printer regularly, it may not last a month. By banding together with friends, you may be able to order at a discount. R

# Letter Perfect!

**NEW**

only  
**\$299.95**



## ELITE-5

### Features:

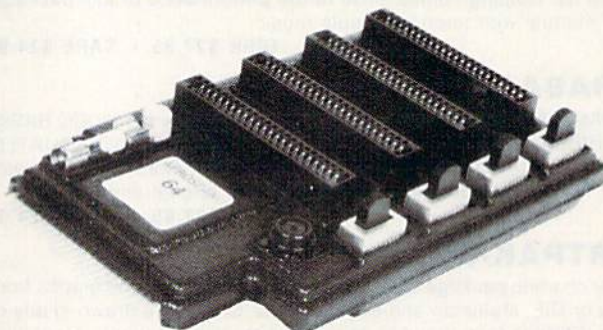
- Superb LETTER QUALITY printing
- Supports leading word-processing packages
- Simple, reliable mechanism provides trouble free use
- Bold print, superscript, subscript and underlining
- Logic seeking bidirectional printing for faster printouts
- Five line test printout capability
- Optional bidirectional tractor-feed for easy document handling. **only \$145.95**

ELITE-5CD model has Direct-Connect interface for all Commodore

home computers **only \$339.95**

ADD: \$8.00 Shipping (Cont. U.S.), \$35.00 CAN, HI, AK.

**APROSPAND-64™** Gives your Commodore 64 full expandability! This superbly designed expansion module plugs into the 64 & gives you 4 switchable (singly or in any combination) expansion connectors - plus fuse protection - plus a reset button!



**ONLY \$39.95**

## Commodore Interfaces and Accessories

- ParallAX-CD Parallel Printer Interface for use with VIC-20, C-64, EX-64, Plus-4 & C-16..... **\$59.95**
- Cardprint +G Parallel Printer Interface..... **\$59.95**
- Cardprint B (without graphics)..... **\$37.95**
- AP-Switch -3P 3 to 1 Centronics Parallel Peripheral Switch. Switches active pins 1-18 and 31-36. Connects your computer to up to 3 parallel printers or up to 3 computers to one printer..... **\$97.95**

### APROPOS TECHNOLOGY

1071-A Avenida Acaso, Camarillo, CA 93010

CALL OUR TOLL FREE ORDER LINES TODAY:

1-(800) 962-5800 USA or 1-(800) 962-3800 CALIFORNIA

TECHNICAL INFORMATION: 1-(805) 482-3604

Add Shipping Per Item: \$3.00 Cont. U.S. \$6.00 CAN, Mexico, HI, AK, UPS Blue



www.commodore.ca  
May Not Reprint Without Permission

# FOR '64 USERS ONLY!

## THE ANATOMY OF THE C-64

insider's guide to the lesser known features of the '64. Includes graphics, sound synthesis, I/O control, sample programs using kernal routines, more. For those who need to know, includes complete disassembled and documented ROM listings.

ISBN-0-916439-00-3 300pp \$19.95

## ANATOMY OF 1541 DISK DRIVE

unravels mysteries of using misunderstood disk drive. Details use of sequential, relative and random files. Includes sample programs: FILE PROTECT, DIRECTORY, DISK MONITOR, BACKUP, MERGE, COPY, others. Describes DOS kernal with disassembled and documented 1541 ROMS listings.

ISBN-0-916439-01-1 320pp \$19.95

## MACHINE LANGUAGE FOR C-64

write faster, more efficient programs in machine language. Specifically geared to '64 features. Learn all 6510 instructions. Includes 3 full length programs: ASSEMBLER, DISASSEMBLER and amazing 6510 SIMULATOR to "see" each operator on the screen

ISBN-0-016439-02-x 200pp \$14.95

## TRICKS & TIPS FOR THE C-64

collection of easy to use programming techniques. Perfect companion for those hard to solve problems. Covers advanced graphics, ease data input, CPM, POKES, BASIC enhancements, character sets, joystick/mouse simulation, transferring data between computers, more. A treasure chest.

ISBN-0-916439-03-8 280pp \$19.95

## ADVANCED MACHINE LANGUAGE FOR C-64

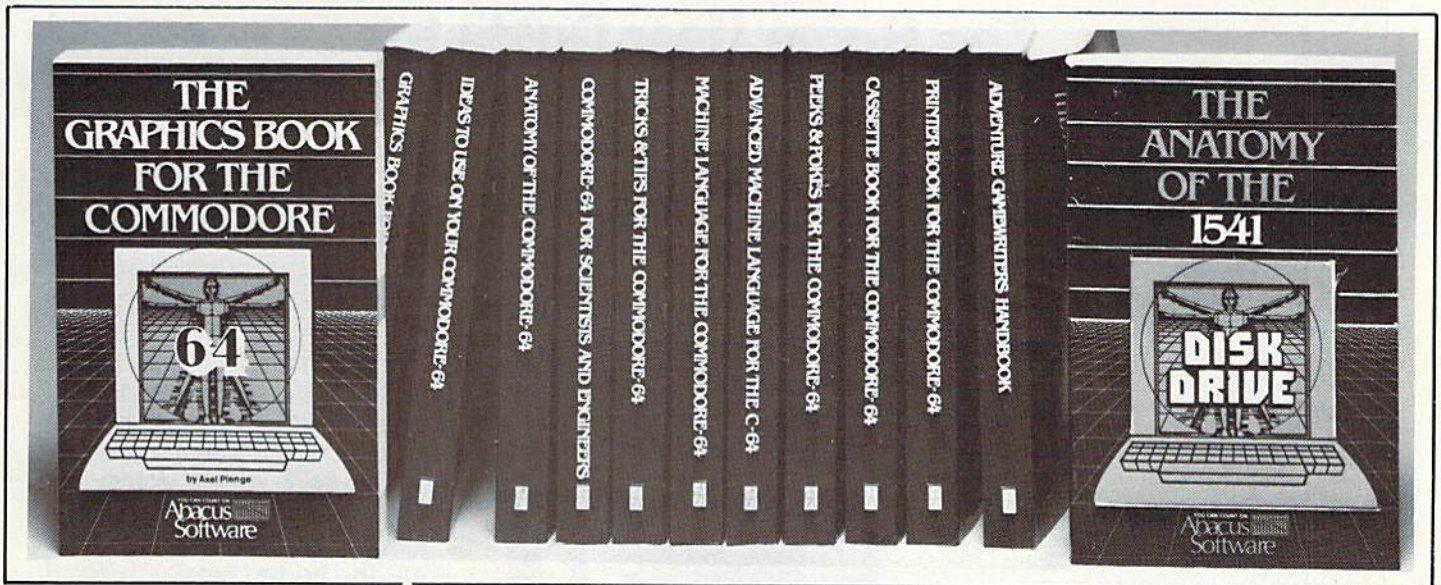
author L. Englisch clearly explains some very detailed subjects: interrupts, video controller, timer, real time clock, parallel and serial I/O, extending BASIC, tricks and tips from machine language, more.

ISBN-0-916439-06-2 210pp \$14.95

## IDEAS TO USE ON YOUR C-64

wondering what to do with your '64?, we suggest dozens of possibilities including complete program listings for many, many uses. Themes such as auto expenses electronic calculator, construction estimator, health diet plans, store window advertiser, computer poetry, party invitations and more.

ISBN-0-916439-07-0 200pp \$12.95



## CASSETTE BOOK FOR C-64 (or Vic 20)

all information needed to use and program datasette. Many exmple programs. Includes new operating system for fast loading and saving of files.

ISBN-0-916439-04-6 200pp \$14.95

## ADVENTURE GAMESWRITERS HANDBOOK

Writing adventure games! Here's a handbook with suggestions and hints for you. Includes an adventure program generator to simplify your projects.

ISBN-0-916439-14-3 220pp \$14.95

## GRAPHICS BOOK FOR C-64

from fundamentals thru advanced topics this is most complete reference anywhere. Covers character sets, moving sprites, drawing in HIREs and MULTICOLOR, using lightpens, handling IRQs, 3D graphics, projections, curves, animation. Dozens of examples.

ISBN-0-916439-05-4 350pp \$19.95

## PRINTER BOOK FOR C-64

for your understanding of MPS801, 1520, 1525, 1526, Epson and most dot matrix printer. Packed with examples and utilities. Learn hardcopy of text and graphics, secondary addresses, plotting in 3D, much more. With MPS801 ROM listings.

ISBN-0-916439-08-9 350pp \$19.95

## SCIENCE / ENGINEERING C-64

topics include linear/non Linear regression, CHI square, Fourier analysis, matrix calculations, more. Programs from physics, chemistry, biology, astronomy, electronics, etc. Describes variable types, computational accuracy, sort algorithms. Many program listings.

ISBN-0-916439-09-7 250pp \$19.95

## PEEKs AND POKEs FOR C-64

Fast and simple techniques for programming. Make your 64 do things that previously required much programming.

ISBN-0-916439-13-5 180pp \$14.95

## DEALER INQUIRIES ARE INVITED

### IN CANADA CONTACT:

The Book Centre, 1140 Beaulas Street  
Montreal, Quebec H4R1R8 Phone (514) 332-4154

AVAILABLE AT COMPUTER STORES, OR WRITE:

**Abacus Software**

P.O. BOX 7211 GRAND RAPIDS, MI 49510

Exclusive U.S. DATA BECKER Publishers

For postage & handling, add \$4.00 (U.S. and Canada), add \$6.00 for foreign. Make payment in U.S. dollars by check, money order of charge card. (Michigan Residents add 4% sales tax.)

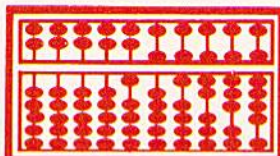


FOR QUICK SERVICE PHONE (616) 241-5510

Commodore 64 is a reg. T.M. of Commodore Business Machines

You Can Count On

# Abacus



# Software

www.Commodore.ca  
P.O. Box 7211 Grand Rapids, MI 49510  
May Not Reprint Without Permission

Exclusive U.S. Data Becker Publisher

# IMPORTANT ANNOUNCEMENT!

**FREE  
PULL-OUT  
WALL CHART INCLUDED**

## **THE RUN SPECIAL ISSUE:** The Home User Guide to Commodore Computing

We've wrapped up one super package for users of the Commodore family of computers—a special Home Computing Guide that can be referred to for years to come.

There's never been anything like it! Everything for the new Commodore owner, and something special for every veteran user, including:

- A **FREE** pull-out informational wall-chart—eliminates time-consuming searching through manuals... contains operating information in one convenient place!
- More than 400 hints from Louis Sander, author of "Magic"—RUN's most popular column. A variety of great ideas that everyone can use!
- Many "How To Get Started" articles that will put every new Commodore user at ease!
- An exhaustive computer/Commodore terms glossary!
- Up-to-date listing of Commodore clubs and user groups so you can correspond with others across the miles!



**A Lifetime  
Reference Library  
In One BIG Issue!**

### **Don't delay!**

This *limited edition* is sure to be in big demand. Reserve your copy today by returning the coupon, or call TOLL FREE 1-800-258-5473. In New Hampshire, call 1-924-9471.

RUN Magazine's **SPECIAL ISSUE: The Home User Guide to Commodore Computing** is the perfect gift for yourself... and for your Commodore friends!

**RUN**  
**SPECIAL ISSUE**

**Look for the special order form in this issue!!**

**YES**, I want RUN's **SPECIAL ISSUE**. I am enclosing \$3.95 for each copy that I order. Please send me \_\_\_\_\_ copies of RUN's **SPECIAL ISSUE**. Limited quantities!  
 Check Enclosed  MC  VISA  AE

Card #

Exp. Date

Signature

Name

Address

City

State

Zip

Canada & Mexico \$4.50, Foreign Surface \$7.15, US funds drawn on US bank. Foreign Airmail, please inquire. Delivery will be in mid-December.

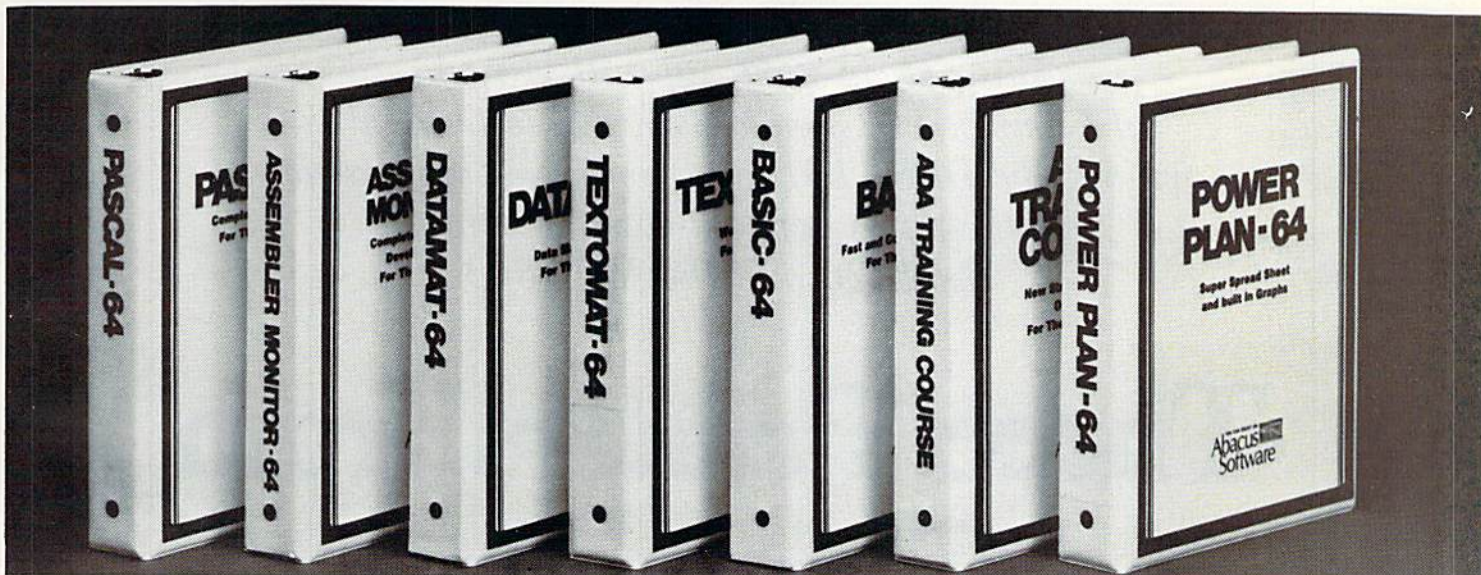
**RN01**

**CW Communications/Peterborough • 80 Pine Street • Peterborough, NH 03458**



# SERIOUS 64 SOFTWARE

## INDISPENSIBLE TOOLS FOR YOUR COMMODORE 64



### PASCAL 64

Disk \$39.95

This full compiler produces fast 6502 machine code. Supports data Types: REAL, INTEGER, BOOLEAN, CHAR, multiple dimension arrays, RECORD, FILE, SET and pointer. Offers easy string handling, procedures for sequential and relative data management and ability to write INTERRUPT routines in Pascal! Extensions included for hires and sprite graphics. Optionally link to ASSEM/MON machine language.

### ASSEMBLER MONITOR

This complete language development package features a macro assembler and extended monitor. The macro assembler offers freeform input, complete assembler listings with symbol table (label), conditional assembly. The extended monitor has all the standard commands plus single step, quick trace breakpoint, bank switching and more.

DISK \$39.95

### ADA TRAINING COURSE

This package introduces you to ADA, the official language of the Department of Defense and the programming language of the future. Includes editor, syntax checker/compiler and 110 page step by step manual describing the language.

DISK \$79.95

### DATAMAT-64

DISK \$39.95

This powerful data base manager handles up to 2000 records per disk. Select the screen format using up to 50 fields per record. DATAMAT 64 can sort on multiple fields in any combination. Complete report writing capabilities to all COMMODORE or

### BASIC-64 COMPILER

DISK \$39.95

This is a full compiler that won't break your budget. Is compatible with Commodore 64 BASIC. Compiles to fast machine code and/or speedcode. Protect your valuable source code by compiling with BASIC 64.

### POWER PLAN 64

DISK \$49.95

This super spreadsheet features built in graphics. It's as simple to use as 1-2-. Power Plan 64 displays your choices on screen with help screens always available. Makes excellent graphs. Includes 300pp in depth user's manual.

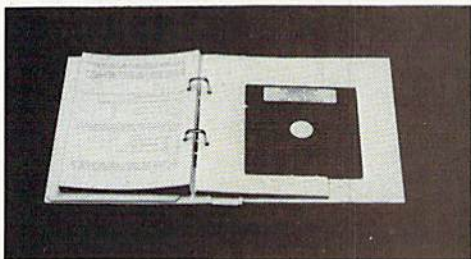
### TEXTOMAT-64

DISK \$39.95

This complete word processor displays 80 columns using horizontal scrolling. In memory editing up to 24,000 characters plus chaining of longer documents. Complete text formatting, block operations, form letters, on-screen prompting.

### OTHER NEW SOFTWARE COMING SOON!

All software products featured above have inside disk storage pockets, and heavy 3-ring-binder for maximum durability and easy reference.



### DEALER INQUIRIES INVITED

AVAILABLE AT COMPUTER STORES, OR WRITE:

**Abacus Software**

P.O. BOX 7211 GRAND RAPIDS, MI 49510

Exclusive U.S. DATA BECKER Publishers

For postage & handling, add \$4.00 (U.S. and Canada), add \$6.00 for foreign. Make payment in U.S. dollars by check, money order or charge card. (Michigan Residents add 4% sales tax.)

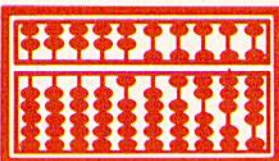


FOR QUICK SERVICE PHONE (616) 241-5510

Commodore 64 is a reg. T.M. of Commodore Business Machines

You Can Count On

# Abacus



# Software

P.O. Box 7211 Grand Rapids, MI 49510

Exclusive U.S. Data Becker Publisher

www.Commodore.ca  
May Not Reprint Without Permission

Circle 8 on Reader Service card.

*This article starts off with a review of Commodore's new daisywheel letter-quality printer, the DPS-1101, and continues with reviews of their two new dot-matrix printers, the 1526 and the MPS-803.*

# Three Printers from Commodore

By TOM BENFORD

A daisywheel letter-quality printer uses a spoked wheel with characters molded onto the ends of the spokes for printing, so that it looks somewhat like a technologically advanced daisy. The singular advantage of any daisywheel printer is the absolutely pristine quality of the print output. The letters are sharp, clear and perfectly formed images that rival or exceed the output of the finest professional office typewriter.

Don't confuse the terms letter-quality and correspondence-quality. High-resolution dot-matrix printers will produce correspondence quality; only a daisywheel printer will produce true letter-quality, since the letters are fully formed and not composed of a series of dots.

It's really no secret that Commodore has had a letter-quality daisywheel printer in the works for some time. I got my first look at a prototype of it last January at the Winter CES in Las Vegas. As with so many of their other products under development, however, they teased me with a peak but refused to elaborate on the details.

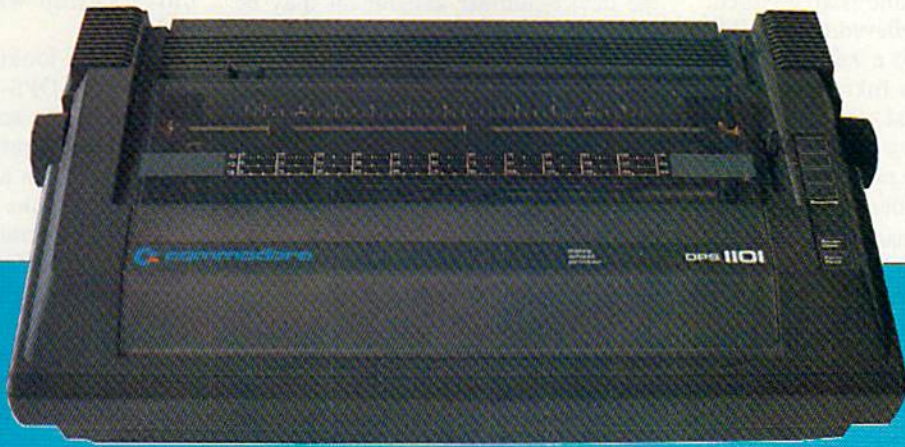
By the time you read this, your dealer will probably have the DPS-1101 on his shelves. When I received

mine, my first impression of the DPS-1101 was "nice." After using it for a couple of weeks, I've changed my opinion, though. Now I'd have to say "very nice."

## Inside and Out

It's an attractively styled unit, molded in dark charcoal-gray plastic that matches the new Commodore Plus/4 and C-16 computers. It's rather large in comparison to other printers, but that's because it features a 13-inch platen. The extra-wide platen makes the DPS-1101 useful for spreadsheet applications or other uses where wide printer paper is desirable. Of course, you can also use the standard 8½-inch-wide paper as well. The standard paper-advance mechanism is friction-feed, but an optional tractor-feed accessory is planned as of this writing.

One of the biggest complaints I've heard about Commodore printers in the past pertained to the oddball ribbons utilized in these units. Apparently, Commodore had received a lot of complaints about the availability of ribbons for their printers, and they finally did something about it; the DPS-1101 uses a standard IBM Selectric-type ribbon cartridge that can be purchased just about anywhere. Since it's a car-



TOM BENFORD

tridge, changing or replacing the ribbon is literally a snap—you push the ribbon release lever, pop out the old cartridge, drop the new one in and snap it closed.

I was also quite relieved to find that the daisywheel is also a standard item. The DPS-1101 uses a Juki or Triumph-Adler print wheel that can be found at most better stationery or office supply stores. Changing the print wheel is also a simple affair, thanks to good engineering of the print assembly.

The controls are well-positioned on the printer, affording easy access to the user. On the right-hand top panel of the 1101 are the print spacing controls, and a choice of 10-, 12- and 15-characters per inch (proportional spacing is also available). Also found on this panel are the controls for form-feeds, pause/clear and power indicators. On the back are the power switch, power-cord socket and two serial jacks. On the inside of the 1101 are two banks of DIP switches that allow custom-tailoring of the printer's functions, such as linefeed on or off. I'll go into more detail about these DIP switches a little later on.

The DPS-1101 is assigned as device #4 at the factory, but by manipulating the settings of the DIP switches, the device-number assignment may be changed. This is a handy feature, since it's plausible that you may wish to have both the 1101 and a dot-matrix printer connected at the same time. By keeping the dot-matrix printer assigned as device #4 and changing the assignment of the 1101 to #5 or #6, you can direct the output to either printer! The dual serial jacks on the back of the 1101 make it possible to daisy-chain two printers together, as in this example.

You'll also be pleased to know that you won't need an interface to use this printer—you need only a simple serial cable from either the computer or the disk drive to the printer. While this is fine for us Commodore users, it does restrict the printer to Commodore use only. The inclusion of either an RS-232 or a Centronics jack would have expanded the appeal and marketability of this printer.

One feature that definitely should have been included—a paper-advance switch—was not, and I don't know

why. You can manually advance the paper—two large knobs at either end of the platen roller do the job nicely—but a switch would have made it easier.

If you're looking for a really *fast* printer, the DPS-1101 is not for you. Because of the actual print mechanics of daisywheel printers, none of them will ever win an award for speed. The DPS-1101 cranks out beautiful output at a very respectable rate of 18 characters per second (cps). That might seem like a snail's pace to anyone who's used to the 60 cps or faster output of a dot-matrix printer. Judging it against other letter-quality printers, 18 cps is rather brisk; most daisywheel printers move at 12 to 16 cps!

Noise is an inherent problem with daisywheel printers (the printer hammer must strike the daisywheel hard enough to smash the imprint of the letter onto the paper), and the DPS-1101 is no exception; while it's not the loudest printer I've ever heard, it's not the quietest, either. I found that placing the printer on a rubber typewriter mat (available from an office supply

---

## 1526 Dot-Matrix Printer

The 1526 printer had made its debut about a year ago, but the unit was so beset with problems that Commodore recalled it. After the recall, Commodore ripped the unit apart and corrected all of its many bugs, and now it's back on the market again.

One of the most serious faults of the early version of the 1526 was that it would crash right in the middle of... anything—word processing, program listings—it didn't discriminate. Needless to say, this made it quite unpopular with users, and dealers were up to their necks with returns of the unit.

I admit that I, too, was skeptical of this past-proven bad apple, and when I got my hands on one of the "new, improved" 1526s, I resolved to *really* put it through the paces. The bottom line is that it not only passed, but did so with flying colors!

The 1526 has an impressive list of features, among which are: tractor-and friction-feed, bidirectional printing, programmable line spacing, cartridge-load ribbon and a 10-inch carriage width. The unit is fast, spewing forth characters in excess of 60 per second, and since it prints in both directions, it can crank out 45 80-character lines in slightly less than one minute!

The printed image is the result of an 8 × 8 dot matrix, which affords hi-res characters with true descenders. Of course, the entire graphics character set is printable, and it plugs directly into your computer or disk drive without any interfacing.

Standard goodies that come with the 1526 are a smoked-plastic dust cover (which also serves to reduce the already low noise level), a serial cable and a wire paper holder that snaps onto the back of the printer. Also included are a power cable, a well-written user's manual and a ribbon cartridge.

It's good to see that Commodore has corrected the bugs that originally plagued this printer, and I could find no fault with the unit in its present form. If you're looking for a moderately priced (\$225-\$300) high-resolution dot-matrix printer, the 1526 should fill the bill nicely for you.

---

## The MPS-803 Dot-Matrix Printer

If you're computing on a budget, the MPS-803 dot-matrix printer may be worth investigating, since it's an economy-priced unit that will most likely sell for under \$200.

The MPS-803 prints at a rate of 60 characters per second bidirectionally, features friction-feed, and is a compact and lightweight unit. There are some trade-offs, however, to keep the price down. First, the friction-feed is nice if you want to print out a letter, but for extended program listings, form-feed paper is the way to go. I tried using continuous-form paper on the unit, and without the sprockets to pull the paper through, I had some problems with long listings.

Another drawback is the low-resolution (7 × 5) dot-matrix image; while it produces decent printout, the lack of true descenders detracts somewhat from the legibility. Descenders are the "tails" of certain characters, for example, p, q, j, g and y. We're all used to seeing these tails dip below the rest of the characters on a line, but with the MPS-803, they're slightly elevated; it takes a bit of getting used to.

The unit I used for testing performed flawlessly. It plugs directly into your computer or disk drive without the aid of an extra interface. There are even device # and lines-per-inch selector switches (in the back of the machine) and a Self-Test mode to make sure everything's working correctly.

The unit is molded in black plastic, which makes it color coordinated with the new Commodore computers—the Plus/4 and C-16. Its compact size enables you to tuck it away in an average-sized briefcase for ease of transportation.

The 803 is ideally suited to the uses of a novice computerist or anyone who needs inexpensive, reliable printout without frills.



## Info Designs™... Making Home Town Business Grow

Info Designs is the leading producer of accounting software for the Commodore 64... home town businesses made us **Number 1**. We specialize in Accounting Software and market only the highest quality business systems. Our integrated systems have helped businesses become more prosperous through better management of their money and resources. Info Designs five accounting packages make it possible for you to computerize your business cost effectively. Our proven business software packages have been purchased for \$595 each. With **100,000** programs sold, you can be assured of a proven value at **\$79.95** per Commodore-64 program.

### Select the disk programs you need—

- Accounts Receivable/Billing
- Account Payable/Checkwriting
- General Ledger
- Inventory Management
- Payroll

### Customer Support Plan

An optional telephone consulting service is available to support installation and ongoing operations.

### To Purchase

See your local Commodore-64 Dealer or call us directly at (313) 540-7772.

Circle 102 on Reader Service card.

Info Designs Inc.  
6905 Telegraph Road  
Birmingham, MI 48010

# Info Designs™

### SUPER PRINTER PACKAGES

Gemini 10X and Cardco + G ..... 329  
 Prowriter and Cardco + G ..... 414  
 No additional shipping charges on Printer Packages in Continental USA

### PRINTERS

Alphacom 40C/Int. 99.95  
 Alphacom 80C/Int. 189.95  
 Epson ..... Call  
 Silver Reed ..... Call  
 Prowriter 8510 ..... Call  
 Legend ..... 239  
 Riteman ..... 289  
 Toshiba 1351 ..... Call  
 Toshiba 1340 ..... Call  
 Axiom -CM-550 ..... 279

# COMMODORE 64



THE POWER BEHIND THE PRINTED WORD.

Gemini 10X ..... 249    Delta 15X ..... 499  
 Gemini 15X ..... 389    Radix 10X ..... 549  
 Delta 10X ..... 369    Radix 15X ..... 629  
 Powertype .. 329

CBM 64 ..... Call  
 SX-64 ..... Call  
 1541 Disk Drive ..... Call  
 1526 Printer ..... 279  
 1530 Datasette ..... 66  
 1702 Monitor ..... Call  
 1650 AD/AA Modem ..... 89  
 RS 232 Interface ..... Call

Call for Special Package  
 64 System Price

### ANIMATION STATION TOUCH TABLET ..... 59.95

Bring the trivia craze home with **P.Q. The Party - Quiz Game** for the CBM 64-D. Call

### MODEMS

Hayes Smart Modem 300 ..... Call  
 Mark VII/Auto Ans/Auto Dial ..... Call  
 Mark XII/1200 Baud ..... Call  
 Prometheus ..... Call  
 Westridge AA/AD ..... Call

## C O M M O D O R E 6 4 S O F T W A R E

### ACCESS

Neutral Zone-D/T ..... 23.95  
 Spritemaster-D/T ..... 23.95  
 Beachhead-D/T ..... 23.95  
 Master Composer-D ..... 27.95  
 Raid Over Moscow-D/T ..... 27.95  
 Scrolls Of Abaddon-D/T ..... 23.95

### ACCESSORIES

WICO Joystick ..... Call  
 Flip 'n' File-D ..... 20.95  
 Flip 'n' File Cart ..... 20.95  
 Joysensor ..... 24.95  
 WICO Trakball ..... 37.95  
 KRAFT Joystick ..... 15.95  
 EIS Compuserve Kit ..... 64.95  
 VIDTEX ..... 29.95  
 Big Foot 16K Buffer ..... Call  
 Big Foot 32K Buffer ..... Call  
 Big Foot 64K Buffer ..... Call  
 Gemini 10X 8K Upgrade ..... Call  
 Monitors ..... Call  
 Compuserve Starter ..... 27.95  
 Elephant SS/SD ..... 17.00  
 Verbatim SS/DD ..... 20.00  
 Elephant SS/DD ..... 20.00  
 Ultra Magnetics SS/DD ..... 18.00  
 Alien Voice Box II-D ..... 99.95

### ACTIVISION

Hero-D ..... 24.95  
 Pitfall II-D ..... 24.95  
 River Raid-D ..... 24.95  
 Decathalon-D ..... 24.95  
 Star League Baseball-D/T ..... 23.95  
 On-Field Tennis-D/T ..... 23.95

### AVALON HILL

Call for Items and Prices  
**BATTERIES INCLUDED**  
 Consultant-D ..... 69.95  
 Paperclip w/Spellpak-D ..... 84.95  
 Super Busscard II ..... Call  
 Home Inventory-D ..... 23.95  
 Recipe-D ..... 23.95  
 Audio/Video Cat-D ..... 23.95  
 Mail List-D ..... 23.95  
 Stamps-D ..... 23.95  
 B.T. 80 Card ..... Call  
 Home Pak-D ..... 37.95

### BRODERBUND

AE-D ..... 23.95  
 Bank Street Writer-D ..... 49.95  
 Chopfliper-D ..... 23.95  
 Drol-D ..... 23.95  
 Loderunner-D ..... 23.95  
 Operation Whirlwind-D ..... 27.95  
 Mask of the Sun-D ..... 27.95  
 Dr. Creep-D ..... 20.95  
 Gumball-D ..... 20.95  
 Bumping Bay-D ..... 20.95  
 Spelunker-D ..... 20.95  
 Stealth-D ..... 20.95  
 Whistler's Brother-D ..... 20.95

### CARDCO

Cardprint/B ..... 47.95  
 Cardco+G ..... 64.95  
 Cardboard/5 ..... 59.95  
 Cardkey ..... 39.95  
 Cassette Recorder ..... 37.95  
 Printer Utility-D/T ..... 19.95  
 Write Now-Cart ..... 34.95  
 Mail Now-D ..... 27.95  
 File Now-D ..... 27.95  
 Graph Now-D ..... 27.95  
 Spell Now-D ..... 27.95  
 LD-1 Printer ..... Call  
 LD-2 Printer ..... Call  
 LO-3 Printer ..... Call

### CBS SOFTWARE

Call for Items and Prices

### COMMODORE

Assembler-D ..... 39.95  
 Easy Finance I,II,III,IV-D ..... 19.95  
 Easy Calc-D ..... 34.95  
 Easy Mail-D ..... 19.95  
 Easy Script-D ..... 44.95  
 Easy Spell-D ..... 19.95  
 Logo-D ..... 57.95  
 The Manager-D ..... 39.95  
 General Ledger-D ..... 39.95  
 Accts. Rec-D ..... 39.95  
 Accts. Pay-D ..... 39.95  
 Magic Desk-Cart ..... 39.95  
 Inst. Soccer-Cart ..... 22.95  
 Magic Voice ..... 54.95  
 Suspect-D ..... 24.95  
 Cuthroats-D ..... 24.95  
 Simon's Basic-Cart ..... Call

### DYNATECH

Adventure Writer-D ..... 41.95  
 Codewriter-D ..... 69.95  
 Dialog-D ..... 41.95  
 Elf System-D ..... 41.95  
 Home File Writer-D ..... 41.95  
 Reportwriter-D ..... 41.95  
 Menuwriter-D ..... 34.95  
 Speedwriter-D ..... 49.95

### ELECTRONIC ARTS

Archon-D ..... 29.95  
 Pinball Construction-D ..... 29.95  
 M.U.L.E.-D ..... 29.95  
 Murder/Zinderneuf-D ..... 29.95  
 One On One-D ..... 29.95  
 Archon II-D ..... 29.95  
 Financial Cookbook-D ..... 37.95  
 Music Construction-D ..... 29.95  
 7 Cities Of Gold-D ..... 29.95  
 Standing Stones-D ..... 29.95

### EPYX

Dragons/Pern-D/T ..... 27.95

### EPYX (cont'd)

Oil Barons-D ..... 37.95  
 Pitstop II-Cart ..... 27.95  
 Puzzlemania ..... Call  
 Robots Of Dawn-D ..... 27.95  
 Summer Games ..... 27.95  
 Breakdance-D ..... 27.95  
 Barbie-D ..... 27.95  
 G.I. Joe-D ..... 27.95  
 Hot Wheels-D ..... 27.95  
 Impossible Mission-D ..... 27.95  
 World's Grest Baseball-D ..... 23.95

### FIRST STAR

Astrochase-D/T ..... 20.95  
 Bristles-D/T ..... 20.95  
 Flip-Flop-D/T ..... 20.95  
 Spy Vs. Spy-D ..... 20.95

### HANDIC

64 Forth-Cart ..... 29.95  
 64 Graf-Cart ..... 23.95  
 Stat 64-Cart ..... 23.95  
 Calc Result Easy-Cart ..... 34.95  
 Calc Result Adv.-Cart ..... 69.95  
 The Diary-Cart ..... 23.95  
 The Tool-Cart ..... 29.95  
 Bridge Cart ..... 29.95

### HESWARE

Hesware ..... Call

### INSTA (CIMMARON)

Insta-Writer-Cart ..... 39.95  
 Insta-Mail-D ..... 24.95  
 Insta-File-D ..... 49.95  
 Management Combo ..... 64.95  
 Insta-Calc-Cart/D ..... 31.95  
 Insta-Graph-D ..... 24.95  
 Insta-Vestor-D ..... 31.95  
 Insta-Speed-D ..... 99.95  
 Insta-Music-Cart/D ..... 79.95  
 Invest Combo ..... 74.95  
 Word Craft-D ..... 54.95

### INFOCOM

Deadline-D ..... 29.95  
 Enchanter-D ..... 23.95  
 Infidel-D ..... 24.95  
 Planetfall-D ..... 34.95  
 Sorcerer-D ..... 34.95  
 Starcross-D ..... 29.95  
 Suspended-D ..... 29.95  
 Witness-D ..... 34.95  
 Sea Stalker-D ..... 24.95

### KOALA

Gibson Light Pen ..... 69.95  
 Koala Touch Tablet-D ..... 69.95  
 Koala Touch Tablet-C ..... 74.95  
 Muppet Learn Keys-D ..... 54.95

Disk T. Cassette Cart - Cartridge

### MICROFUN

Death in the Caribbean-D ..... 27.95  
 Dino Eggs-D ..... 27.95  
 The Helst-D ..... 23.95  
 Boulder Dash-D ..... 23.95  
 Short Circuit-D ..... 23.95

### MICROPROSE

Floyd/Jungle-D ..... 23.95  
 Hellcat Ace-D/T ..... 23.95  
 NATO Commander-D ..... 23.95  
 Solo Flight-D/T ..... 23.95  
 Spiffire Ace-D/T ..... 23.95  
 Air Rescue-D/T ..... 23.95  
 Challenger-D/T ..... 23.95  
 F-15 Strike Eagle-D ..... 23.95

### MISCELLANEOUS

Ken Uston's Blackjack-D ..... 49.95  
 Quick Brown Fox-D/Cart ..... 34.95  
 Ultima III-D ..... 41.95  
 Flight Simulator II-D ..... 37.95  
 Night Mission/Pinball-D/T ..... 20.95  
 Home Accountant-D ..... 49.95  
 Step By Step-D/T ..... 44.95  
 Barron's Sat.-D ..... 67.95  
 Telear 64-Cart ..... 37.95  
 Castle Wolfenstein-D ..... 20.95  
 MasterType-D/Cart ..... 27.95  
 Aztec-D ..... 27.95  
 Miner 2049er-Cart ..... 27.95  
 Strip Poker-D ..... 23.95  
 Astro Chase-D/T ..... 20.95  
 Flip Flop-D/T ..... 20.95  
 Beyond Wolfenstein-D ..... 23.95  
 Sam-D ..... 41.95  
 Mae Assembler-D ..... 49.95  
 Jupiter Mission-D ..... 34.95  
 Barron-D ..... 37.95  
 Tycoon-D ..... 37.95  
 Millionaire-D ..... 27.95  
 Kwik-Load-D ..... 16.95  
 Sargon III-D ..... 34.95  
 Air Rally-D ..... 20.95  
 Graphics Basics-D ..... 23.95  
 Hes Games-D ..... 23.95  
 Multiplan-D ..... 69.95  
 Omniview/Spell-D ..... 41.95  
 Bruce Lee-D/T ..... 23.95  
 Manticore-D ..... 27.95  
 Meridian III-D ..... 27.95  
 Mastering The Sat-D ..... 104.95  
 Hes Forth-Cart ..... 31.95  
 Pogo Joe-D/T ..... 20.95  
 Movie Maker-D ..... 41.95  
 Typing Tutor III-D ..... 34.95  
 Space Taxi-D ..... 20.95  
 Vip Terminal-D ..... 41.95  
 Doodle-D ..... 27.95  
 Superbase 64-D ..... 69.95

### PARKER BROTHERS

Forgger II-Cart ..... 34.95  
 Gyrrus-Cart ..... 34.95  
 James Bond-Cart ..... 34.95  
 Popeye-Cart ..... 34.95  
 O'Bert-Cart ..... 34.95  
 Star Wars-Cart ..... 34.95  
 Montezuma's Revenge-C ..... 34.95

### SCARBOROUGH

MasterType-D/Cart ..... 27.95  
 Net Worth-D ..... 54.95  
 Songwriter-D ..... 27.95  
 Run For The Money-D ..... 27.95

### SCHOLASTIC

Call for Items and Prices

### SCREENPLAY

Call for Items and Prices

### SEGA

Call for Items and Prices

### SIERRA ON-LINE

Championship Boxing-D ..... 20.95  
 Dark Crystal-D ..... 27.95  
 Frogger-D/T ..... 23.95  
 Homeword Speller-D ..... 34.95  
 Homeword-D ..... 49.95  
 Mission Astroid-D ..... 20.95  
 Oil's Well-D ..... 23.95  
 Quest for Tires-D ..... 23.95  
 Threshold-D ..... 27.95  
 Time Zone-D ..... 74.95  
 Ultima II-D ..... 41.95  
 Ultima I-D ..... 23.95  
 Ulysses-D ..... 27.95  
 Wizard/Princess-D ..... 22.95  
 Homeword w/Speller-D ..... 69.95

### SPINAKEE

Adventure Creator-Cart ..... 22.95  
 Aerobics-D ..... 27.95  
 Alf in the Color Caves-C ..... 22.95  
 Alphabet Zoo-Cart ..... 22.95  
 Delta Drawing-Cart ..... 22.95  
 Facemaker-Cart ..... 22.95  
 Fraction Fever-Cart ..... 22.95  
 Kids on Keys-Cart ..... 22.95  
 Kidwriter-D ..... 22.95  
 Snooper #1-D ..... 22.95  
 Snooper #2-D ..... 22.95  
 Story Machine-Cart ..... 22.95  
 Trains-D ..... 22.95  
 Grandma's House-D ..... 19.95

Hundreds of Items available for the CBM 64, please call

### SSI

50 Million Crush-D ..... 27.95  
 Battle/Normandy-D/T ..... 27.95  
 Combat Leader-D/T ..... 27.95  
 Computer Baseball-D ..... 27.95  
 Cosmic Balance-D ..... 27.95  
 Eagles-D ..... 27.95  
 Fortress-D ..... 23.95  
 Germany 1985-D ..... 41.95  
 Knight/Desert-D/T ..... 27.95  
 Professional Golf-D ..... 27.95  
 RFD 1985-D ..... 23.95  
 Ringside Seat-D ..... 27.95  
 Tigers in the Snow-D ..... 27.95  
 Baltic 85-D ..... 23.95  
 BroadSides-D ..... 27.95  
 Computer Football-D ..... 27.95  
 Questron-D ..... 27.95

### SYNAPSE

Blue Max-D/T ..... 23.95  
 Dreibr-D/T ..... 23.95  
 Fort Apocalypse-D/T ..... 23.95  
 Necromancer-D/T ..... 23.95  
 New York City-D/T ..... 23.95  
 Quasimodo-D/T ..... 23.95  
 Relax Stress Reduction Sys. ..... 79.95  
 Stam-Ball-D/T ..... 23.95  
 Zaxxon-D/T ..... 27.95  
 Zeppelin-D/T ..... 23.95

### TIMETWORKS

Accounts Payable/Checkwriter-D ..... 41.95  
 Accounts Receivable/Invoice-D ..... 41.95  
 Cash Flow Management-D ..... 41.95  
 Data Manager 2-D ..... 34.95  
 Data Manager-D/T ..... 19.95  
 Dietron-D/T ..... 19.95  
 Dungeon Algebra Dragon-D/T ..... 19.95  
 Electronic Checkbook-D/T ..... 19.95  
 General Ledger-D ..... 41.95  
 Inventory Management-D ..... 41.95  
 Money Manager-D/T ..... 19.95  
 Payroll Management-D ..... 41.95  
 Evelyn Woods-D ..... 49.95

### TRILLIUM

Amazon-D ..... 22.95  
 Dragonworld-D ..... 22.95  
 Fahrenheit 451-D ..... 22.95  
 Rendezvous w/Rama ..... 22.95  
 Shadowkeep-D ..... 22.95

### WAVEFORM

Call for Items and Prices

### WINDHAM CLASSICS

Below the Root-D ..... 19.95  
 Gulliver's Travels-D ..... 19.95  
 Swiss Family-D ..... 19.95  
 Wizard of Oz-D ..... 19.95

To Order Call Toll Free  
**800-558-0003**      **414-351-2007**

NEW LOWER PRICES  
*Computability*™  
 NO SURCHARGE FOR MASTERCARD OR VISA  
 Circle 78 on Reader Service card.

Est. 1982

ORDERING INFORMATION: Please specify system. For fast delivery send cashiers check, money order or direct bank transfers. Personal and company checks allow 2 weeks to clear. Charges for COD are \$3.00. School Purchase Orders welcome. IN CONTINENTAL USA, include \$3.00 shipping per software order. Include 3% shipping on all Hardware orders, minimum \$3.00. Mastercard & Visa please include card # and expiration date. WI residents please add 5% sales tax. HI, AK, FPO, APO, Canadian orders - add 5% shipping, minimum \$5.00. All other foreign orders, please add 15% shipping, minimum \$10.00. All goods are new and include factory warranty. Due to our low prices, all sales are final. All defective returns must have a return authorization number. Please call 414-351-2007 to obtain an RA# or your return will NOT be accepted for replacement or repair. Prices and availability are subject to change without notice.

COMPUTABILITY  
 P.O. Box 17882  
 Milwaukee, WI 53217

ORDER LINES OPEN

Mon-Fri 11 AM - 7 PM CST  
 Sat 12 PM - 5 PM CST

store) significantly reduces the noise level.

### What It Prints

You should remember that you won't be able to print out *graphics* characters with the DPS-1101; since the printing depends on the characters contained on the daisywheel itself, you're limited to printing out *only* those characters. If your primary use of a line printer is listing the contents of your programs replete with graphics characters, you'll need a dot-matrix printer. Optional print wheels are available for printing out foreign languages, but I don't know of any graphics wheels available.

Some of the 1101's more impressive print features are the ability to underscore, backspace during printing (to add an accent mark over a character), shadow-print and multi-strike a character for emphasis. Additionally, printing subscripts and superscripts is also possible.

The internal DIP switches control a number of functions, depending on how they are set. The options that are controllable via these switches include auto linefeed on/off, CBM or standard ASCII coding, paper length, line spacing, international character sets and device # assignment. The 1101's accompanying owner's manual provides complete information on configuring these switches.

The 1101 also has a built-in RAM buffer that can store and hold up to 2K. What this means, simply, is that you don't have to wait for the printer to catch up to the computer; the extra information is held in the buffer until the printer gets to it, thereby freeing up the computer for another use while printing continues. Once again, this isn't a major feature, but it *is* nice to have.

And now, the bottom line: What's its cost? At the time of this writing, the price is *tentatively* set for \$399.95, with some of the larger stores discounting it to some degree. My sources tell me that you'll probably be able to buy a DPS-1101 at discount department stores and toy chains for about \$300.

No matter how good or how reasonable the 1101 is, not everyone needs or wants a letter-quality printer. For those of you who fall into that group, Commodore has also released two nice dot-matrix models (see sidebars). ®

## AUTOMATED LAB TESTS BUILDING MONITOR SYSTEMS HOME SECURITY

# DIADAC 1

### DATA ACQUISITION AND CONTROL BOARD for Commodore 64

#### DIADAC 1 FEATURES:

- ✓ **16 CHANNEL ANALOG INPUT: 0-10 VOLTS**  
12 BIT RESOLUTION INTERNAL REFERENCE
- ✓ **ANALOG OUTPUT: 0-10 VOLTS**  
PRECISION REFERENCE DOUBLE BUFFERED
- ✓ **CMOS REAL TIME CLOCK CALANDER**  
BATTERY BACKUP CRYSTAL CONTROLLED
- ✓ **12 CHANNEL TTL DIGITAL INPUTS**
- ✓ **12 CHANNEL TTL DIGITAL OUTPUTS**

COMPLETE WITH MANUAL AND SOFTWARE DRIVER \$249.00

## DOUBLE COLUMN WORD PROCESSOR

Copy-Writer is a full feature word processor that provides all the features normally expected in the expensive packages. In addition, Copy-Writer provides more! DOUBLE COLUMNS in the direct printout mode offer a unique capability found only in \$10,000 word processors. Eliminate the cutting and pasting required for newsletters, proposals, reports; Copy-Writer does it for you. Copy-Writer also features embedded text margin control, embedded text page control, global edit capabilities, printer code capability, "cut and paste" on screen, auto page numbers, footers, headers, and much

more. Copy-Writer can record text data on disk as either standard or straight ASCII data files. Printouts can be made formatted or raw (unformatted) with all control codes printed. Copy-Writer even has the ability to merge disk data files in order to print form letters.

Copy-Writer can operate with SCREENMAKER, 80 Column Video Board to provide a full professional system.

This is actual text created on a C64 with Copy-Writer and printed on an EPSON printer. The double column print mode was used.

**Copy-Writer \$79.00**

## PASCAL FOR C64!

KMMM Pascal is based on Jensen and Wirth Pascal. It complies to true machine language for ultimate performance. The package includes an Editor/Compiler, an Editor, a true Compiler and a Translator. In addition, a library of sample programs and goodies are included!

**KMMM PASCAL \$99.00**

**cgis**  
**MICROTECH**

P.O. Box 102  
Langhorne, PA 19047  
215-757-0284

Address all author correspondence to  
Tom Benford, PO Box 4125, Osbornville,  
NJ 08723.

[www.Commodore.ca](http://www.Commodore.ca)  
May Not Reprint Without Permission

# DISK TIPS FOR BEGINNERS

BY KARL T. THURBER, JR.

*This article provides you with some practical tips to help you better manage your disks.*

This article will concentrate on the disks themselves rather than technical topics relating to the disk drive. I'll present a potpourri of hints and tips regarding disk handling, cataloging, file naming and so on that you can use for more logical, efficient and effective disk management.

## Disk Handling

1. *Disk IDs.* Give your disks meaningful ID characters (the two-digit identifier placed in the upper right-hand corner of the disk directory). Doing this will help you in cataloging, indexing, storing and retrieving your disks.

For example, you might assign GA to your first game disk, UA to your first utility disk and so on. Start with your first disk and keep up with the system you develop as your collection grows. (Table 1 shows a suggested disk cataloging scheme for general home use. The point is: Start with an expandable cataloging system of your choice and stick with it!)

To avoid confusing your disk drive with more than one of the same ID names, make sure each ID you assign is unique. To better ensure uniqueness, assign characters such as +, #, - and % as one of the ID characters—in fact, assign any character that the 64 keyboard will let you type in

and that the 1541 drive will accept!

Also, note that although there are utility programs available that allow you to change the disk ID after you have programs on the disk, these programs should be used carefully and should never be applied to any protected commercial disks, which could be ruined.

2. *Sending your disks by mail.* If you exchange disks with others or send disks to authors of magazine articles for their programs, it's a nice courtesy to first format your disk. Doing this will save the author some time and allow you to set up the disk name and ID as you want it. Enclose your disk in a regular disk mailer, send it first class and mark it with such cautions as "Do Not Bend" and "Magnetic Media—Do Not X-Ray." Be sure to affix sufficient postage: 37 cents is the minimum for a single disk.

3. *Use of write protectors.* I always use these tape strips, having found that they provide very inexpensive insurance against write accidents that could instantly wipe out an irreplaceable program or even an entire disk.

Keep a protector covering the hole on the side of your disks whenever you're not actually writing to them, and especially when you loan out your disks to others. Without the protector installed, one mix-up of source and

destination disks when copying programs could mean curtains for your cherished programs!

4. *Directory printouts.* If you have a printer, it's a good idea to make a directory printout of each disk you own. You may punch holes in these directories and keep them on 8½- × 11-inch sheets of paper in a looseleaf binder or cut up and place them loose in the disk's envelope or taped to its outer surface. If you use soft plastic disk-holder pages, you may dispense with the envelope and insert the directory in the small transparent pocket to the left of the disk pocket.

To print out the directory, use the following sequence in Direct mode:

```
LOAD"$",8:OPEN4,4:CMD4:LIST
```

When printing is complete, clear the printer by typing:

```
PRINT#4:CLOSE4
```

5. *Disk organization.* For the most part, program collections tend to "just grow," with neither rhyme nor reason. Try to keep only one type of program on a disk; if you don't separate different types of programs, they will ultimately be very difficult to sort out!

Once a disk is nearly full, you may want to go back and rename program titles that are unclear, scratch or erase old versions of programs, group sim-

**RUN It Right**

C-64



# MICRO-SYS DISTRIBUTORS.

## **commodore**

### SOFTWARE FOR C-64

#### Business

Multiplan (Spreadsheet) .....	\$ 63.00
Calc Result (Advanced) .....	\$ 79.95
Superbase 64 .....	\$ 75.00
Mirage Concepts (Data Base) .....	\$ 89.00
Mirage Concepts (Word Processor) (40/80 column & 30K Dictionary) ..	\$ 89.00
B.I. Paperclip W/SPELLPAC (W/P) ..	\$ 85.00
Home Accountant (Continental) .....	\$ 45.00
Tax Advantage (Continental) .....	\$ 35.00
Info Designs G/L .....	\$ 19.95
Southern Solutions Accounting G/L, A/R, A/P, P/R, I/M .....	\$ 49.95
Tri Micro Accounting C64 & Plus 4 G/L, A/R, A/P, P/R, I/M .....	\$ 49.95
Smart64 Term + 3 .....	\$ 39.95
Hellcat Ace (game) .....	\$ 25.00
Solo Flight (game) .....	\$ 25.00

#### Utilities

Printer Utility Program (Cardco) ..	\$ 19.95
Disk Utility Program (Fast copy, File copy, Disassembler, For 1541) ..	\$ 49.95
Bits and Pieces (Backup & Utility, Screen Dump & More for MSD Drive) .....	\$ 49.95
Simon's Basic .....	\$ 39.95
80 Column Expander (Cartridge) ..	\$ 60.00
64 Relay Cartridge .....	\$ 45.00
Oxford Pascal .....	\$ 69.95
Tool 64 (Handic) .....	\$ 39.95
Graf 64 (Handic) .....	\$ 39.95
Stat 64 (Handic) .....	\$ 39.95
Forth 64 (Handic) .....	\$ 39.95

### ACCESSORIES

MSD Super Disk Drive (single) .....	\$ 349.00
MSD Super Disk Drive (dual) .....	\$ 575.00
Hayes Smart 300 Modem .....	\$ 229.00
Vic 1530 Datasette .....	\$ 65.00
Cardco Datasette .....	\$ 55.00
Cardco Numeric Key Pad .....	\$ 39.95
Alien Voice Box .....	\$ 95.00
When I'm 64 (Voice Box Sings) ..	\$ 25.00
Voice Box Dictionary .....	\$ 25.00

B.I. 80 Column Display .....	\$ 159.95
1541/Flash .....	\$ 89.95
Sock It To Me (For 8032) .....	\$ 29.00
6420 Westridge Modem (Auto Answer/Auto Dial) .....	\$ 89.95
Telearning (Auto Answer/Auto Dial) Modem With software .....	\$ 95.00
CBM 4023 Ribbons .....	\$ 10.95
CBM 1526 Ribbons .....	\$ 10.95
CBM 8023P Ribbons .....	\$ 8.75
CBM 6400 Ribbons .....	\$ 8.75
LQ1 Ribbons .....	\$ 8.75
Diablo Daisy Wheel .....	\$ 13.95
Abati Daisy Wheel .....	\$ 13.95
Flip N' File 10, 15, 25, 50 .....	Call
Power Strips (Surge Protector) .....	\$ 49.95
Computer Glow Care Kit .....	\$ 10.95
Disk Drive Cleaning Kit .....	\$ 10.95

### MONITORS

Panasonic TR120 (Amber) For Apple or IBM Computers .....	\$ 156.00
Green & Amber (For Apple & IBM) ..	\$ 85.00
RGB Monitor Cable: ET-101C (Apple) .....	\$ 33.80

### INTERFACES

BussCard II (Batteries Included) IEEE, Cartridge Slot, Basic 4.0 ..	\$ 159.95
BussCard Printer Cable .....	\$ 29.95
SuperBox 64 (Handic) IEEE, Reset, 3-Slot .....	\$ 139.95
Interpod (Intelligent IEEE & RS-232) .....	\$ 139.95
Cardco + G Parallel Interface .....	\$ 79.95
Cardco B Parallel Interface .....	\$ 49.95
The Connection (by Tymac) (Commodore Graphics + 2K Buffer) Epson, Gemini, Okidata, Panasonic .....	\$ 95.00
Turbo/GT (Telesys) With optional 16K or 32K Buffer .....	\$ 89.95
Vic Switch (Handic) .....	\$ 149.95
ADA1800 IEEE to Centronics .....	\$ 149.95
Pet to IEEE Cable .....	\$ 39.00
IEEE to IEEE Cable .....	\$ 49.00
Networking For C-64 & CBM .....	Call

### LETTER QUALITY PRINTERS

Abati (20 CPS) W/Interface .....	\$ 475.00
----------------------------------	-----------

### DOT MATRIX PRINTERS

Smith Corona Fastex 80 (80 CPS) ..	\$ 259.00
Smith Corona 100 (120 CPS) .....	\$ 315.00
Smith Corona 200 (140 CPS) .....	\$ 456.00
Smith Corona 300 (140 CPS, 15in)	\$ 589.00

### BUSINESS SOFTWARE — B128

Superscript II (40K Dictionary) .....	\$ 199.00
Superbase (Data Base) .....	\$ 199.00
Calc Result .....	\$ 199.00
Complete Accounting System From Software Design (G/L, A/R, A/P, P/R, I/M) .....	\$ 375.00

### BUSINESS SOFTWARE — 8032/8096

WordPro 4+ or 5+ .....	\$ 225.00
Calc Result .....	\$ 199.95
SuperBase (8096 only) .....	\$ 225.00
Complete Accounting System From Software Design (G/L, A/R, A/P, P/R, I/M) .....	\$ 375.00

### TERMS

Orders under 50.00 add 10.00 Handling fee  
MasterCard, VISA, Money Order, Bank Check  
COD (add 5.00)  
Add 3% For Credit Cards

All Products In Stock Shipped Within 24 Hours

F.O.B. Dallas, Texas  
All Products Shipped With Manufacturers  
90 Day Warranty

PRICES ARE SUBJECT TO  
CHANGE WITHOUT NOTICE.

## AUTHORIZED WHOLESALE DISTRIBUTOR FOR ALL COMMODORE BUSINESS MACHINE PRODUCTS.

BECOME A COMMODORE DEALER. AND SEE WHY IT'S THE BEST DEAL IN NEW COMPUTER PRODUCTS.

FOR PRODUCT CATALOG & PRICE LIST WRITE OR CALL MICRO-SYS DISTRIBUTORS.

Circle 212 on Reader Service card.

ORDERS ONLY CALL  
1-800-527-1738

INQUIRIES & INFORMATION PLEASE CALL  
1-214-231-2645

# Micro-Sys

# D I S T R I B U T O R S

641 Presidential Drive • Richardson, Texas 75081 • 9:30 a.m.-6:30 p.m. (Mon.-Fri.) • 10:30 a.m.-2:30 p.m. (Sat.)

# C-64 / VIC-20 RS-232 INTERFACE

\$ 39 95

MFJ-1238

Provides RS-232 voltage conversion for C-64/VIC-20 serial port. Use RS-232 printers, modems, speech synthesizers, other peripherals. Switch reverses transmit/receive lines. Use as null modem. 25 pin RS-232 connector. Plugs into user's port. 2 1/4 x 2 1/4 inches.



# MODEM

\$ 49 95

MFJ-1237

High performance Texas Instrument single chip design. For C-64/VIC-20. Plug into user port. For single or multiline phones. Plugs into phone base. 300 baud. Direct connect. Originate/Answer Full duplex. Carrier detect LED. Crystal controlled. Includes Basic listing of Terminal Program.



Order from MFJ and try it. If not delighted, return within 30 days for refund (less shipping). One year unconditional guarantee. Order yours today. Call toll free 800-647-1800. Charge VISA, MC. Or mail check, money order.

**CALL TOLL FREE ... 800-647-1800**

Call 601-323-5869 in MS, outside continental USA.

**MFJ ENTERPRISES INCORPORATED**

921 Louisville Road, Starkville, MS 39759

Circle 325 on Reader Service card.

## HOT ACCOUNTS™

The most highly acclaimed bookkeeping system for the Commodore 64®



Superb! An exceptional program that outshines all others. RUN Magazine, Nov. 1984

**HOT ACCOUNTS™** teaches you bookkeeping as it automatically performs dozens of full-service accounting functions. It is a complete system that will instantly organize your records and receipts and supply charts, formal statements, and budget information. Now your records can be accurate, up to date and confidential. ■ Tracks charge cards, checkbooks, all transactions ■ Requires no prior knowledge of accounting ■ Home or small business ■ Improves your financial image ■ Cost less than 1 hour with a C.P.A.

**HOT ACCOUNTS™** Bookkeeping System on Diskette

For **RUSH** delivery, send check or money order for \$64.95 to:

Computer Ed. Software  
1002 Brookes Ave. W., Ste 100  
San Diego, CA 92103

Credit card orders, call toll-free  
1-800-621-0852 ext. 238

VISA MASTERCARD

**P.S. Use HOT ACCOUNTS™ to do your taxes and the price is tax deductible!**

**BONUS OFFER!** Order before March 15th and receive a full featured, 60 function word processing & 3-D business graphics package as our **FREE** gift to you.

Program Classification	First Disk ID in Classification
Games (arcade/action)	GA
Games (fantasy/adventure)	FA
Games (strategy/simulation)	SA
Educational	EA
Business (home management, finance)	BA
Programming—Languages	LA
Programming—Tutorial	TA
Utilities	UA
Demo	DA
Music	MA
Miscellaneous	XA

**Table 1.** This suggested disk-cataloging scheme can be modified as desired to suit your particular needs.

ilar or related programs together and so on. On disks where there are many different programs or groups of programs, you can help organize things by placing dummy directory entries on the disk at key points to serve as handy dividers.

You could accomplish this by giving a filename (such as “ -- -- Board Games -- --”) to a nonexistent program, then saving it. That will fool the disk drive into treating the empty program as a real one.

Simpler dividers can be used to merely show where one group of programs ends and another group begins; these might consist of only dashes (for example “ - - - - -”). Note that, as with any other filename, you can use no more than 16 characters, and no two filenames can be identical.

**6. Filename tips.** You can use unusual (but easily remembered) characters such as ! or % for the complete filename of frequently used programs, such as wedges and loaders. For example, I have renamed the familiar C-64 wedge as ! in my collection, and this saves me some typing each time I use the wedge.

Another way to speed up entry is to assign numbers as the first character of filenames for frequently used programs. For example, if you want to speed up loading of the C-64 wedge but don't want to rename it with an exclamation point (!), then rename it as 1 C-64 WEDGE.

You can then load the wedge by simply typing in 1\* rather than the full filename, making use of the \* for pattern matching. Reserve the digits 0-9 for this technique. To avoid possibly loading in the wrong program from your disk, be

careful not to assign a number as the first digit of any other program.

**Bonus tip:** Note that, as with tape loading, you can type a shifted run/stop to automatically load and run the selected program. To use this feature, simply type in LOAD “PROGRAM”, 8; taking care to add the colon. Now, instead of hitting the return key, press the shift and run/stop keys together. This will load and automatically execute your program.

**7. Menu generators and other disk utilities.** Put a menu program on the disks that you create, to facilitate accessing programs from the disk. This can be a real time-saver and can minimize confusion in booting up complicated sets of programs.

For example, some menu-generator programs ignore sequential files (which you don't load in the usual sense, anyway), and others ignore filenames that are indented with a space as the starting character (thus ignoring subprograms loaded from the disk's main programs). Still other menus ignore the first program on the disk, thereby ignoring the menu itself if it is at the top of the directory.

The “C64.Menu” program on the Commodore Disk Bonus Pack, for example, is an excellent menu generator that alphabetizes the directory and ignores indented filenames and sequential files; it creates a very short sequential directory file, which it reads each time the program is run. If you indent this menu's filename, saving it on your disk as “ Menu,” it will ignore itself in building the disk's menu. If you make it the very first program on the disk, you can boot up the disk by simply typing: LOAD “\*”, 8.

Other useful menu programs appear from time to time in the various Commodore-oriented magazines, as well as in catalogs from the Toronto PET User's Group and Public Domain, Inc.

**Bonus tip:** If you want to add a menu to a disk that's nearly full, you'll have to move the first program to another spot on the disk. To do this, you must first use the Copy command, as described in the *1541 User's Manual* (p. 16 in my book), to give the program a different, temporary name, such as "Temp" or "XX," when moving it down the directory.

Following this, scratch (erase) the original file to make room for your menu at the top of the directory.

Next, reassign the temporary file with its original name.

Finally, save the Menu program; it should appear as the first listing on the directory. Figure 1 shows a sample disk directory that contains a menu generator as the first program on the disk and makes use of program dividers as previously discussed.

Many C-64 users also find it useful to include various other utilities as one of the first programs on each disk they create. Inclusion of the C-64 wedge/DOS 5.1 or other disk-management programs can be a conve-

```

0      "DEMO - DISK TIPS" DA 2A
5      "MENU" PRG
1      " - - - UTILITIES - - - - " PRG
1      "C-64 WEDGE" PRG
4      "DOS 5.1" PRG
4      "DISK ADDR CHANGE" PRG
1      " - - - GAMES - - - - - " PRG
1      "SPACEDUEL BOOT" PRG
5      "SPACEDUEL" PRG
1      "SPIKE BOOT" PRG
18     "SPIKE" PRG
1      " - - - BUSINESS - - - - - " PRG
10     "FINANCIAL CALCS" PRG
12     "INVESTMENT.ALT" PRG
1      " - - - M/L BOOT - - - - - " PRG
3      "MACH LANG BOOT" PRG
1      " - - - - - NOTE - - - - - " PRG
1      " - - - SEE TEXT FOR - - - " PRG
1      " - - - LAST PROGRAM - - - " PRG
1      " - - - - - ABOVE - - - - - " PRG
592 BLOCKS FREE.

```

READY.

**Figure 1.** This sample disk directory depicts a well-organized disk, which is accessed by a simple public domain menu, or directory boot. Machine language programs are indented to show that they are loaded via other programs. The last program on the disk, "MACH LANG BOOT," may be used to load machine language games and utilities, as described in Listing 1.

### Listing 1. A simple method of loading machine language (M/L) programs that must not be relocated in memory.

```

10 REM ****{2 SPACES}MACHINE LANGUAGE BOOT
****
20 REM -- USE THIS BOOT AS AN EXAMPLE TO{10
SPACES}LOAD M/L GAMES AND UTILITIES
30 REM -- INSERT PROG. NAME IN LINE 120{11
SPACES}AND STARTING SYS IN LINE 160
40 REM -- SAVE BOOT AS "PROGNAME BOOT"
50 REM -- CALL M/L PROGRAM " PROGNAME",{11
SPACES}INDENTING NAME ONE SPACE
60 REM
70 REM *****
80 POKE53280,0:POKE53281,0
90 PRINT"{SHT CLR}{CTRL 2}{11 CRSR DNS}{13
SPACES}PLEASE WAIT..."
100 REM -- INSERT M/L PROGRAM NAME IN{14 SP
ACES}LINE 120 INDENTING ONE SPACE
110 PRINT"{HOME}{2 CRSR DNS}":PRINT"LOAD ";
CHR$(34);
120 PRINT " PROGNAME";
130 PRINTCHR$(34);CHR$(44);"8";CHR$(44);"1"
140 REM -- INSERT M/L PROGRAM STARTING{13 S
PACES}SYS IN LINE 160
150 PRINT"{4 CRSR DNS}SYS ";
160 PRINT "99999"
170 PRINT"{HOME}"
180 POKE198,2:POKE631,13:POKE632,13

```

Circle 318 on Reader Service card.



900 "N" AVE.  
P.O. BOX 454  
PLANO, TEXAS 75074

**COMPARE  
OUR LOW PRICES  
ON POPULAR COMPUTER  
ACCESSORIES, MONITORS  
AND PERIPHERALS by MTR**

8401 UHF/VHF TV MONITOR TUNER **\$85.85**  
EV-2114 COMPOSITE COLOR MONITOR  
Green Screen Switchable. 6 Front  
Controls. 13" Diag. picture **\$229.95**  
EV-1251C 11" 80 Col. Composite Green  
or Amber. Swivel included **\$134.95**

**SWIVEL BASES FOR MONITORS.** Tilt, Turn &  
Lock. Standard **\$19.95**, Large **\$25.95**  
DATA CASSETTE for C-64 and VIC-20.  
Ready to connect **\$39.95**

**CABLES - 6' PRINTER/DRIVE** for  
Commodore. 6 pin DIN each end. **\$9.95**

**3' UNIVERSAL MONITOR CABLE.** 5 pin  
DIN to 4 RCA plugs & adapter **\$7.95**

**DUST COVERS.** Brown vinyl with cloth backing  
For Commodore Computers **\$3.95**  
For Commodore Disk Drives **\$3.95**

**\$2.00 BRINGS YOU OUR FULLY ILLUSTRATED  
BROCHURE BY FIRST CLASS MAIL,  
WITH \$2.00 REFUND CERTIFICATE—GOOD  
ON ANY ORDER. SEND TODAY!**

Prices do not include shipping, handling or insurance. Ask for complete copy of order terms.

**E MART, INC.** Dept. "R", P.O. Box 454  
Plano, Texas 75074

ORDER TOLL FREE **1-800-631-1112**  
IN TEXAS CALL 214-423-4199





Circle 334 on Reader Service card.

### •• WORD GENIE •• C-64 WORD PROCESSOR

USER FRIENDLY WITH:

- Help screens
- Simple text commands
- Sample letter
- Menu driven

FEATURES:

- Disk Utility
- Printer commands
- Headings & Footnotes
- Double, Triple spacing
- Right justify
- Centering
- Page numbering
- Margin control
- Columns (tabs)
- Word search
- Merge files

IDEAL FOR:

- Personal letters
- Themes & Reports
- Business & Form letters
- YOU

Priced at only

**\$39.95**

(Disk only - shipping included)

Send check or money order to:

**GENIE SOFTWARE**

P.O. BOX 416 DEPT. R.

MALTA, OHIO 43758

Ohio residents please add \$2.20 sales tax.

nient time-saver and avoids unnecessary disk-flipping when doing file maintenance on the disk.

Note also in Figure 1 that you can insert explanatory notes or reminders in the directory, in the last four filenames. Also, if you use a menu program such as Commodore's "C64.Menu," which alphabetizes the menu screen (in ASCII-code order), and you also use file dividers, these file dividers will be out of place on the menu screen since they will be alphabetized to appear ahead of the filenames, which start with letters.

8. *Changing drive address.* If you own two disk drives and typically use the second drive for data files, place the Disk Address Change utility (contained on the demo/test disk included with your 1541 disk drive) on each of your data disks. Turn on the computer and the drive that's to have its device number changed (usually to #9), insert the data disk, load in the Disk Address Change program and change the device number to 9. Turn on the other drive (#8), insert the program disk, load it into the computer, and you're ready to go without having to switch any disks.

Of course, you can eliminate this by permanently changing the device num-

ber of your second drive, but it's not within the realm of this article to explain how to do this.

9. *Testing disks before use.* It's a good idea to test each box of disks you purchase as soon as you buy them to spot any bad disks early on. Formatting new disks as soon as you receive them will help in securing warranty replacement adjustments, help you to have ready-to-use disks available at all times and will help prevent the disappointment of discovering a bad disk when it's the last one you have on hand. To avoid doing twice as much work, develop a disk- and ID-naming file plan, and format these disks using this system.

10. *Drives: Transport with care!* Whenever transporting your disk drive, treat it gingerly, ensuring that it is not subjected to extremes of heat or cold. Maintaining proper alignment on the 1541 is a classic problem, and isn't helped by unnecessary jarring and vibration. Newer 1541s come with a cardboard Head Vibration Protector, which looks like a square cardboard disk. You should insert this protector into the drive whenever it is in transit.

Alternatively, you can probably achieve the same protection by insert-

ing a discarded disk or cleaning disk jacket into the drive when moving it about.

11. *Disk file maintenance.* I've already mentioned that understanding and using the files contained on your disks will be less confusing if you logically structure the placement and naming of programs on each disk, grouping related files and programs together.

Also keep in mind, however, that if you have repeatedly scratched and re-saved programs, it's a good idea to periodically send the Validate command to the disk, so that the block-allocate map (BAM) updates. This allows your drive to tidy up and reorganize the disk and its directory. This will let you know how many free blocks remain on the disk, so you'll get the most from the available disk space.

*Bonus tip:* Performing a Validate command on a disk containing random files may damage the files, so it's best not to do this on this type of file. Never try to use the Validate command on a commercial, copy-protected disk, and never attempt to place other programs on the same disk. If you do either of the above, you may wreck the disk and be unable to access the programs on it.


12. *Keep track of your disks.* As your disk collection grows, keeping track of what's where becomes of paramount importance.

Several methods of disk tracking can be used. You may simply print out each disk's directory on a letter-size sheet of paper, filing the sheets in a looseleaf notebook set up with dividers to indicate the types of programs involved.

Another method is to use a database or filing program to catalog your disks by category or type, disk name, ID and program title, or various combinations of these. Using such a program affords all of the advantages that a computerized database brings to any complex operation, and can even let you generate stick-on labels for your disks. However, entering data requires a good deal of typing, which can be tiresome to maintain on a regular basis.

Another approach is to make use of an automated disk cataloging system. The one I use regularly is Disk Master, a modified PET program that appeared in *RUN*'s February 1984 issue under the title "Disk Master Revisited," by Bob Baker. This program allows you to automatically read in

Circle 276 on Reader Service card.



FOR COMMODORE 64™ and VIC 20™

TAX AID TAX AID

# USE TAX AID™

TO PREPARE YOUR  
INCOME TAX RETURN

TAX AID

■ Developed by an experienced accounting firm, TaxAid is accurate, easy to use, and comes with a detailed manual. Your tax data is permanently stored on tape or disk. The cost is tax deductible and low cost yearly updates are available. ■ TaxAid is menu driven with advanced editing features and will prepare any IRS form 1040. Calculations are automatic and all tax tables including income averaging are built in. Results can be directed to the monitor or the printer.

**Call or write for complete brochure**

**TAX AID II**

FOR VIC 20 WITH 16K

**TAX AID III**

FOR COMMODORE 64

**Disk or Cassette: \$29.95 + 1.50 shipping**

**TAX AID SOFTWARE, INC.**  
606 E. Second Avenue  
Two Harbors, MN 55616  
(218) 834-5012 or 834-3600



TAX AID

TAX AID

TAX AID

TAX AID IS A TRADEMARK OF TAX AID SOFTWARE, INC.



# USER FRIENDLY PRICES! (BELOW WHOLESALE)

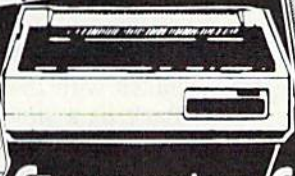


**commodore**  
VIC 1541  
DISC DRIVE  
**199<sup>95</sup>**

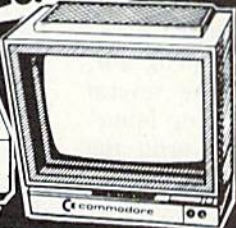


**commodore**  
64  
**189<sup>95</sup>**  
C-16 & C+4 IN STOCK!

2 FREE Software Cartridges  
with Purchase of Commodore 64  
Call for Details until 1/15/85



**commodore**  
NEW  
802  
PRINTER  
**559<sup>95</sup>**



**commodore**  
1702  
MONITOR  
**199<sup>95</sup>**



**commodore**  
SX64  
PORTABLE  
**559<sup>95</sup>**

ALL CARDCO PRODUCTS  
IN STOCK & ON SALE!



**Monitors**  
NEC ..... 199<sup>95</sup>  
Pan 1300 RGB & Comp. .... 289<sup>95</sup>  
EV 2114 14" Color to Green ..... 189<sup>95</sup>  
Amdek III ..... 124<sup>95</sup>  
BMC Green ..... 69<sup>95</sup>



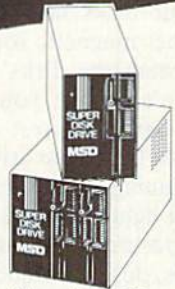
**Printers**  
Okimate ..... Call  
Gemini 10X ..... 239<sup>95</sup>  
Gemini 15X ..... 399<sup>95</sup>  
Silver Reed 400 ..... 249<sup>95</sup>  
Silver Reed 500 ..... 379<sup>95</sup>  
Silver Reed 550 ..... 409<sup>95</sup>  
Brother 15X ..... 379<sup>95</sup>  
Brother 25X ..... 514<sup>95</sup>  
Juki 6100 ..... 399<sup>95</sup>  
Panasonic 1090 ..... 249<sup>95</sup>

**Diskettes**  
BASF ..... 13<sup>95</sup>  
Sentinel Color ..... 16<sup>95</sup>  
Scotch ..... 14<sup>95</sup>  
Maxell ..... 14<sup>95</sup>



**Modems**  
Hayes-300 ..... Call  
Hayes-1200 ..... Call  
Comm 1650 ..... Call  
Hes II ..... Call

**Interfaces**  
Star ..... Call  
Tally ..... Call  
Microworld ..... 99<sup>95</sup>  
Cardco G+ ..... Call



**New! MS-DOS  
Super Disc II  
Now On Sale  
449<sup>95</sup>**  
Single Drive 249<sup>95</sup>



**Cassette Recorders**  
Comm CN-2 ..... 59<sup>95</sup>  
Third Party ..... 39<sup>95</sup>

**TO ORDER: CALL TOLL FREE—WE'RE PROUD OF OUR PRICES—SATISFACTION GUARANTEED**  
**1-800-631-1003**  
Check. Money Order. MC or VISA accepted.  
No additional charge for MasterCard and Visa.  
Call for shipping and handling information. NYS residents add applicable sales tax.  
All goods are new and include factory warranty. Dealers Welcome!  
Prices and availability are subject to change without notice.  
NYS residents must purchase service contracts on hardware in retail outlets.



Write  
Computer Centers of America  
31 East Mall  
Plainview, NY 11803

**We're Reliable! 18 years of service at these locations: Plainview, Syosset, New Hyde Park, West Hempstead, Huntington, Patchogue**

**ACCESS**  
Neutral Zone-D/T ..... 20.95  
Sprintmaster-D/T ..... 20.95  
Beachhead-D/T ..... 20.95  
Master Composer-D ..... 23.95

**ACCESSORIES**  
VIC Joysticks ..... Call  
Flip 'n' File-D ..... 20.95  
Flip 'n' File Cart ..... 20.95  
Joysensor ..... Call  
VIC Trakball ..... 37.95  
KRAFT Joystick ..... 15.95

**ATARISOFT**  
Battlezone-Cart ..... 24.95  
Centpede-Cart ..... 24.95  
Defender-Cart ..... 24.95  
Dig Dug-Cart ..... 24.95

Donkey Kong-Cart ..... 24.95  
Galaxian-Cart ..... 24.95  
Joust-Cart ..... 24.95  
Jungle Hunt-Cart ..... 24.95  
Moon Patrol-Cart ..... 24.95  
Ms. Pac-Man-Cart ..... 24.95  
Pac-Man-Cart ..... 24.95  
Pole Position-Cart ..... 24.95  
Robotron: 2084-Cart ..... 24.95

**CBS SOFTWARE**  
Argos Expedition-D ..... 29.95  
Charles Goren's Bridge-D ..... 49.95  
Coco Notes-D ..... 19.95  
Duck's Ahoy-D ..... 23.95  
Ernie's Magic Shapes-D ..... 23.95  
Mastering the SAT-D ..... 104.95  
Movie Musical .....  
Madness-D ..... 24.95  
Murder by the Dozen-D ..... 23.95

Peanut Butter Panic-D ..... 24.95  
Sea Horse Hide n' Seek ..... 24.95  
Success Decimals .....  
(Add/Subt)-D/T ..... 14.95  
Success Decimals .....  
(Mult/Div)-D/T ..... 14.95  
Success Fractions .....  
(Add/Subt)-D/T ..... 14.95  
Success Fractions .....  
(Mult/Div)-D/T ..... 14.95  
Timebound-D ..... 24.95  
Webster Word Game-D ..... 24.95

**COMMODORE**  
Program Ref. Guide ..... 19.95  
Assembler-D ..... 17.95  
Easy Finance I,II,III,IV-D ..... 19.95  
Easy Calc-D ..... 64.95  
Easy Mail-D ..... 17.95  
Easy Script-D ..... 39.95  
Easy Spell-D ..... 19.95

Logo-D ..... 49.95  
The Manager-D ..... 37.95  
General Ledger-D ..... 37.95  
Accts. Rec.-D ..... 37.95  
Accts. Pay.-D ..... 37.95  
Magic Desk-D ..... 52.95  
Zork I, II or III-D ..... 29.95  
Suspended-D ..... 29.95  
Starcross-D ..... 29.95  
Deadline-D ..... 29.95

**HESWARE**  
Super Zaxxon ..... 22.95  
64 Forth-Cart ..... 40.95  
6502 Profess Dev Sys-T ..... 19.95  
Coco-D/T ..... 26.95  
Factory-D ..... 16.95  
Finance Manager-D ..... 48.95  
Ghost Manor/Spike Pk-D ..... 18.95  
Graphics Basic-D ..... 23.95  
HES Cat-D ..... 18.95  
HES Font-Cart ..... 15.95  
HES Games 84-D ..... 23.95  
HES Kit-Cart ..... 33.95  
HES Mon-Cart ..... 25.95

HES Writer-Cart ..... 29.95  
Microsoft Multiplan-D ..... 65.95  
Minnesota Fats' Pool-Cart ..... 19.95  
Missing Links-D ..... 19.95  
Mr. TNT-Cart ..... 19.95  
Omniwriter-D .....  
Omnispell-D ..... 49.95  
Root 'n' Tootin-Cart ..... 23.95  
Synthesound-D ..... 15.95  
The Pit-Cart ..... 19.95  
Time Money Manager-D ..... 48.95  
Turtle Graphics II-Cart ..... 40.95  
Turtle Toyland Jr.-D/T ..... 22.95  
Type 'n' Writer-D ..... 19.95  
HES Modem I ..... 49.95

**SPINNAKER**  
Adventure Creator-Cart ..... 21.95  
Aerobics-D ..... 25.95  
Aegean Voyage-Cart ..... 21.95  
All in the Color Caves-C ..... 21.95  
Alphabet Zoo-Cart ..... 20.95  
Bubble Burst-Cart ..... 21.95  
Cosmic Life-Cart ..... 20.95  
Delta Drawing-Cart ..... 21.95  
Facemaker-Cart ..... 20.95

Fraction Fever-Cart ..... 20.95  
Grandma's House-D ..... 20.95  
Jukebox Cart ..... 20.95  
Kids on Keys-Cart ..... 20.95  
Kidwriter-D ..... 20.95  
Kindercomp-Cart ..... 17.95  
Ranch-Cart ..... 20.95  
Rhymes/Riddles-D ..... 17.95  
Search/ .....  
Amazing Thing-D ..... 24.95  
Snooper #1-D ..... 24.95  
Snooper #2-D ..... 24.95  
Story Machine-Cart ..... 20.95  
Trains-D ..... 24.95  
Up For Grabs Cart ..... 20.95

**TOUCH TABLETS**  
Koala Touch Tablet-D ..... 44.95  
Koala Touch Tablet Cart ..... 49.95  
Muppet Learning Keys ..... Call

Concorde Third Party Disk  
Drive for Commodore 64  
parallel & serial models  
available ..... 169<sup>95</sup>

Price reductions may have been made since this ad was placed.  
Call us for our latest price quotes. \*After mfr.'s rebate thru 12/31/84.

each disk's name, ID, program titles and other data, and it also constructs a customized database of your disk collection.

This program allows you to search your collection by various categories, show which IDs and disk names are in use and generate alphabetized directory printouts from the program, among other things. I know several individuals who even make up homemade disk envelopes and print the Disk Master directories right on the envelopes!

13. *Take care of your disks.* To preserve your disks, don't eat, drink or smoke around them; don't write on them with pencil or a ballpoint pen (use a felt-tip instead); don't leave your disks near a telephone, TV or other magnetic source; don't touch or scratch the disks' magnetic surfaces; don't subject your disks to extremes of temperature; and don't remove disks from your drive until it has stopped spinning (a few seconds after the 1541's red light goes out). Also, minimize the exposure of your disks to foreign particles, dust and static electricity.

Store your disks vertically in their envelopes, preferably in a disk caddy, and don't paper-clip anything to

them. Especially important: If you let others use your disks, make sure they know how to use and properly take care of them.

14. *B is for backup.* Despite your best intentions, disk disasters do occur. Thus, it's best to back up your most valuable and/or irreplaceable software or data. While copying disks is no fun, judicious backing up can save untold grief. The 1541 Backup program, included with the Commodore Bonus Pack, is a slow but reliable copier, and many other single- and dual-drive copiers are available through magazine listings and commercial software packages.

Many manufacturers will sell you backups for a fraction of the original software package price if you are an original owner of the disk. Some of the newer programs are exceptionally fast: For example, Blue Sky's Supercopy can back up an entire disk in seven to eight minutes.

15. *Machine language programs.* Most of us are aware that to load a machine language (ML) program from disk requires the LOAD "PROGRAM",8,1 format. This is done so that the machine language program loads itself into the same memory lo-

cations from which it came.

This loading procedure is easy to forget, and it's even easier to forget the required SYS call needed to run the program once it's loaded. One approach is to include the SYS location right in the program's title; this becomes both a reminder that the program is in machine language and of what the starting SYS command is.

For example, you might call your ML program "PROGRAM 32768." This reminds you that the game is loaded by typing in LOAD "PROGRAM 32768",8,1, followed by typing in SYS 32768 once the program is loaded from disk. (Note that you don't have to type RUN to get this type of program running.)

*Bonus tip:* Even this procedure can be improved upon. Construct a simple boot, or loader, program for your machine language programs, such as games and utilities. These boots can be written so that once they are loaded, they automatically take control and load the machine language program.

A simple boot for many such programs can be modeled after the short program shown in Listing 1. Note that, in this example, "PROGRAM BOOT" is the name of the boot program, and "PROGRAM" (with its indented space) is the name of the main machine language program. Both programs are on the disk directory, but as explained in our discussion of menu generators, the indented machine language program may not show up on the menu, depending on the particular menu program you're using. The boot automatically performs the SYS command needed to make the program run, so there's nothing special for you to remember or forget!

16. *Label it right!* Instead of merely scrawling some information across the disk label, make the label count. I show the disk name and ID across the top of every label and show how the disk is accessed: whether by loading a menu, loading individual program names or whatever else is required. I usually indicate a disk's key programs right on the label, and also indicate if any of them are machine language and without boots. You might want to use color-coded labels for different program categories (games, utilities, business and so on).

Figure 2 is an example of what a good label might look like. Use it to show the disk's name, its ID and how it is accessed, such as via a menu program. List the disk's key programs

Circle 35 on Reader Service card.

## If you don't see it here...

### GIVE A "HOLLER"!

New items arrive daily! Over 1000 prog. in stock.

ACCESS		INFOCOM		STRATEGIC	
Raid Over Moscow(D)	\$28.95	Hitch Hiker(D)	27.95	SIMULATIONS INC.	
ACTIVISION		KOALA		Computer	
Ghost Busters(D)	27.95	Koala Printer(D)	19.95	Quarterback(D)	27.95
BRODERBUND		MIRAGE CONCEPTS		Broadsides(D)	27.95
Castles of Dr. Creep(D)	23.95	Word Processor(D)	69.95	SUBLOGIC	
Spellunker(D)	23.95	ORBYTE		Flight Simulator II(D)	37.95
CBS		Stock Analyzer(D)	47.95	TIMWORKS	
Adventure Master(D)	33.95	(Challenge Ware, complete line)		Data Manager II(D)	37.95
CITY SOFTWARE		PARKER BROS.		TOTL	
Doodle(D)	29.95	James Bond Agent		Infomaster(D)	40.00
CONTINENTAL		007(C)	37.95	Totl Ledger(D)	35.95
Home Accountant(D)	49.95	PRACTICORP		TRILLIUM	
CREATIVE		PractiCalc 64(D)	39.95	Fahrenheit 451(D)	25.95
I Am The 64		PRECISION SOFTWARE		WAVE FORMS	
(Vol. 1-6)(D)	23.95	Superbase 64(D)	69.95	Music Calc Pro	99.00
Easy Disk(D)	21.95	RESTON		WINDHAM CLASSICS	
CSM		Movie Maker(D)	39.95	The Wizard of Oz(D)	21.00
Disk Drive Alignment		SIERRA/ON LINE		HARDWARE	
Kit(D)	30.95	Homeword(WP)(D)	49.95	CARDCO	
DATAMOST		Ultima II(D)	41.95	Cardprint G	68.95
Kwick Load(D)	15.95	SOFTLAW		Cardboard 5 Slot	56.95
DESIGNWARE		V.I.P. Library Terminal	47.95	MODEMS	
States & Traits(D)	35.95	SPINNAKER		Westridge	79.95
ELECTRONIC ARTS		Juke Box(C)	\$26.36	Mitey Mo	79.95
Reims of					
Impossibility(D)	27.95				
Standing Stones(D)	29.95				
FISHER PRICE					
Up & Add 'Em(C)	19.95				
HARCOURT BRACE					
JOVANOVICH					
Computer SAT (D's & books)	63.95				
HAYDEN					
Sargon III(D)	\$39.95				
HES					
Omni Writer/Speller(D)	47.95				



**UNIVERSAL SOFTWARE**  
The Best Software for Less  
P.O. Box 955 • Claremont, N.H. 03743  
Call Now 1-800-343-8019 Toll Free

# A Real Music Keyboard for Just \$99.00!

(Price Includes a Complete Music Software Package Featuring Four-Color Graphics, Recording and Playback!)

Tap the full power of your Commodore 64's® built-in musical instrument with the new MusicMate™ keyboard from Sequential.

The MusicMate keyboard is a fully functional, quality music tool with full-size keys that lets you play your music live and record it. And it's polyphonic so you can play 3 notes at a time. Best of all, the MusicMate gives you this creative flexibility at a very affordable price!

Playing music on a typewriter keyboard or a plastic overlay of miniature-size keys limits your music. We know. We're the largest American manufacturer of professional synthesizers. Our Prophet keyboards are used by your favorite artists on stage and in the studio. We've put our extensive experience in making quality musical instruments into every MusicMate keyboard.

The MusicMate comes with the Model 970 software diskette package that lets you select many different instrument sounds and record and playback up to 10 continuous minutes of your music.

Unlike other remote keyboards, ours doesn't tie up any of your expansion slots. Just plug your MusicMate into your Commodore's joystick port.

Add any one of our exciting software packages to extend the MusicMate's capabilities. They're just \$39.95 each.

## SONG BUILDER (Model 971)

Build your own songs by overdubbing up to 3 layers of notes (each with its own instrument sound!). Or record 1-2 layers of notes and play the third layer *live*. Also, change the key and speed of your music.

## SONG EDITOR (Model 972)

See the songs you write with the SONG BUILDER displayed on a four-color Grand Staff on your monitor. And conveniently edit your songs.

## SONG PRINTER (Model 973)

The SONG PRINTER prints out your songs in standard music notation.

## SOUND MAKER (Model 974)

View a full color graphic display that looks like the front panel of a professional synthesizer to program the shape, volume and tone of your own personal sounds.

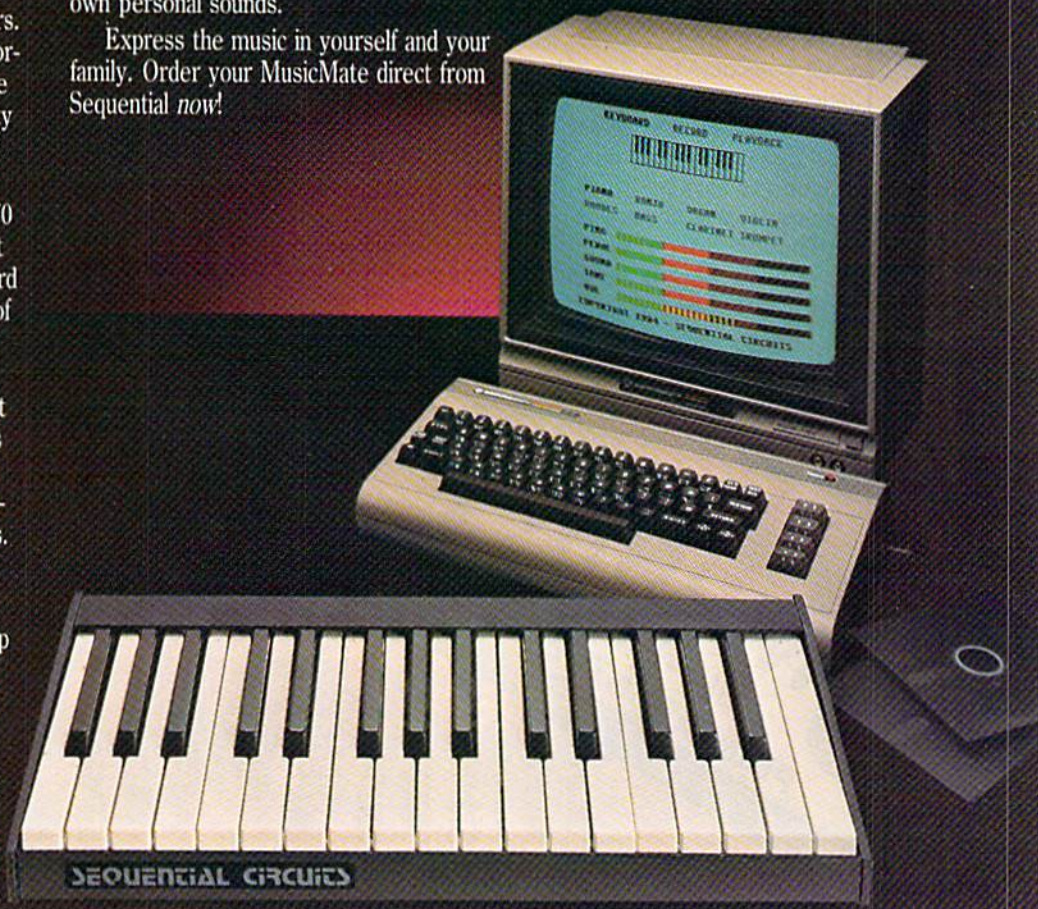
Express the music in yourself and your family. Order your MusicMate direct from Sequential *now!*

If you're not completely satisfied with the MusicMate keyboard, just return it within 10 days of receipt to Sequential for a full refund. (Sorry, no returns on computer software, once opened.)

# SEQUENTIAL

For a complete Sequential catalog including decals, send \$2.00 to: Sequential, 3051 North First Street Dept. R, San Jose, CA 95134. Or call, (408) 946-0226.

Circle 49 on Reader Service card.



Commodore 64 is a registered trademark of Commodore, Inc.  
\*MusicMate is a trademark of Sequential  
© 1984, Sequential

Yes, I want to play my own songs on the MusicMate!

Name (Please Print) \_\_\_\_\_

Street \_\_\_\_\_

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

Check or  Money Order  Visa  MasterCard  American Express  Please do not send cash.

Card # \_\_\_\_\_

Valid from: \_\_\_\_\_ to: \_\_\_\_\_

Signature \_\_\_\_\_

Quantity		Price
_____	MusicMate(s) @ \$99.00 .....	_____
_____	SONG BUILDER @ \$39.95 .....	_____
_____	SONG EDITOR @ \$39.95 .....	_____
_____	SONG PRINTER @ \$39.95 .....	_____
_____	SOUNDMAKER @ \$39.95 .....	_____
	Shipping and Handling	\$4.00
	CA residents add 6.5% Sales Tax	

TOTAL PRICE \_\_\_\_\_

If not completely satisfied, return MusicMate to Sequential within 10 days for full refund. (Sorry, no returns on computer software, once opened.)



www.Commodore.ca

May Not Reprint Without Permission

Mail order form to: Sequential, 3051 North First Street, Dept. R, San Jose, CA 95134 Or, use our order line (408) 946-0226.

DEMO - DISK TIPS	DA
LOAD "MENU", 8	
+C64 WEDGE +DISK ADDR CHANGE	
+SPACEDUEL +SPIKE +FIN CALCS	
+INV.ALT +MACH LANG BOOT	



**Figure 2.** An example of a disk's label, which is a key to a disk's contents.

and any special instructions (such as necessary starting SYS commands) to get programs up and running.

17. Using those "other" disks. Commodore 1541 disk drives use SSSD (single-sided, single-density) disks. But, you can also use single-sided, double-density disks with no problem, as these may be considered to be high-quality single-sided disks.

Commodore drives use so-called soft-sectored disks, but you can use hard-sectored disks as well, since the 1541 drive doesn't care about the extra holes in the latter type of disk. On the other hand, the 1541 is designed for single-sided disks, so it's best not

to get into the risky business of trying to make a double-sided disk out of a single-sided one by manually cutting out a second write-enable notch—easy to do, but done at some risk to the disk, the programs you may write to it and possibly even to the disk drive itself.

18. Take care of your drive! Early 1541s are temperamental, particularly with respect to head alignment and overheating, so it's best not to jar the drive unnecessarily or to keep it running for hours on end with poor ventilation. Using a small fan to direct a steady flow of cool air on the drive minimizes the chance for overheating.

Occasionally use a vacuum cleaner to clean out the front of your disk drive and clean the read/write head. The drive should not require frequent cleaning, as the back-and-forth movement of the drive's read/write head against the disk's surface produces a self-cleaning action that minimizes oxide and dirt build-up. Heavy drive use, however, may require occasional cleaning of the head with some isopropyl al-

cohol applied with a cotton swab.

Alternatively, one of the many head-cleaning disks currently on the market can be used to do the same thing. Some of these cleaning disks are very abrasive, however, so you should clean only when necessary rather than on a rigid time schedule, to prevent needless head wear.

*Bonus tip:* Frequent read/write errors can be a tip-off to upcoming drive alignment problems, particularly in the last few blocks of the disk, when the outer- and innermost tracks (1 and 35, respectively) are in use. Nevertheless, the bulk of such disk errors are caused by dirt on the read/write head, a worn head-load pad, power-line spikes and noise and disk defects. These should all be investigated before seeking head realignment. ®

Address all author correspondence to Karl T. Thurber, Jr., 317 Poplar Drive, Millbrook, AL 36054.

Circle 144 on Reader Service card.



# UNIPRINT

## UNIVERSAL PRINTER INTERFACE

## THE QUALITY INTERFACE FOR THE QUALITY PRINTER

- NO DIP SWITCHES OR CHIP CHANGES NECESSARY. THE NEW COMMODORE PRINTER INTERFACE THAT YOU JUST PLUG IN AND IT'S READY TO USE.
- INTERFACES THE COMMODORE 64 AND VIC 20\* WITH A PARALLEL PRINTER—EPSON AND COMPATIBLES, CANON, STAR GEMINI, BMC, PANASONIC, SMITH CORONA, RITEMAN, ETC. OKIDATA—DAISY WHEELS JUKI, STAR MICRONICS (POWERTYPE), OUME, DIABLO, BROTHER, SILVEREED, ETC.
- ACCESSES YOUR PRINTER'S SPECIAL FEATURES • SUPPORTS DOT-ADDRESSABLE GRAPHICS
- COMPATIBLE WITH YOUR FAVORITE SOFTWARE PROGRAMS—PAPERCLIP, EASY SCRIPT, BANK STREET, DOODLE, CHARTPAK 64, MUSICALC, MIRAGE DATA-BASE, PRACTICALC, VIP TERMINAL, ZORK 1,2,3, AND MANY MORE
- CONVERTS COMMODORE ASCII TO STANDARD ASCII CODE • EMULATES THE VIC-1525 PRINTER
- TRANSPARENT MODE • COMPLETE LANGUAGE TRANSLATION

**SEND COUPON OR CALL**  
**(201) 585-1800**

MANUFACTURED IN THE U.S.A. BY  
GIGA INTERNATIONAL CORPORATION  
2044 CENTER AVENUE  
FT. LEE, NEW JERSEY 07024

\*COMMODORE 64 & VIC 20 ARE REGISTERED TRADEMARKS OF COMMODORE BUSINESS MACHINES, INC.

LIST PRICE \$99.00

**YES! PLEASE SEND MORE INFORMATION ON  
YOUR EXCITING NEW INTERFACE**

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZIP \_\_\_\_\_



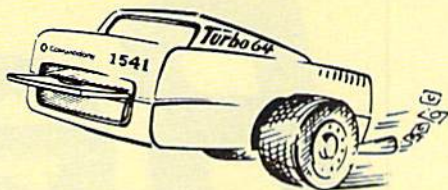
## TURBO 64

Turbo 64 will turn your 1541 into a super fast and efficient disk drive. Loads programs five to eight times faster, works with 99% of your basic and machine language programs. The master disk allows you to put unlimited Turbo 64 boot copies on all your disks. This disk also includes:

### Auto Run Boot Maker

Auto Run Boot Maker will load and auto run your basic or machine language programs.

**\$19.95**



**\$19.95**

**DMS-Errors 20,21,22,23,27 & 29**  
Format Single Tracks  
Read Disk Errors

**1/2 Track Reader**-read and select 1/2 track.

**1/2 Track Formatter**-Format a disk with 1/2 tracks. This is where the next protection schemes are coming from.

**Drive Mon-Disk Drive** assembler/disassembler. For your 1541.

**The Doc-Disk Doctor** that reads code under errors.

**Sync Maker**-Place a sync mark on any track out to 41. Also used for protection.

**Sync Reader**-Check for Sync bits on any track out to 41.

**Change Drive No.**-Changes drive number (7-30).

**Disk Logger**-Finds starting track, sector, start and end addresses.

**Disk Match**-Compare any two diskettes. Byte for Byte.

**New Wedge**-Easier to use DOS wedge.

**ID Check**-Check ID's on any track.

**Unscratch**-Restore a scratched file.

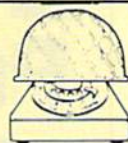
**View RAM**-Visual display of the free and used sectors on a diskette.

**Read/Write Test**-1541 performance test.

**Repair a track**-Repair a track with checksum errors. Reads code under errors and restores track.

**Fast Format**-Format a disk in just 10 seconds (with verify!).

## WAR GAMES AUTODIALER



- 1-Auto Dial will automatically dial a set of numbers you choose.
- 2-Review Numbers will review numbers that were answered by a computer.
- 3-Save Numbers will save numbers where a computer answered.
- 4-Hardcopy of Numbers will print out list of numbers where a computer answered.
- 5-LOAD Numbers will load in numbers to continue where it left off.
- 6-Continue will pick up dialing where it was interrupted.

**\$29.95**

## GEMINI BIT COPIER



99.9% Effective!

- 3 Minute copy program
- Copies Bit by Bit
- Eliminates worries of all Commodore DOS errors
- Very simple to use
- Half tracks
- 100% machine language
- Will not knock disk drive
- Copies quickly
- Writes errors automatically 20,21,22,23,27 & 29
- Errors are automatically transferred to new disk

- Copies identical syncs
- Supports use of two disk drives
- Unlocks disks to make your actual copies
- No need to worry about extra sectors
- This program covers all the latest protection schemes.

**\$29.95**

# SOFTWARE PROTECTION HANDBOOK

This book "BLOWS THE LOCKS OFF" protected DISKS, CARTRIDGES, and TAPES! Protection "secrets" are clearly explained along with essential information and procedures to follow for breaking protected software. An arsenal of protection breaking software is included with all listings, providing you with the tools needed! Programs include high speed error check/logging disk duplicator... disk picker... disk editor... Cartridge to disk/tape saver and several others for error handling and advanced disk breaking. The cartridge methods allow you to save and run cartridges from disk or tape! The tape duplicator has never been beaten! This manual is an invaluable reference aid including computer and disk maps, as well as useful tables and charts. (212 pages 11 programs)

C64 Book only ..... \$19.95 US  
Book & Disk of all programs ..... \$29.95 US  
Vic 20 book... Cart. & Tapes only ..... \$9.95 US

THIS MANUAL DOES NOT CONDONE PIRACY

\* SHIPPING: \$2.00

## BULLETIN BOARD

Set up and operate your own bulletin board with a single 1541 disk drives. This one has all the features and you can customize it easily yourself.

- |                         |                          |
|-------------------------|--------------------------|
| 1-RUN MEGASOFT BBS      | 9-WRITE OPENING MESSAGE  |
| 2-CREATE MEGA FILES     | 10-READ LOG              |
| 3-ADD TO SYSOP'S CORNER | 11-CYCLE LOG             |
| 4-NEW SYSOP'S CORNER    | 12-READ DOWNLOAD FILE    |
| 5-READ MESSAGES         | 13-SCRATCH DOWNLOAD FILE |
| 6-SCRATCH MESSAGE       | 14-ADD TO OTHER SYSTEMS  |
| 7-CYCLE MESSAGES        | 15-CREATE OTHER SYSTEMS  |
| 8-READ SYSOP MESSAGES   |                          |

**\$39.95**

**Two Drive System:** Includes everything listed above plus direct file transfer, dule passwords, for signon and updown load sections and many more options!

**\$59.95**

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders. Canada orders must be in U.S. Dollars.  
VISA - MASTER CARD - C.O.D.

All Programs are for C-64. \$2.00 S & H on all orders

Software Submissions Invited.



# MegaSoft Limited

P.O. Box 1080, Battle Ground, Washington 98604

Phone (206) 687-5116 • BBS 687-5205 After Hours Computer to Computer

# ReRUN

**Programs on cassette or disk that give you more time to enjoy your Commodore computer.**

AVAILABLE NOW... a second collection of RUN magazine's best programs of 1984. ReRUN Volume II!

Great programs for the Commodore 64 and VIC-20, taken from the July through December issues.

With ReRUN, you'll get every program running in less time than it takes to read this ad! No tedious typing!

The new Volume II features:

- Helpful utilities like Datafile
- Educational programs like Speller
- Exciting games like Mystery of Lane Manor

You'll save yourself days of typing, build yourself a great reference library, and best of all—you'll enjoy your computer more. ReRUN is available on disk or cassette.

ReRUN Volume II, like its predecessor, promises to be in big demand. Orders for Volume I surpassed our expectations, so we've gone back to press for more. It's now available in limited quantities.

To order, simply return the coupon, or call TOLL FREE 1-800-258-5473. In New Hampshire, dial 1-924-9471. Charge it on your Visa, Mastercard, or American Express.

Order both volumes of ReRUN today and save \$5 off the total price!



Send me \_\_\_\_\_ copies of ReRUN Volume II on disk at \$21.47.  
Send me \_\_\_\_\_ copies of ReRUN Volume II on cassette at \$11.47.  
Send me \_\_\_\_\_ copies of ReRUN Volume I on disk at \$21.47.  
Send me \_\_\_\_\_ copies of ReRUN Volume I on cassette at \$11.47.

**YES!** Enter my order for Volumes I & II and take \$5 off my total order!

Volume I & II \_\_\_\_\_ Volume I & II \_\_\_\_\_ TOTAL \_\_\_\_\_  
DISKS CASSETTES

Please specify disk or cassette.

CHECK/MO  MC  AE  VISA

NOTE: Prices include postage and handling. Foreign air mail, please add 45%.  
US funds on US banks ONLY. Please allow 3-4 weeks for delivery.

Card# \_\_\_\_\_ Exp. Date \_\_\_\_\_  
Signature \_\_\_\_\_  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

ReRUN • 80 Pine Street • Peterborough, NH 03458 1-85

# MSD Shure Copy

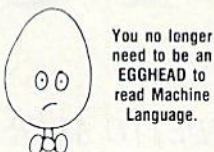
At last a complete utility package for the MSD Dual Drive. This is the first MSD utility program that does it all. The main menu options include:

- Copy Protected Disk
- Copy Files
- Format a Disk
- Change Disk Name
- Quit
- Copy Unprotected Disk
- Scratch a File
- Rename a File
- View Directory

**\$39<sup>95</sup>**

Sure Copy will put all errors automatically on disk: 20, 21, 23, 27 and 29's.

## D-CODER



You no longer need to be an EGGHEAD to read Machine Language.

- Translates any machine language program into easy-to-read English descriptions with complete explanations of each command!
- Makes complete notations of all important memory locations accessed by the program! (SID, VIC, MOS, KERNAL, etc.)
- Gives you three ways of accessing programs:
  - 1) Will read and list programs from DISK
  - 2) Will read and list programs from MEMORY!
  - 3) Direct user input (from magazines, etc.)
- Can be used to locate and examine any machine language program's protection routines!
- Can be used to easily break apart machine language programs for study and examination!
- Printer option for complete hard copy listings!

**\$19<sup>95</sup>**

## SWIFTERM 3.0

FINALLY a terminal program that's not only easy but fun. There are several notable differences between **Swiftterm** and the other popular terminal programs. First there's an incredibly small amount of documentation necessary to operate **Swiftterm** efficiently. **Swiftterm** is so user friendly that it doesn't require reading a two-inch-thick book before you start using it. Options include: terminal to terminal direct file transfer . . . auto dial and redial . . . standard and Commodore . . . askii transfer . . . printer dump . . . 300 and 1200 BAUD . . . and a big 29K buffer for file transfer. **Swiftterm** can be used with all the popular bulletin board news services and compuserve. Step by step examples are also included to help in the up down load section for beginners.

**\$29<sup>95</sup>**

Enclose Cashiers Check, Money Order, or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders. Canada orders must be in U.S. Dollars. VISA — MASTER CARD — C.O.G.

Programs for C-64 \$2.00 S & H on all orders.



Software Submissions Invited.

# MegaSoft Limited

P.O. Box 1080, Battle Ground, Washington 98604

Phone (206) 687-5116 • BBS 687-5205 After Hours Computer to Computer

## TUSSEY MT. SOFTWARE and Peripherals

Guaranteed Lowest Prices!  
"Find a lower price and we'll beat it!"

Toll Free Order Line: **800-468-9044**  
Information and PA orders: 814-234-2236  
Phone lines open 10-8 Mon-Fri, 10-5 Sat

—Order with confidence. We honor manufacturer's warranties  
—UPS second day air available. \$3.00 extra on software

—We ship COD on everything except printers, monitors, and disk drives  
—Next day shipping on instock items

—We accept Mastercard and Visa  
Free 20 page catalog available.

### MONTHLY SPECIALS

Prices expire 01/31/85

Specials change every month

Gemini 10X . . . . \$249.00

WP64, Spellpro 64,

Power 64, or Pal 64

by Proline . . \$39.99 each

Toolbox by Proline . . \$69.99

### PRINTERS

Gemini 10X . . . . .	\$249.00
Gemini 15X . . . . .	\$377.00
Delta 10, 160 cps, 8k buffer . . . . .	\$389.00
Delta 15 . . . . .	Call
PowerType 18cps, letter quality . . . . .	\$ 349.00
Radix 10, Radix 15 printers from Star Micronics . . . . .	Call
All above printers come with a 1 year warranty, which we honour.	
Cardco 101 letter quality printer . . . . .	\$454.00
Hiteman LD . . . . .	\$279.00
Cardco 103 . . . . .	Call
Gragpler CD printer interface . . . . .	Call
Panasonic KXP 1090 . . . . .	\$239.00
Panasonic KXP 1091 . . . . .	\$299.00
Xetec GP1 . . . . .	\$ 76.99
Xetec SP1/B . . . . .	59.99
Xetec SP1 . . . . .	\$ 43.99

"Epson and Okidata printers now in stock! Call for our low price!"

### WORD PROCESSORS

WP64 by Proline(d) . . . . .	\$ 39.99
Wordpro 3+/64 w/Spellright(d) . . . . .	\$ 59.00
Paperclip(d) . . . . .	\$ 59.00
Paperclip w/spellpack(d) . . . . .	\$ 76.99
Cardco Write Now/64 (cart) . . . . .	\$ 37.00
Mirage Professional W/P (d) . . . . .	\$ 59.00
Mirage Personal W/P (d) . . . . .	\$ 29.00
Omni Writer/Speller(d) . . . . .	\$ 45.00
Word Writer(d) by Timeworks . . . . .	\$ 37.00
Heswriter . . . . .	\$ 16.00

### SPREADSHEETS

Calc Result Adv(d, cart) . . . . .	\$ 67.00
Calc Result Easy(cart) . . . . .	\$ 33.99
Hesware Multiplan(d) . . . . .	\$ 65.00
P.S. (Prog. Spreadsheet)(d) . . . . .	\$ 54.99
Practical 64(d) . . . . .	\$ 36.00
Practical 64(d) . . . . .	\$ 34.00

### MONITORS

Zenith 12" Amber . . . . .	\$ 97.00
Zenith 12" Green . . . . .	\$ 92.00
Sakata SC100 Color Monitor . . . . .	\$239.00
Amdek Color 1 Plus . . . . .	\$259.00
Cable for monitors . . . . .	\$ 9.95

### HARDWARE

MSD SD1, single disk drive . . . . .	\$334.00
MSD, SD2, double disk drive . . . . .	Call
BI 80 batteries included 80 column card with Basic 4.0 built in . . . . .	\$137.99
Bus Card II by Batteries included . . . . .	Call

Call or Write for our FREE 20 page catalog!

### CARDCO

Printer int. w/graphics . . . . .	\$ 67.00
Printer interface/B . . . . .	\$ 44.00
Light pen . . . . .	\$ 29.00
Numeric keypad . . . . .	\$ 35.00
5 slot exp. interface CB/5 . . . . .	\$ 58.00
Mail Now/64 . . . . .	\$ 32.00
Spell Now . . . . .	Call
File Now . . . . .	Call
Graph Now . . . . .	Call

### UTILITIES

The Last One(d), a Basic program generator . . . . .	\$ 64.00
Pal 64 assembler by Proline(d) . . . . .	\$ 39.99
Power 64 Basic by Proline(d) . . . . .	\$ 39.99
Toolbox 64, both Pal 64 and Power 64(d) . . . . .	\$ 69.99
Copy Plus by Blue Sky(d) . . . . .	\$ 26.99
SuperBasic 64 by Blue Sky(d) . . . . .	\$ 29.99
Add on Basic by Blue Sky(d) . . . . .	\$ 29.99
Canada A/M backup program . . . . .	\$ 39.95
Simon's Basic . . . . .	\$ 39.95

### DATABASES

The Consultant (formerly Delphi's Oracle)(d) . . . . .	\$ 63.99
Mirage Database Manager(d) and Report Generator . . . . .	\$ 69.99
Superbase 64(d) . . . . .	\$ 64.99
Data Manager II(d) by Timeworks . . . . .	\$ 37.00
Practifile by MS(d) . . . . .	\$ 37.00

### MODEMS

Commodore 1600 . . . . .	\$ 56.00
Commodore 1650 autoanswer, autodial . . . . .	\$ 89.99
Hesmodem I . . . . .	\$ 45.00
Hesmodem II . . . . .	Call
Compuserve starter kit . . . . .	\$ 26.95
Westridge modem . . . . .	\$ 76.95
Mighty Ma. new modem from USI . . . . .	Call
VIP terminal package by Softlaw . . . . .	\$ 43.99
Vidtex terminal pack and Compuserve starter kit . . . . .	\$ 59.99

### MISCELLANEOUS

Koolpad w/painter(d) . . . . .	\$ 65.00
Spellpro 64(d) by Proline . . . . .	\$ 39.99
Mailpro 64 . . . . .	\$ 39.99
Complete Personal Accountant(d) . . . . .	\$ 54.00
Vertatim Datatype ss/dd disks (10) . . . . .	\$ 23.99
Maxell MD1 ss/dd disks (10) . . . . .	\$ 21.99
1541 Express by RTC . . . . .	Call
Smart Cable . . . . .	Call
Musicalc 1 . . . . .	\$ 37.95
Musicalc 2 . . . . .	\$ 27.95
Musicalc 3 . . . . .	\$ 27.95
SAM. Software Automatic Mouth . . . . .	\$ 47.95
Mirage Advanced Report Generator . . . . .	\$ 39.95
The Home Accountant . . . . .	\$ 46.95
Timeworks Inventory, A/P/A/R, Cash Flow Management, General Ledger, Payroll Management . . . . .	\$ 40.95 each
64 Doctor . . . . .	\$ 24.95
FCM, First Class Mail . . . . .	\$ 36.95
Super Sketch . . . . .	\$ 39.99
Simon's Basic . . . . .	\$ 39.95

DEALER INQUIRIES WELCOME

Tussey Mt. Software  
Box 1006

State College, PA 16804

To Order By Mail — Send personal check, money order, or certified check. For fastest service send money order or certified check. Allow 2 weeks for personal checks to clear.

Shipping & Terms — Add \$2.50 per order for shipping software and accessories. Add \$6.00 per order for COD. Add \$10.00 to ship printers and disk drives. \$8.00 to ship monitors. COD orders not accepted on printers and monitors. Foreign orders, APO, FPO, AK, and HI require additional amounts for shipping. We pay shipping on backorders. Orders shipped UPS unless noted otherwise. All prices reflect cash discount. Visa, Mastercard add 3%. Manufacturer's warranty honored with our invoice and original packaging. PA residents add 6% sales tax. Prices subject to change.

# LET THERE BE Light Pens

By SHARON ZARDETTO AKER

**S**hort of an actual touch-sensitive screen, a light pen is one of the most direct of input devices. With a graphics tablet, you touch here and something happens there. A mouse rolls on a desk as the cursor moves on the screen. A joystick limits you to a few possible directions, and, of course, the keyboard doesn't lend itself to very much other than typing.

Each of these devices has its place in the world of computing; indeed, I have at least one of each, and I wouldn't trade one for another for certain applications. However, I have just spent a few months investigating light pens and their attendant software, and I am glad to be adding them to my arsenal of input devices.

## How a Light Pen Works

The inside surface of your monitor or TV screen is coated with a phosphor that glows when hit by a beam of electrons. An electron beam scans a narrow line across the width of the screen from top to bottom; the entire screen scan is called a frame. Because the phosphor fades so quickly, the screen must be "refreshed" (scanned again from top to bottom) very often; it is, in fact, refreshed at the rate of 60 frames per second.

When you point a light pen at the screen, the electron beam hits the phosphor within the pen's field. The pen registers the "hit," sending a signal to the computer. (The light pen is plugged into the joystick port.) The computer, in turn, makes note of the point on the screen that was being scanned when it received the pen's signal. The result is that the computer "knows" just where you placed the light pen.

Of course, depending upon the brightness of the screen and the sensitivity of the pen, you do not actually

have to touch the pen to the screen for a "hit" to register; this can lead to many problems as you move toward the desired spot on the screen while the computer tracks your progress. As a result, light pens are made so you can activate them only when you want the touch to register.

The way a pen is activated depends upon its design. You might have to press a key on the keyboard, press a button on the pen itself, or push a pressure-sensitive pen tip against the screen. (Coincidentally, these three types are represented by the three light pens reviewed in this article.)

The method of light pen activation, however, is not the major consideration when you are shopping for a light pen. Hardware is only as good as the software that is available for it, and, of course, there are price considerations as well.

The three light pens covered in this review, from Futurehouse, Inkwell Systems and Tech Sketch, Inc., differ not only in their activation processes, but also in the quality and quantity of software support. Their prices vary, and each seems aimed at a different type of user.

## Light Pen Graphics Programs

Since each of the light pens reviewed in this article comes with a graphics program, it is appropriate to discuss the contents of a good graphics package. A light pen graphics program, or any good drawing program, will have menus that give you the following options:

**Draw.** Draw free-form lines of various colors and widths.

**Color Palette.** Choose the color you are going to use for any given option; sometimes patterns that combine colors are available in addition to solid colors.

**Brush Palette.** Choose the size and shape of the "brush" you are drawing

with. In addition to different brush widths, a change of brush angle should be available, as well as fancy options such as double and triple dots that let you draw multiple lines.

**Shapes.** Draw rectangles by indicating the opposing corners, or circles by specifying the center and edge. Shapes can be drawn hollow or filled automatically.

**Fill.** This fills in an enclosed area with the color of your choice.

**Lines and Rays.** Draw lines by indicating the start and end points; a connected line option will automatically start another line where the previous one ends. Rays can be drawn by indicating a common starting point and the various end points for each of the individual rays.

**Zoom.** This lets you magnify a portion of your drawing so you can work on it in detail.

**Copy and Move.** *Move* lets you shift parts of your drawing around the screen; *Copy* leaves the original portion intact.

**Mirror.** This option lets you draw in one section of the screen, giving you mirror images of your drawing in the other quadrants, which results in symmetrical designs.

**Undo.** Every program lets you erase your entire picture, but some will also let you "undo" only your last command. This is important for correcting mistakes.

**Text.** This option lets you type keyboard characters onto the drawing field.

**Print.** A screen dump is a nice extra in a graphics program; however, some might not support your particular printer.

Keep in mind that although a light pen will work with a TV, graphics programs are much better when you use a monitor, due to the sharper image that a monitor gives.

Now, the pens and their software.

*For graphics and other applications,  
light pens are now available and affordable.  
Find out what they are, how they work and  
what they can do for you.*



## Edumate Light Pen

The Edumate light pen, from Futurehouse, is roughly as slim as a standard pencil. It is plugged into the computer with a coiled cord that stretches easily when you reach for the screen. It is activated by pressing a key on the keyboard; to make a potentially awkward system a little more convenient, there is one key on each side of the keyboard (Commodore key and right shift key) that can be used. Despite a few minor flaws, the graphics program that comes with the Edumate pen, cleverly titled Peripheral Vision, is my favorite of the three drawing programs.

### Peripheral Vision

The Peripheral Vision drawing screen has a color palette across the top, and a command menu across the bottom; there is also a second command menu, easily accessed from the first. Both the menus and the color palette can be removed from the screen with the f3 key, thereby expanding your drawing area. Anything you draw in the menu areas will remain even if you toggle the menus back on. The menus are clear, and their icons (pictures that represent the available options) are well designed.

Chief among Peripheral Vision's limitations is the lack of a true Move or Copy function. You can take a tracing of a line or object and copy or move that, but this is an entirely different feature, and it cannot replace the ability to copy an entire section of a drawing. Another drawback is that you cannot create shapes automatically. Also, the Fill option will only fill in an area that is enclosed by a single color.

The documentation is brief, and perhaps not entirely adequate. If the documentation is less than ideal, however, the program's ease of use makes up for it.

Among Peripheral Vision's extras is a Focus option that affects the accuracy of the pen, determining just how closely the line being drawn will follow your pen's path. At one extreme of the five available levels, the accuracy is high, but the speed is slow; at the other end, you can get the program to keep up with your fastest strokes, but your lines will get pretty wiggly.

By far the best extra is the Texture choice. There are 35 pre-defined textures that you can use with any combination of two colors. This painting in multicolored patterns is unmatched

by either of the other two light pen graphics programs reviewed here, and it is a lot of fun to work with. To make a good thing even better, you can also design your own textures and store your personal texture palettes on a disk for future use. The Peripheral Vision Print option supports most popular printers.

### Playground Software

The rest of the available programs for the Edumate light pen are children's programs (in Futurehouse's Playground line of software). Some are terrific, some mediocre, and one is rather poor. Many can be used with a joystick, and all can be used with a KoalaPad (from Koala Technologies) instead of the light pen. A very special feature in many of the programs is the incorporation of S.A.M. (Software Automatic Mouth) from Tronix, which synthesizes speech. The accent is reminiscent of the Swedish Chef on *The Muppet Show*, but it is generally understandable.

The unevenness of the quality of these programs is surprising; even something that should be standard from one program to the next, such as the particular keys that are used to activate the light pen, is not the same.

Many of the introductory menus are done in color combinations that are nearly impossible to read. Some require choices to be made with the light pen; some require keyboard input.

Here are brief reviews of the programs available in the Playground line:

*Little Red Riding Hood.* The first, and currently the only, in a series of Bedtime Stories, this program is narrated by Freddy the Frog. His sprite helper, Fly Guy, is used as a target for the light pen. As the story progresses, pointing to Fly Guy will cause some action on the screen. The child is often spoken to directly, and the total effect is very charming. There is also a short letter-recognition game available on this disk, but it did not hold the interest of my preschooler—it was just too dull compared to the interactive story available.

*Alphabet Construction Set.* Robo the Builder is the narrator for this program, and he's the only cute thing about it. The child is supposed to trace a letter with Robo's help, then draw one unassisted. The program is utterly unforgiving of the slightest wobble during the tracing, or the smallest deviation in the drawing. (After a quarter-century of printing

	Edumate	Tech Sketch	Flexidraw
Draw	✓	✓	✓
Color Palette	✓	✓	
Textures	✓	✓*	✓**
Brush Widths	✓	✓	
Brush Shapes		✓	
Fill	✓	✓	✓
Lines	✓	✓	✓
Connected Lines	✓	✓	
Rays		✓	✓
Shapes	✓	✓	✓
Zoom	✓	✓	✓
Copy		✓	✓
Move		✓	✓
Mirror	✓	✓	
Undo			
Print	✓		✓
Text	✓		✓
2nd Drawing Area			✓
	*Checkerboard only	**Black and white only	

This chart shows the availability of basic graphics features in the three light pen graphics programs. Certain features not available in the main program, like Inkwell's coloring option and Tech Sketch's print option, are available as separate programs on the main disk.

# FAST DELIVERY

Call Us For  
Fast Service, Experience  
and Affordable Prices

## Software

**HOLIDAY SPECIAL**



**SUBLOGIC**  
Flight Simulator  
\$34.95

**MICROPROSE**  
Solo Flight  
\$24.95

**F-15 EAGLE**  
\$29.95

**INFOCOM**

Zork I, II, III...ea \$25  
Suspended.....\$25  
Starcross.....\$25  
Deadline.....\$25  
Sea Stalker.....\$25

**WORD PROCESSING**

*Special of the Month*  
**PAPERCLIP**  
with SPELLER \$69

Easy Script.....\$45  
Word Pro 64 & Speller.....\$58  
EZ Spell.....\$17

**PROGRAMMING SERIES**

Assembler 64.....\$36  
Logo.....\$52

**Simon Basic.....\$29**

Screen Editor.....\$19  
Nevada Fortran.....\$39  
Nevada Cobol.....\$39

**ACCOUNTING**

Home Accountant.....\$45  
Tax Advantage.....\$45  
General Ledger.....\$35  
A/R, A/P, Payroll.....\$35  
The Manager.....\$35

**DATA BASES**

Code Writer.....\$64  
Mirage Database Mgr.....\$79  
Super Base 64.....\$67

*Special of the Month*  
**The Consultant**  
\$65.00

**SPREAD SHEET**

Multiplan.....\$63  
Practicalc.....\$38

## Hardware



**1541 \$Call**

*Special of the Month*  
**MSD DISK DRIVE**  
SD1 Disk Drive \$335  
SD2 Disk Drive \$495

*Introductory Offer*  
**INDUS GT**  
**DISK DRIVE**  
\$CALL\$

**ELEPHANT DISK**  
SS/SD \$15.50 SS/DD \$16.50

Verbatim, Datalife.....\$19.95  
Maxell SS/DD.....\$19.95  
Westridge 64 Modem ..\$77

**HOLIDAY SPECIAL**  
**1650 AUTO MODEM**  
\$87

1520 Color Plotter.....\$109  
MPS 801 Printer.....\$205  
1530 Datasette.....\$64  
1526 Printer.....\$265  
Magic Voice Speech.....\$49.95  
1011 RS 232 Interface.....\$49

**1702 Monitor**  
\$CALL

**ZENITH MONITORS**  
122 Amber.....\$84  
123 Green.....\$84

**COMPUTER COVERS**

Features:  
heavy duty  
canvas  
with vinyl  
interior  
waterproof

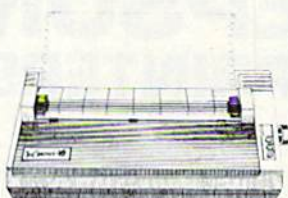
Reg. \$15<sup>95</sup>

**\$6.99**

CMD 64.....\$6.99  
VIC 20.....\$6.99  
Disk Drive.....\$6.99  
Espon MX 80.....\$7.99  
Espon MX 80 FT.....\$7.99  
Okidata 92.....\$7.99

## Printers

**GEMINI 10X**  
**\$239**

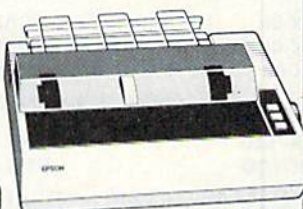


15X.....\$349

Number one selling dot matrix printer, Gemini 10X, prints 120 cps bi-directionally, with logic-seeking printerhead control. There's both friction and tractor paper feed. Prints high resolution graphics.

POWERTYPE....\$325.00  
RADIX 10.....\$499.00 DELTA 10.....\$359.00  
RADIX 15.....\$555.00 DELTA 15.....\$495.00

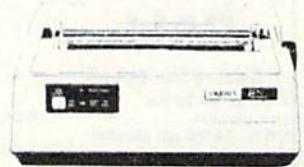
**EPSON RX80**  
**\$239**



RX 80 FT.....\$279

The most compatible dot matrix printer, prints 100 cps, bi-directionally. Call for RX-100, FX-80 and FX-100 prices.

**OKIDATA 92**  
**\$374**



The most advanced dot matrix printer, prints 100cps, bi-directionally. Correspondence quality at 40 cps.

OKIDATA 93 ....\$599.00 OKIDATA 84 ....\$699.00

**PRINTER INTERFACES**

Micrografix MW350.....\$69  
Tymac Connection.....\$79  
Cardco + G Interface.....\$66  
Cardco B Interface.....\$39  
Grappler CD.....\$102

**SURGE PROTECTORS**

1 Outlet.....\$14  
4 Outlet.....\$38  
6 Outlet.....\$69  
6 Outlet & Noise Filter.....\$88

### Ordering & Payment Policy

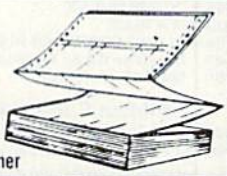
Prices reflect a cash discount. For C.O.D., Visa, and MasterCard add 3% Immediate delivery with certified check or wired funds. N.J. resident add 6%. Prices subject to change.

### Shipping

For shipping and handling add 3%. (\$3 minimum)  
Larger shipments require additional charge.

### Special Offer With Printer Purchase!

**STARTER PAK**  
For Gemini or Okidata  
300 Sheets & Ribbon **\$9.95**



FOR EPSON.....\$10.95 Limit One Per Customer

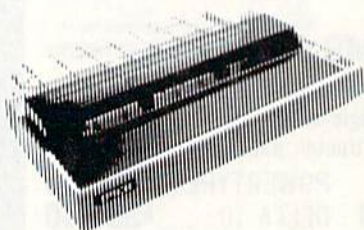
FOR INFORMATION CALL (609) 596-1944

**ORDER TOLL FREE (800) 992-3300**



P.O. Box 3354  
Cherry Hill, N.J. 08034

Call ELEK-TEK for

**UNBELIEVABLE  
PRICES!!****EPSON  
PRINTERS****80 COLUMN PRINTERS**

RX-80	.....	CALL
RX-80 FT.	.....	275.00
FX-80	.....	390.00

**132 COLUMN PRINTERS**

RX-100	.....	390.00
FX-100	.....	590.00

**NEW Near Letter Quality  
PRINTER****LQ 1500**

200/67 c.p.s. Tractor/Friction

**CALL****Cables for Epson**

CB5622 10 ft. 36/36 pin standard parallel	.....	32.00
CB5609 8 ft. 36/25 pin parallel for IBM	.....	25.00
CB5618 6 ft. 36/16 pin parallel for TI-99/4A	.....	25.00
CB5629 10 ft. 25 pin standard RS-232C (fully loaded)	.....	25.00
CB5620 6 ft. parallel for TRS 80 Model I-III-IV	.....	22.00
RS1Y RS-232 Y cable for TI-99/4A	.....	25.00

**DUST COVERS  
AVAILABLE FOR  
MOST MODELS—\$5.00****Interfaces**

CARDCO G	.....	65.00
APPLE DUMPLING GX	.....	65.00
GRAPPLER PLUS	.....	105.00
Buffered (16K) GRAPPLER PLUS	.....	165.00
8148 Ser. (For RX or FX Models)	.....	90.00
8161 IEEE-488 Interface	.....	60.00

**Ribbon Cartridges**

DPR 192 For EPSON 80 col. printers	.....	4.00
DPR 193 For EPSON 132 col. printers	.....	6.00

**CALL TOLL FREE 800-621-1269  
EXCEPT Illinois, Alaska, Hawaii**

Corp. Accts. invited. Min. Ord. \$15.00 Mastercard or Visa by mail or phone. Mail Cashier's Check, Money Ord., Pers. Check (2 wks to cir.) Add \$4.00 list item. (AK, HI, P.R., Canada add \$10.00 first item) \$1.00 ea. add'l ship. & handl. Shipments to IL address add 7% tax. Prices subj. to change. WRITE for free catalog. Return policy for defective on arrival replacements only: 90 day mfr. wty. ALL ELEK-TEK MERCHANDISE IS BRAND NEW, FIRST QUALITY AND COMPLETE.

**ELEK-TEK, Inc.**6557 N. Lincoln Ave., Chicago IL 60645  
(800) 621-1269 (312) 677-7660

perfectly recognizable Ns, I was told by Robo that mine weren't good enough and that I had to do it over again.)

The educational value of this program is doubtful. It purports to teach letter drawing, but the muscle control and coordination of wrist and fingers for printing on paper is a far cry from the stretched arm and stiff fingers of someone holding a light pen to the screen.

*Computer Crayons.* I thought this program to be only mediocre, due to its crude drawings and so-called animation, but my chief tester (my four-year-old) likes it a lot. The child picks a letter, and a picture related to that letter appears in rough outline; it can then be colored in by choosing different colored "crayons." At any point, the picture can be animated; this is sometimes cute (one example being a sketch of a person walking through the doorway of a house), but most often it is a disappointment (such as a lampshade changing color).

*Animal Crackers.* This one is a winner. Freddy the Frog is back, in charge of a ticket booth. The child buys a ticket to any of seven games, using the ticket to travel to any of nine locations to play the game. The games are pre-reading and pre-math skill builders, such as matching letters, numbers and shapes; the location selection (outer space, farm or playground) determines the background scenery for the game.

**Summary**

I can recommend the Edumate light pen without reservation; the Peripheral Vision graphics program that is available for the pen is excellent, and the pen itself has stood up to a lot of use in my house over a period of eight months (including a stint at a local nursery school). The Playground Software line holds promise; all of the programs in the series could use a little polishing (except Alphabet Construction Set, which may be unsalvageable), but most of them are enjoyable in their present form. (*Futurehouse, Inc., 310 West Franklin, PO Box 3470, Chapel Hill, NC 27514. Edumate light pen with Peripheral Vision, \$34.95; Playground Software, \$34.95 each.*)

**Tech Sketch**

The Tech Sketch light pen is activated by pressing a white button on its shaft. The cord that connects it to the computer is straight rather than coiled (not as comfortable or convenient as

a coiled wire). The graphics program that comes with the pen is called Micro Illustrator.

**Micro Illustrator**

Micro Illustrator's command menu is on a screen by itself, separate from the drawing area; getting back and forth is a simple matter of pressing the space bar. Icons represent each of the possible commands, and there is a full brush palette, as well as a color palette. The color palette gives a choice of solid or shaded colors. (The shades are simply the base color overlaid with a white checkerboard.)

All of the basic graphics options are available, with the addition of a Point option that lets you draw dotted lines. There is also a special Align option, used for aligning the light pen on the screen; choosing Align also brings you to the "inertia level" selection. This is supposed to change the speed at which the cursor follows your pen. I did not find an appreciable difference between the lowest and highest inertia levels, except that the cursor is very bouncy when inertia is set at low.

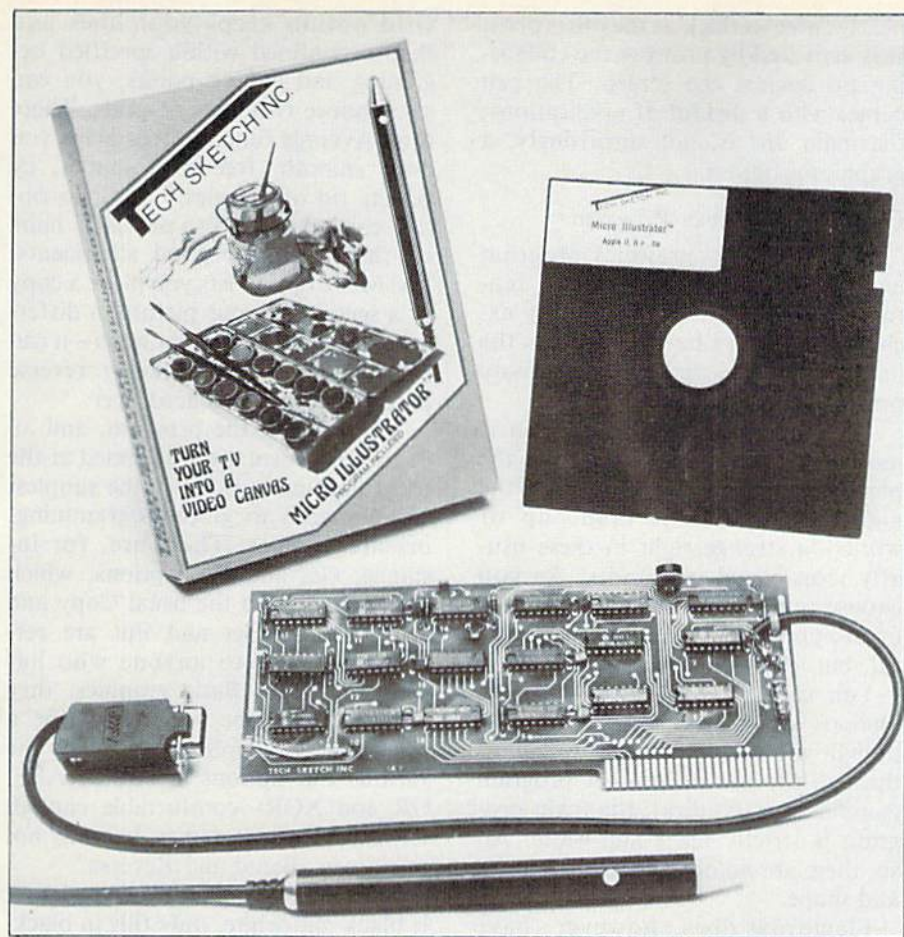
The documentation for Micro Illustrator is adequate, though brief. There is a rather cryptic piece of advice about "optimum performance" of your monitor: "Normal viewing of a TV or monitor is approximately 30-35 footcandles. This should be considered when viewing and working with computer terminals in general." The last time I had to consider footcandles was in my high school physics class, and I'd be hard-pressed to glean any useful advice from that statement.

There is a Sketchprinter program included on the Micro Illustrator disk. It apparently supports only the Commodore 1525 printer, and its documentation is a few short sentences that leave you in the dark as to a number of things. Neither the instructions nor the program, for instance, let you know when to switch from the program to the data disk. The first question presented by the program is: "Is the picture small or large?" There is no mention of this in the documentation, and you will be at a loss to figure out which to choose. If you have the right printer and can figure out how to use the program, you can print out your Micro Illustrations.

**Lite Sprite**

Lite Sprite is a sprite-design and animation program that utilizes the Tech Sketch light pen. If you can get past a few program problems (e.g., faulty loads, poor error handling) and the





documentation, you might enjoy the program very much.

The booklet that accompanies Lite Sprite is a poor excuse for documentation. First of all, its pages are put together in the wrong order: pages 18 and 19 follow page 3; then come 6 through 17, followed by 4, and so on. After sorting out the pages, typos, small errors and generally poor presentation, you might think the program is useless. However, it is the documentation, not the program, that is useless.

With Lite Sprite, you can design a sprite with the pen on a 24x21 grid. Each sprite can be put into one of 128 available frames. The options available for manipulating sprites are terrific. You can take a sprite and flip it horizontally or vertically, shift it by one or any number of pixels in any direction or invert it. It is easy to view animation sequences of your frames; you can specify which frames will be shown and the delay that should occur between them.

The main Lite Sprite screen is composed of a Main Menu, a Command Window, a Work Station and a five-frame Preview Window. However, with this setup, you must keep track

of a Work buffer and a Frame buffer, and transfers from one place to another cannot always be made directly.

The procedure for choosing from the menu needs better error trapping. If you choose the wrong item by mistake, you will still have to answer questions pertaining to that choice in the Command Window—there is no way to cancel a selection. This is very annoying, because it is easy to move the pen slightly while pointing at the menu, resulting in the wrong choice. This “no-turning-back” is also a problem in many other parts of the program.

Despite the annoying programming flaws and the poor documentation, Lite Sprite is certainly fun and potentially useful. You can transfer the sprite data into a Basic program. (Transferring all 128 frames, however, will leave only 6K of programming space.)

Lite Sprite only supports the design of single-color sprites; the documentation does suggest (in one of its more lucid moments) that you design high-resolution multicolor sprites by utilizing the sprite priority scheme and layering differently colored sprites.

There is also a Programmer's Guide

Circle 335 on Reader Service card.

## AA COMPUTER EXCHANGE

“SOUTH'S LARGEST COMMODORE 64 DEALER”  
OVER 2000 ITEMS IN STOCK

COMPLETE REPAIR SERVICE FOR  
COMMODORE 64 AND C-64 PERIPHERALS

ORDER LINE: 1-800-447-0088  
INQUIRIES & FL: 904-388-0018

REQUEST OUR FULL CATALOG TODAY

HERE ARE A FEW OF OUR MAIL ORDER PRICES

HARDWARE & ACC.	\$	PRACTICORP	\$
Plus4	299	64-Doctor	20
C-64 Computer	199	Practical 64	37
1541 Disk Drive	239	Practifile	37
1702 Color Monitor	239	PS Spreadsheet	54
MSD Dual Drive	551	Wordpro 3+ w/Speller	54
HES Modem I	49		
Total Comm. Auto Modem	75	<b>MIRAGE CONCEPTS</b>	
Westridge Auto Modem	76	Data Base Manager	61
C-64 Power Supply	29	WP Prof. Version	61
RS-232 Interface	30	WP Pers. Version	28
Par. Printer Intfce	30	<b>SIGHT N' SOUND</b>	
<b>ACCESS SOFTWARE</b>		Keyboard	34
Beach Head	24	Synthesizer	34
Raid Over Moscow	24	Processor	24
Master Composer	28	Rhythm Rocker	27
<b>COMPUERVE</b>		Music Video (Thriller)	17
Starter Kit (5 hr)	23	On Stage	17
Executive Kit (2 hr)	52	Tune Trivia	24
Vidtex	28	<b>SKYLES ELECTRIC</b>	
<b>KOALA</b>		"1541 Flash" Disk Drive	
Koala Pad	58	Speed-Up Kit	69
Spider Eater	18	<b>SUBLOGIC</b>	
Programmers Tool Kit	24	Flight Simulator II	37
<b>PRECISION SOFTWARE</b>		<b>MISC.</b>	
Superbase	60	Doodle	29
<b>BATTERIES INC.</b>		Inkwell's Flexidraw	129
Paper Clip w/Spellpack	82	Smart 64 Term	29
The Consultant	68	Telstar 64 Term (Cart)	34
Home Organizer Ser. (ea)	20	Auto-Boot (Cart)	15
		Super Clone	39

2726 PARK ST., JACKSONVILLE, FL 32205

Orders with cashiers check, money order and VISA/MC shipped promptly • For personal company checks allow 3 weeks for clearance • No CODs • For VISA/MC add 3% • Shipping charges extra, \$3.00 minimum • Prices may differ in AA stores • Florida residents add 5% tax • Prices subject to change without notice.

### GEMINI

State-of-the-art single or dual drive backup program for those “IMPOSSIBLE TO COPY” programs.

\$39.95

### SERIAL PRINTMASTER-64

A cartridge used in conjunction with any standard Serial to Centronics parallel printer interface to give you a two-stroke screen dump and full Commodore Graphics.

\$39.95

### OCTOPUS

A low cost networking system: up to eight C-64's and/or Vic-20's to one disk drive and printer.

\$89.95

### BI-NET

Network two C-64's or Vic 20's or combination to one disk drive and printer.

\$24.95

### RESET

A plug in reset button for the Commodore 64.

\$19.95

Contact your local dealer or  
**COMPUTRON BUSINESS SYSTEMS**  
503-224-2220

Visa/Mastercharge accepted, add  
\$3.00 for shipping & handling

Circle 331 on Reader Service card.

disk, which includes four programs that demonstrate the use of the light pen in a Basic program.

Each of the light pens reviewed here is programmable from Basic, by the way, although some of the manuals offer better guidelines than others. Most light-pen programs in Basic will restrict you to pointing the pen at menu choices; a drawing program will run much too slowly in Basic to be of any value.

### Summary

The Tech Sketch light pen is a reasonable value for the money; the graphics program included with it is useful, and the sprite-generating program, though flawed, has its merits. At this time, there are no other software programs available for this light pen. (*Tech Sketch, Inc., 26 Just Road, Fairfield, NJ 07006. Light pen with Micro Illustrator, \$49.95; Lite Sprite, \$49.95.*)

### Flexidraw Light Pen/ Software System

The Flexidraw light pen, from Inkwell Systems, is, by looks, feel and price, the most technologically advanced of the three pens reviewed here. It is comfortably chunky—

nearly twice as thick as the other pens. It is activated by pressing the collapsing tip against the screen. The pen comes with a diskful of applications; the main one is, not surprisingly, a graphics program.

### Flexidraw Graphics Program

The Flexidraw graphics program embodies some very advanced features, and, at the same time, it excludes some very basic ones. It is the hardest to learn, and it may be more practical than fun.

The Flexidraw drawing screen is most of the monitor screen, less the border and a menu strip along the right. The menu is made up of words—a strange sight in these usually icon-based programs. As you choose certain options, others appear or disappear; this is sometimes helpful, but it's often confusing.

You can't miss Flexidraw's most obvious shortcoming: no color. Although you can color in your pictures through the use of another program (supplied on the disk), the main program is strictly black-and-white. Also, there are no options for brush size and shape.

Flexidraw does, however, have many unusual and useful options. The

Grid option keeps your lines and shapes confined within specified beginning and ending points; you can also choose two sizes of grids. There is an Average function that helps you draw smooth, free-form shapes, by getting rid of "jiggles." A Cross option can be selected to put cross hairs on the screen for good alignments. The Move option lets you place a copy of a section of your picture in different spots and in different ways—it can be used to cover, blend or reverse parts of what it is placed over.

The setup of the program, and all of the documentation, is aimed at the programming buff. Even the simplest of commands are given programming-oriented names. There are, for instance, Get and Put options, which are analogous to the usual Copy and Move. While Get and Put are certainly familiar to anyone who has used Microsoft Basic graphics, they are not the right vocabulary for a user-oriented application. Even the various Put options are called ABS, OR and XOR—comfortable enough terms for a programmer, but why not use Cover, Blend and Reverse?

The Fill option, since this program is black-and-white, only fills in black, although you can invert the screen at

Circle 27 on Reader Service card.

The

SMART 64 TERMINAL

Links your Commodore 64  
to the World



#### Features:

- Unlimited Upload/Download Programs and Text
- Adjustable Translate Tables
- Formatted Lines
- VT-52 Cursor Controls
- Auto-Recall of User Parameters
- Full Modem Control
- Screen Print Online
- Built-In Disk Commands
- Time-of-Day Display
- Alarm Timer
- Shift/Lock
- Single Keystroke ID & Password
- Four Programmable Function Keys
- Echo Mode
- Auto-Answerback for Telex
- Break Key
- X-on/X-off Flow Control
- Review, Rearrange, Print Files
- 40 or 80 Columns\*
- Operates With Manual, Intelligent, or 1650-Compatible Modems

\*80 Columns with Data 20 Cartridge

Dealer Availability  
Call (203) 389-8383

Commodore 64\*



**MICROTECHNIC  
SOLUTIONS**

P.O. BOX 2940, NEW HAVEN, CONN. 06515

Disk \$39.95

\*Commodore 64 registered trademark  
of Commodore Business Machines Inc.

any time to reverse the black/white fields. There are patterns available, but they can only be placed over black areas. So, to get a pattern, you must first fill with black, then fill again with the pattern. This is very clumsy, and it is almost an insult on top of the injury of no color.

I found the program a little confusing; certain options are available only from certain modes. If, for instance, I want to fill something with a pattern, I have to remember to be in the Point (as opposed to the Draw) mode, and enable the Grid option as well. Until both of those conditions are met, Fill doesn't even appear on the menu. I am sure that, if I were to spend more time with the program, I would become more familiar with its modes and options, but, as it stands, I don't particularly want to spend more time with it.

I also found that the keyboard was utilized entirely too much for a light-pen program; such things as selecting spots for line and shape options are indicated by pointing *and* pressing a key.

#### Pen Palette

A separate program on the disk allows you to color your Flexidraw

### Other Light Pens Available for Your Commodore

#### Koala Light Pen System

Koala Technologies Corp., 3100 Patrick Henry Drive, Santa Clara, CA 95050. (C-64, with Graphics 64 software on disk, \$99.95.)

#### McPen

Madison Computer, 1825 Monroe St., Madison, WI 53711. (C-64/VIC-20, with software on disk or cassette, \$49.95.)

drawings. It is doubly awkward: First, it is separate from the main program; second, it is set up rather oddly.

After loading a Flexidraw drawing, you are starting with a black-and-white picture, all of which can be viewed as either background or foreground. Pen Palette lets you define 23 different "paint pots," which are combinations of two colors. When you select a paint pot and paint a section of your drawing, the two colors are applied to the background and foreground of the section being



Circle 50 on Reader Service card.

## RABBIT

For the 64 or VIC

\$39.95

Alternative to the 1541 Disk Drive!

Load or save 8K in 30 seconds! It's less expensive than disk and can even be used as a backup to the flaky 1541!

Yes, the RABBIT is that and much more. Uses the Commodore cassette deck but loads and saves much, much faster than regular Commodore load/save. Think about it — loads or saves an 8K program in almost 30 seconds, 16K in 1 minute, etc. That's nearly as fast as the 1541 disk. RABBIT is on cartridge so it's always there. Also has other useful commands. Specify for use on the 64, or on the VIC 20 —

"It was the best purchase for my computer that I have ever made!"

"Congratulations on your 64 Rabbit. It's a super piece of work."

## MAE NOW THE BEST FOR LESS!

Please for your own protection consider the MAE first before you buy that other assembler. We've had numerous customers who wasted their money on some cheaper off brand assembler tell us how much better the MAE is.

The most powerful Macro Assembler/Editor available for the Commodore 64 and other CBM/PET computers, and also for the ATARI 800/XL and Apple II/III.

MAE includes an Assembler, Editor, Word Processor, Relocating Loader, and more all for just \$59.95.

We could go on and describe the MAE but we thought you would like to read our customers' comments. The following are actual unedited comments from correspondence about the MAE:

"Excellent Development Package."

"Compares to DEC and INTEL."

"I like MAE and wish that you had it on the Macintosh."

"It is a superb program."

## AutoLoad/Directory

Cartridge for the 64.

This cartridge has 2 push-button switches on it that allow you to: 1) Load and then automatically run the first program on disk, and 2) Display the disk directory — either at the touch of a button! It may not sound like much but it is absolutely one of the most convenient accessories you can install on your 64. Housed in an attractive plastic cartridge complete with easy to install instructions, works with every software package (including menus and commercial software) we have tried and it doesn't take away any memory. Think about it the next time you type: **LOAD "\*" ,8,1 RUN** or **LOAD "\$",8 LIST**. Remember, it's only \$19.95.

## TelStar 64™

by Eastern House

A Communications Cartridge for the Commodore 64.

Upload/Download, Status Line, etc. Works with your Commodore 1600 or 1650 Modem. Auto-dialing, etc. when used with the new CBM 1650 Modem.

Cartridge and Manual — \$49.95

# Eastern House

3239 Linda Dr.  
Winston-Salem, N.C. 27106  
(919) 748-8446  
Send for free catalog!

VISA®

MasterCard

# Super Software Specials!

For Commodore 64

\$1.00 credit for phone orders over \$100

GAMES	LIST	SPECIAL
Archon II - Adept.....	D 40.00	28.56
Baltic '85.....	D 34.95	24.86
Beyond Castle Wolfenstein.....	D 34.95	24.86
Breakdance.....	D 34.95	24.86
Championship Lode Runner.....	D 34.95	24.86
Chess 5.0.....	D 69.95	50.76
Flight Simulator II.....	D 49.95	38.96
Gyruss.....	X 49.95	35.96
Hitchhiker's Guide to Galaxy.....	D 34.95	24.86
Pitstop 2.....	D 39.95	28.56
Questron.....	D 39.95	28.56
Robots of Dawn.....	D 39.95	28.56
Sea Stalker.....	D 34.95	24.86
Spelunker.....	D 29.95	24.86
Star League Baseball.....	D 31.95	22.64
Stealth.....	D 29.95	21.66
Tapper.....	D 44.95	32.26
EDUCATIONAL		
Agent USA.....	D 29.95	28.56
Charlie Brown's ABC.....	D 39.95	28.56
Donald Duck Playground.....	D 39.95	28.56
Facemaker.....	D 34.95	24.86
Goofy's Word Facts.....	D 39.95	28.56
Grammar Examiner.....	D 44.95	32.26
Fraction Fever.....	X 34.95	24.86
Movie Musical Madness.....	D X 29.95	21.66
9.5 Typing.....	D 39.95	28.56
SAT (Barrons).....	D 89.95	65.56
SAT (HBJ).....	D 79.95	58.16
Snoopy's Skywriter Scrambler.....	D 39.95	28.56
Speed Reader II.....	D 69.95	50.76
States & Traits.....	D 44.95	32.26
Weather Tamer.....	D 39.95	28.56
Word Attack!.....	D 49.95	35.96

## Ask for FREE price list

Educators: ask for special educational catalog

### OTHER

80 Col. Card (Bat. Inc.).....	199.95	145.96
Financial Cookbook.....	D 50.00	35.96
Graphic Magician.....	D 39.95	28.56
Homework.....	D 69.95	47.76
Kawasaki Rhythm Rocker.....	D 39.95	28.56
Koala Light Pen.....	D 99.95	71.96
Koala Pad.....	D 99.95	69.95
Koala Printer.....	D 24.95	17.96
Micro Cookbook.....	D 34.95	24.86
Muppet Learning Keys.....	D 79.95	58.16
Net Worth.....	D 79.95	58.16
PFS File.....	D 79.95	58.16
PFS Report.....	D 69.95	50.76
Paper Clip w/Spellright.....	D 119.95	86.76
Party Quiz - Trivia Game.....	D 69.95	50.76
Phi Beta Filer.....	D 39.95	28.56
Print Shop.....	D 49.95	35.96
Sam.....	D 59.95	43.36
Sight & Sound Keyboard.....	D 49.95	35.96
Superbase 64.....	D 99.95	71.96
Super Clone Machine.....	D 49.95	35.96

### Please specify format

c = cassette d = disk x = cartridge



C.O.D. • M.O. • Cert Checks • School P.O.  
 • VISA • MasterCard • Checks Allow 2 Weeks  
 • N.Y.S. Res. Add Sales Tax • US Orders  
 Under \$150. Add \$2.50 P & H • All Canadian,  
 US Funds \$3.00 P & H • Foreign, Charges Only.  
 Min. P & H \$7.00

Source TCP 637, Compuserve 72135.1710

Box 525, Dept. 40  
 East Setauket, N.Y. 11733  
 (516) 751-2535

Painted. While you can change an already painted area just by redefining the paint pot you used for it, it is severely limiting after working with the much freer programs of the other light pens, or a program such as KoalaPad's KPaint.

### Other Programs

There are a number of small applications on the Flexidraw disk that you might find useful. A sprite editor lets you design sprites on the screen, giving you the data necessary to Poke into your Basic program to achieve that design; a Sprite Animator will let you try some "color animation."

The Flexiplot program gives a few machine code routines that you can call from your Basic program for high-resolution graphics plotting, and Transgraph lets you send your drawings over a modem.

There are also some demonstration programs that show how you can incorporate light-pen routines into your Basic programs.

### Summary

The Flexidraw package is good, but only for the right audience—the computer hobbyist or the experienced programmer—not the casual user, nor children. The documentation, and the programs, assume a programming bent on the part of the user. Things are explained, but usually in jargon: "The software continually averages the pen screen location so that any noise caused by the system. . . ." You may wonder what sound has to do with anything.

There is an interesting group of programs on the disk; while they may be, in some ways, technically superior to the other programs reviewed here, the overall impression, chiefly influenced by the lack of color in the drawing program, is that the disparity between program quality and price is too great.

The pen itself is the best of the three; the pressure-sensitive tip is certainly the most convenient of activation devices—whether that is worth the difference in the price is something you will have to decide for yourself. (Inkwell Systems, 7770 Vickers St., PO Box 85152 MB290, San Diego, CA 92138. Flexidraw Light Pen/Software System, \$149.95.)

Address all author correspondence to Sharon Zardetto Aker, 20 Courtland Drive, Sussex, NJ 07461.

# MOVING? SUBSCRIPTION PROBLEM?

Get help with your subscription by calling our new toll free number:

**1-800-645-9559\***

between 9 a.m. and 5 p.m. EST,  
 Monday-Friday.

If possible, please have your mailing label in front of you as well as your cancelled check or credit card statement if you are having problems with payment.

If moving, please give both your old address and new address.

\* New York State residents call 1-800-732-9119.

# ATTENTION

Foreign Computer Stores  
 Magazine Dealers

You have a large technical audience that speaks English and is in need of the kind of microcomputer information that CW/Peterborough provides.

Provide your audience with the magazine they need and make money at the same time.

For details on selling 80 MICRO, inCider, HOT CoCo, RUN contact:

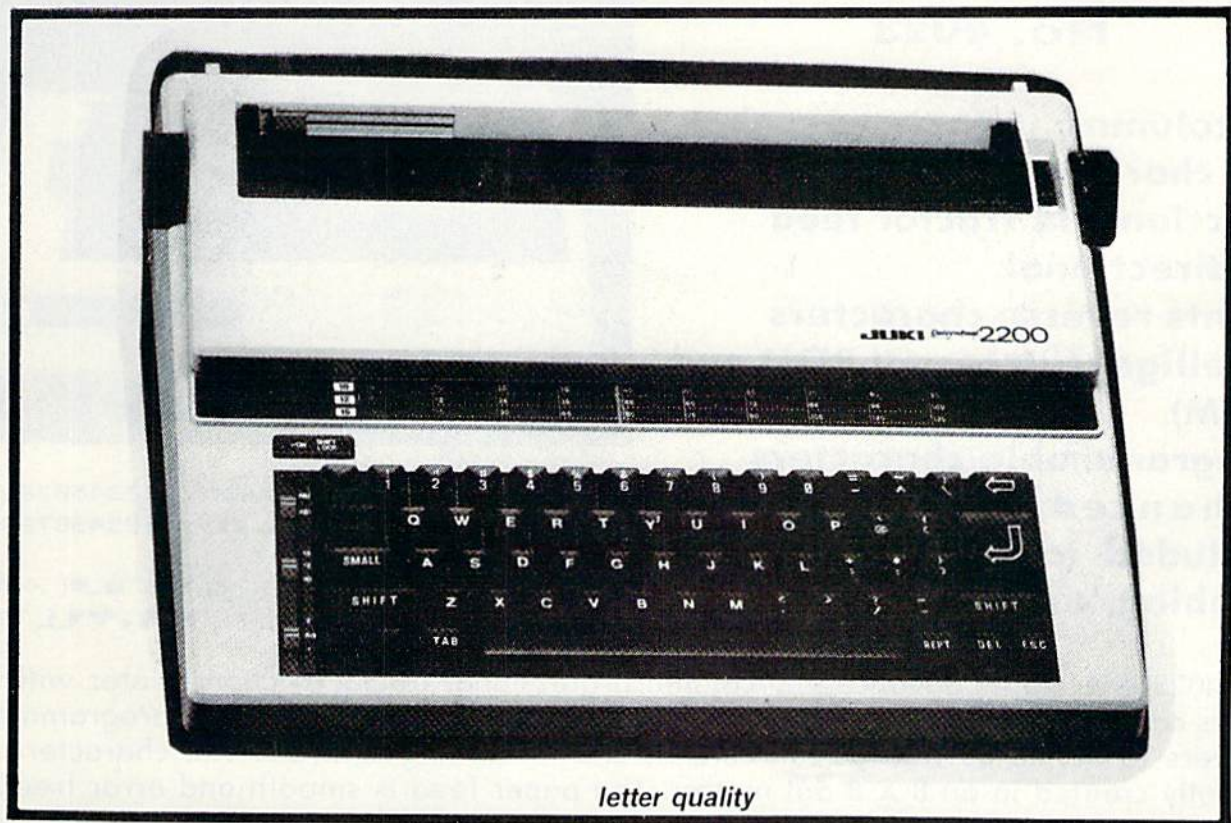
SANDRA JOSEPH  
 WORLD WIDE MEDIA  
 386 PARK AVE., SOUTH  
 NEW YORK, NY 10016  
 PHONE (212) 686-1520  
 TELEX—620430

# JUKI®

COMBINATION "DAISY WHEEL"  
PRINTER / TYPEWRITER

**SALE!**  
**\$299<sup>00</sup>**

DELUXE MODEL 2200 LIST \$499<sup>00</sup>  
(INCLUDING CARRYING HOOD)



- SUPERB COMPUTER PRINTER COMBINED WITH A DELUXE MODEL ELECTRONIC TYPEWRITER (100 CHARACTERS)
- UP TO 14 CPS PRINT SPEED
- TWO MACHINES IN ONE — JUST A FLICK OF THE SWITCH!
- SUPERB EXECUTIVE CORRESPONDENCE — HOME, OFFICE, WORD PROCESSING!
- 13" EXTRA LARGE CARRIAGE
- DROP IN CASSETTE RIBBON — REPLACEMENT CASSETTE RIBBON \$8.95
- PRECISION DAISY WHEEL PRINTING — MANY TYPE STYLES! \$18.95 each
- PITCH SELECTOR — 10, 12, 15 CPS, AUTOMATIC RELOCATE KEY!
- AUTOMATIC MARGIN CONTROL AND SETTING! KEY IN BUFFER!
- 2 K MEMORY
- CENTRONICS PARALLEL OR SERIAL R S 232 INTERFACE BUILT-IN (SPECIFY)
- COMMODORE 64 COMPUTER INTERFACE ONLY \$49.00 - ATARI INTERFACE \$79.00

**15 Day Free Trial - 90 Day Immediate Replacement Warranty**

ADD \$10.00 for shipping and handling!!

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. VISA — MASTER CARD ACCEPTED. We ship C.O.D.

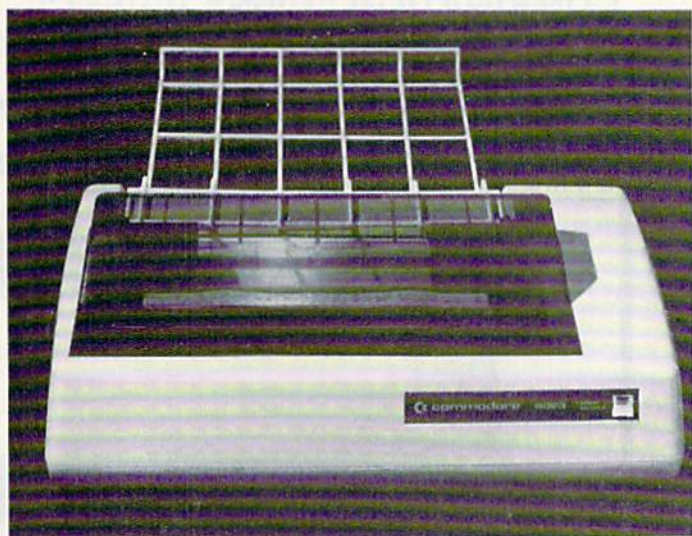
**PROTECTO**  
**ENTERPRIZES** (WE LOVE OUR CUSTOMERS)  
BOX 550, BARRINGTON, ILLINOIS 60010  
Phone 312/382-5244 to order

Circle 15 on Reader Service card.

# Commodore Tractor/Friction Business Printer No. 4023

List \$499 **SALE \$199**

- 80 columns
- 100 characters per second
- Friction and Tractor feed
- Bi-directional
- Prints reverse characters
- Intelligent (Internal ROM and RAM)
- Programmable characters
- Enhanced Formatting included (automatic \$ signs, tabbing, columns, etc.)



ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890--=  
abcdefghijklmnopqrstuvwxyz 1234567890--=

+!@#%&\*~&\*( )-+&# | ~-| h y L V T O \_ ! X O & #  
~!@#%&\*~&\*( )-+&# | ~-| h y L V T O \_ ! X O & #

The 4023 is a highly advanced 80 column professional tractor/friction printer with full graphics capabilities for custom reports, and program listings. You have 64 programmable characters to define as well as full column and formatting controls. The characters are beautifully created in an 8 X 8 dot matrix. The paper feed is smooth and error free and even includes a paper rack for easier paper storage. The ribbon can be replaced with ease (no mess, easily available cartridge) and will last through 1.2 million characters. You can use single sheet standard paper or continuous forms to make up to 3 copies at one time (3 part forms). This is the best printer value in the U.S.A.

## SPECIFICATIONS

### PRINTING METHOD

Serial Impact Dot Matrix

### PRINT RATE

100 characters per second (CPS)

### PRINT STYLE

Correspondence Quality

### PRINT DIRECTION

Bi-directional

### COLUMN CAPACITY

80

### CHARACTER FONT

8 X 8

### LINE SPACING

Programmable

### CHARACTER SIZE

0.094" high, 0.08" wide

### COPIES

3, including original

### RIBBON TYPE

Cartridge

### RIBBON LIFE

1.2 million characters

### RIBBON CARTRIDGE

Commodore P/N613160550

### PAPER WIDTH

3" to 10" tractor or single sheet friction

### FORMS

7.5 plus (0.5 X 2 sprocket margins)

Pin-to-pin distance: .5" longitudinally

9.5" laterally

5/32" diameter

### INTERFACE

IEEE protocol

### GRAPHICS

64 Programmable graphics

**Commodore 64 Computer IEEE Interface & Cable** List \$149.00 **Sale \$79.00**

*15 Day Free Trial - 90 Day Immediate Replacement Warranty*

Add \$14.50 for shipping, handling, and insurance. Illinois residents please add 6% tax. Add \$29.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day express mail!

VISA—MASTER CARD—We Ship C.O.D. to U.S. Addresses Only

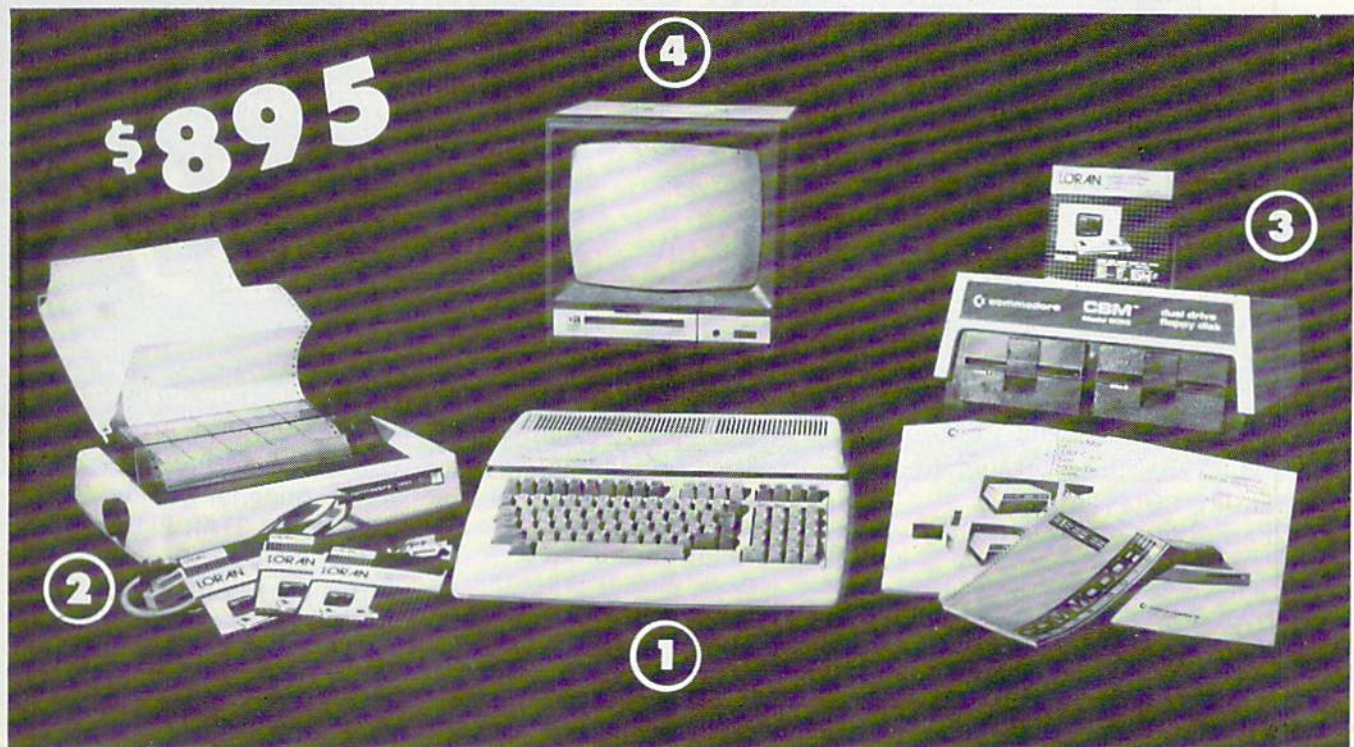
**PROTECTO  
ENTERPRIZES** (WE LOVE OUR CUSTOMERS)

BOX 550, BARRINGTON, ILLINOIS 60010  
Phone 312/382-5244 to order

NEW 128K —MEGA BYTE DUAL DISK DRIVE—80 COLUMN

# COMPUTER SYSTEM SALE!

HOME • BUSINESS • WORD PROCESSING



LOOK AT ALL YOU GET FOR ONLY **\$895.**

- |  |            |           |
|--|------------|-----------|
| ① B128 COMMODORE 128K 80 COLUMN COMPUTER           | LIST PRICE | \$ 995.00 |
| ② 4023 - 100 CPS - 80 COLUMN BIDIRECTIONAL PRINTER |            | 499.00    |
| ③ 8050 DUAL DISK DRIVE (over 1 million bytes)      |            | 1795.00   |
| ④ 12" HI RESOLUTION 80 COLUMN MONITOR              |            | 249.00    |
| • BOX OF 10 LORAN LIFETIME GUARANTEED DISKS        |            | 49.95     |
| • 1100 SHEETS FANFOLD PAPER                        |            | 19.95     |
| • ALL CABLES NEEDED FOR INTERFACING                |            | 102.05    |



**TOTAL LIST PRICE \$3717.95**

**PLUS YOU CAN ORDER THESE BUSINESS PROGRAMS AT SALE PRICES**

	LIST	SALE		LIST	SALE
Professional 80 Column			Payroll	\$149.95	<b>\$99.00</b>
Word Processor	\$149.95	<b>\$99.00</b>	Inventory	\$149.95	<b>\$99.00</b>
Professional Data Base	\$149.95	<b>\$99.00</b>	General Ledger	\$149.95	<b>\$99.00</b>
Accounts Receivable	\$149.95	<b>\$99.00</b>	Financial Spread Sheet	\$149.95	<b>\$99.00</b>
Accounts Payable	\$149.95	<b>\$99.00</b>	Order Entry	\$149.95	<b>\$99.00</b>

**PRINTER REPLACEMENT OPTIONS**

(replace the 4023 with the following at these sale prices)

	LIST	SALE
☆ Olympia Executive Letter Quality Printer	\$699.00	<b>\$379.00</b>
☆ Comstar Hi-Speed 160 CPS 15 1/2" Business Printer	\$779.00	<b>\$469.00</b>
☆ Telecommunications Deluxe Modem Package	\$199.00	<b>\$139.00</b>
☆ IEEE to Centronics Parallel Printer Interface	\$179.00	<b>\$139.00</b>

**15 DAY FREE TRIAL.** We give you 15 days to try out this SUPER SYSTEM PACKAGE!! If it doesn't meet your expectations, just send it back to us prepaid and we will refund your purchase price!!

**90 DAY IMMEDIATE REPLACEMENT WARRANTY.** If any of the SUPER SYSTEM PACKAGE equipment or programs fail due to faulty workmanship or material we will replace it IMMEDIATELY at no charge!!

Add \$50.00 for shipping and handling!!

\$100.00 for Alaska and Hawaii orders.

WE DO NOT EXPORT TO OTHER COUNTRIES

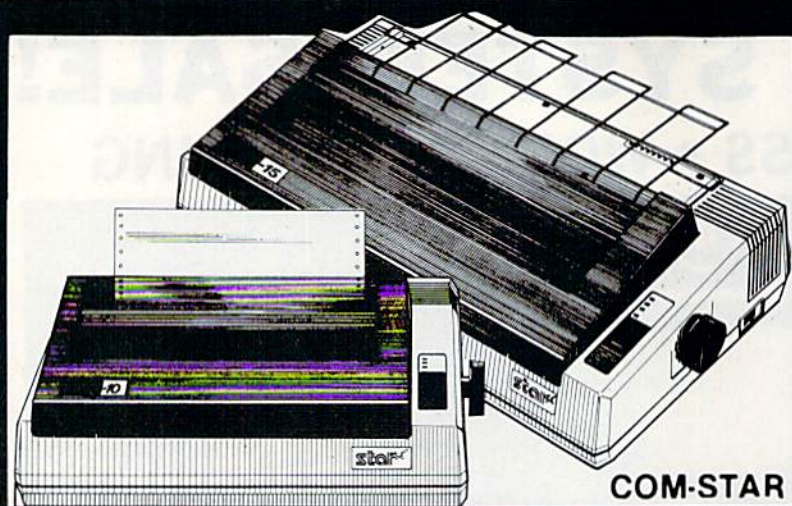
Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day express mail! We accept Visa and MasterCard. We ship C.O.D. to continental U.S. addresses only.

Circle 15 on Reader Service card.

**PROTECTO ENTERPRISES** WE LOVE OUR CUSTOMERS.

BOX 550, BARRINGTON, ILLINOIS 60010  
Phone 312/382-5244 to order

# FANTASTIC COMPUTER PRINTER SALE!!!



## COM-STAR T/F

Tractor  
Friction  
Printer

only \$ **169\*\***

• **Lowest Priced, Best Quality, Tractor-Friction Printers in the U.S.A.**

- **Fast 80-120-160 Characters Per Second**
- **40, 46, 66, 80, 96, 132 Characters Per Line Spacing**
- **Word Processing**
- **Print Labels, Letters, Graphs and Tables**
- **List Your Programs**
- **Print Out Data from Modem Services**
- **"The Most Important Accessory for Your Computer"**

### \*\* DELUXE COMSTAR T/F 80 CPS Printer — \$169.00

This COMSTAR T/F (Tractor Friction) PRINTER is exceptionally versatile. It prints 8 1/2" x 11" standard size single sheet stationary or continuous feed computer paper. Bi-directional, impact dot matrix, 80 CPS, 224 characters. (Centronics Parallel Interface).

### Premium Quality 120-140 CPS 10" COM-STAR PLUS+ Printer \$249.00

The COM STAR PLUS+ gives you all the features of the COMSTAR T/F PRINTER plus a 10" carriage, 120-140 CPS, 9x9 dot matrix with double strike capability for 18 x 18 dot matrix (near letter quality), high resolution bit image (120 x 144 dot matrix), underlining, back spacing, left and right margin settings, true lower decenders with super and subscripts, prints standard, italic, block graphics and special characters. It gives you print quality and features found on printers costing twice as much!! (Centronics Parallel Interface) (Better than Epson FX80). List \$499.00 **SALE \$249.00**

### Premium Quality 120-140 CPS 15 1/2" COM-STAR PLUS+ Business Printer \$349.00

Has all the features of the 10" COM-STAR PLUS+ PRINTER plus 15 1/2" carriage and more powerful electronics components to handle large ledger business forms! (Better than Epson FX 100). List \$599 **SALE \$349.00**

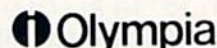
### Superior Quality 10" COM-STAR+ H.S. HIGH SPEED 160-180 CPS Business Printer \$369.00

This Super High Speed Com-Star+ Business Printer has all the features of the 10" COM-STAR+ PRINTER with HIGH SPEED BUSINESS PRINTING 160-180 CPS, 100% duty cycle, 8K Buffer, diverse character fonts, special symbols and true decenders, vertical and horizontal tabs. A RED HOT BUSINESS PRINTER at an unbelievable low price (Serial or Centronics Parallel Interface) List \$699.00 **Sale \$369.00.**

Circle 15 on Reader Service card.

### Superior Quality 15 1/2" COM-STAR PLUS+ H.S. High Speed 160 - 180 CPS Business Printer \$469.00

This Super High Speed COM-STAR+ 15 1/2" Business Printer has all the features of the 10" COM-STAR BUSINESS PRINTER with a 15 1/2" Carriage and more powerful electronic components to handle larger ledger business forms! Exclusive bottom feed. (Serial Centronics Parallel Interface) List \$799.00 **Sale \$469.00**



### Executive Letter Quality DAISY WHEEL PRINTER \$379.00

This is the worlds finest daisy wheel printer **Fantastic Letter Quality**, up to 20 CPS bidirectional, will handle 14.4" forms width! Has a 256 character print buffer, special print enhancements, built in tractor-feed (Centronics Parallel and RS232C Interface) List \$699 **SALE \$379.**

• **15 Day Free Trial - 1 Year Immediate Replacement Warranty**

### PARALLEL INTERFACES

For VIC-20 and COM-64 — \$49.00 For Apple computers — \$79.00 Atari 850 Interface — \$79.00 For ALL IBM Computers — \$89.00

Add \$14.50 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$29.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day express mail! VISA—MASTER CARD—We Ship C.O.D. to U.S. Addresses Only

## PROTECTO ENTERPRIZES (WE LOVE OUR CUSTOMERS)

BOX 550, BARRINGTON, ILLINOIS 60010  
Phone 312/382-5244 to order

COM-STAR PLUS+  
Print Example:

**ABCDEFGHIJKLMN OPQRSTUVWXYZ  
ABCDEFGHIJKLMN OPQRSTUVWXYZ 1234567890**



# COMPUTER AND SOFTWARE SALE

## COMMODORE 64

(with \$12.95 Bonus Pack Purchase)

# \$175<sup>00</sup>\*

- 170K Disk Drive \$239.00 \*
  - Tractor Friction Printer \$169.00\*
  - 13" Hi-Res Color Monitor \$199.00 \*
- \*less coupon discount

WE  
HAVE  
THE  
BEST  
SERVICE

WE  
HAVE  
THE  
LOWEST  
PRICES

## SUPER AUTO DIAL MODEM 64

(Best communications package in USA)

# \$79<sup>00</sup>

- Computer Learning Pad \$49.00
- New Voice Synthesizer \$59.00
- Commodore 64 Power for Vic-20 \$69.00

### SPECIAL SOFTWARE COUPON

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

#### (Examples) PROFESSIONAL SOFTWARE COMMODORE 64

Name	List	Sale	Coupon
Executive Word Processor	\$99.00	\$49.00	\$39.00
Executive Data Base	\$69.00	\$35.00	\$24.00
20,000 Word Dictionary	\$24.95	\$14.95	\$10.00
Electronic Spread Sheet	\$59.95	\$49.00	\$39.00
Accounting Pack	\$49.00	\$39.00	\$29.00
Practicalc	\$59.95	\$44.95	\$36.95
Programmers Reference Guide	\$20.95	\$16.95	\$12.50
Programmers Helper (Disk)	\$59.95	\$39.95	\$29.95
80 Column Screen (Disk)	\$59.95	\$39.95	\$29.95
Flip & File Disc Filer	\$39.95	\$16.95	\$14.95
Deluxe Tape Cassette	\$89.00	\$49.00	\$39.00
Pro Joy Stick	\$24.95	\$15.95	\$12.00
Light Pen	\$39.95	\$16.95	\$14.95
Dust cover	\$8.95	\$6.95	\$4.60
Pogo Joe	\$29.95	\$19.95	\$16.95
Pitstop II - Epyx	\$39.95	\$29.95	\$26.00*
			*Plus One FREE
Music Calc	\$59.95	\$39.95	\$34.95
Filewriter	\$59.95	\$39.95	\$34.95

(See over 100 coupon items in our catalog)

Write or call for  
Sample SPECIAL SOFTWARE COUPON!

#### EXECUTIVE QUALITY PROFESSIONAL BUSINESS SOFTWARE

The Cadillac of Business Programs  
for Commodore 64 Computers

Item	List	*SALE	Coupon
Inventory Management	\$99.00	\$49.00	\$35.00
Accounts Receivable	\$99.00	\$49.00	\$35.00
Accounts Payable	\$99.00	\$49.00	\$35.00
Payroll	\$99.00	\$49.00	\$35.00
General Ledger	\$99.00	\$49.00	\$35.00

#### \* COMMODORE 64 COMPUTER \$175.00

You pay only \$175.00 when you order the powerful 84K COMMODORE 64 COMPUTER! LESS the value of the SPECIAL SOFTWARE COUPON we pack with your computer that allows you to SAVE OVER \$500 off software sale prices!! With only \$100 of savings applied, your net computer cost is \$75.00!!

#### \* 170 DISK DRIVE \$239.00

You pay only \$239.00 when you order the 170K Disk Drive! LESS the value of the SPECIAL SOFTWARE COUPON we pack with your disk drive that allows you to SAVE OVER \$100 off software sale prices!! With only \$500 of savings applied, your net disk drive cost is \$139.00.

#### \* 80 COLUMN 80CPS

#### TRACTION FRICTION PRINTER \$169.00

You pay only \$169.00 when you order the Comstar T/F deluxe line printer that prints 8 1/2 x 11 full size, single sheet, roll or fan fold paper, labels etc. Impact dot matrix, bidirectional. LESS the value of the SPECIAL SOFTWARE COUPON we pack with your printer that allows you to SAVE OVER \$100 off software sale prices!! With only \$500 of saving applied your net printer cost is only \$69.00.

#### \* 13" HI-RES COLOR MONITOR \$199.00

You pay only \$199 when you order this 13" COLOR MONITOR with sharper and clearer resolution than any other color monitors we have tested! LESS value of the SPECIAL DISCOUNT COUPON we pack with your monitor that allows you to save over \$500 off software sale prices With only \$100 of savings applied, your net color monitor cost is only \$99.00. (16 colors).

#### 80 COLUMN BOARD \$99.00

Now you program 80 COLUMNS on the screen at one time! Converts your Commodore 64 to 80 COLUMNS when you plug in the 80 COLUMN EXPANSION BOARD!! PLUS 4 slot expander! Can use with most existing software.

#### 80 COLUMNS IN COLOR EXECUTIVE WORD PROCESSOR \$49.00

This EXECUTIVE WORD PROCESSOR is the finest available for the COMMODORE 64 computer! The ULTIMATE FOR PROFESSIONAL Word Processing DISPLAYS 40 or 80 COLUMNS IN COLOR or Black and White! Simple to operate, powerful text editing with 250 WORD DICTIONARY, complete cursor and insert/delete key controls line and paragraph insertion, automatic deletion, centering, margin settings and output to all printers! Includes a powerful mail merge.

List \$99.00 SALE \$49.00 Coupon \$39.00

#### SUPER AUTO DIAL MODEM \$79.00

Easy to use. Just plug into your Commodore 64 computer and you're ready to transmit and receive messages. Easier to use than dialing your telephone just push one key on your computer! Includes exclusive easy to use program for up and down loading to printer and disk drives. List \$129.00 SALE \$79.00.

#### NEW COMPUTER LEARNING PAD \$39.95

makes other graphics tablet obsolete. This new TECH SCETCH LEARNING PAD allows you to draw on your T.V. or Monitor and then you can print whatever you draw on the screen on your printers. FANTASTIC!!! List \$79.95 SALE \$39.95

#### NEW VOICE SYNTHESIZER \$59.00

For Com-64 or VIC 20 computers. Just plug it in and your can program words and sentences, adjust volume and pitch, make talking adventure games, sound action games and customized talkies!! FOR ONLY \$19.95 you can add TEXT TO SPEECH, just type a word and hear your computer talk—ADD SOUND TO "ZORK", SCOTT ADAMS AND AARDVARK ADVENTURE GAMES!! (Disk or tape).

#### COM-64 POWER FOR VIC-20 \$69.00

Just plug in our 32K RAM MEMORY EXPANDER and you get as much usable programming power as the Commodore-64 computer!! Master control switches on cover. Gold Edge connectors, five year warranty (FREE \$29.95 CARTRIDGE GAME).

#### FLOPPY DISK SALE .98¢

Lowest prices in the U.S.A!! Single sided, single density, with hub rings, quality guaranteed! (100 bulkpack .98¢ ea.) (Box of 10 \$12.00)

#### COM-64 4 SLOT EXPANSION BOARD \$39.95

Easy to use, switch selectable, reset button and LED indicator — saves your computer and cartridges. List \$79.00 Sale \$39.95 Coupon \$36.95.

#### 9" GREEN SCREEN MONITOR \$69.00

Excellent quality SANYO, easy to read, 80 columns x 24 lines. Green Phosphorous screen with anti-glare, metal cabinet! Saves your T.V. PLUS \$9.95 for connecting cable. Com-64 or VIC 20.

#### 12" GREEN OR AMBER MONITOR \$99.00

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

#### PHONE ORDERS

8AM - 8PM Weekdays  
9AM - 12N Saturdays

- LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY
- BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • OVER 500 PROGRAMS • FREE CATALOGS

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

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders, 1 day express mail!

VISA — MASTER CARD — C.O.D.

Circle 15 on Reader Service card.

# PROTECTO ENTERPRISES

(WE LOVE OUR CUSTOMERS)

BOX 550, BARRINGTON, ILLINOIS 60010  
Phone 312/382-5244 to order

# Commodore - 64

# WORD PROCESSING BREAKTHROUGH!

## SCRIPT-64 EXECUTIVE WORD PROCESSOR

**(80 Columns in Color)**

40 or 80 columns in color or black and white; turns your computer into a Business Machine!

This is the finest word processor available. Features include line and paragraph insertion/deletion, indentation, right and left justification, titles, page numbering, characters per inch, etc. All features are easy to use and understand. With tabs, etc. SCRIPT-64 even includes a 250 word dictionary/spelling checker to make sure your spelling is correct. The dictionary is user customizable to any technical words you may use. Furthermore, all paragraphs can be printed in writing and everyday letters are a snap. To top things off, there is a 100 page manual and help screens to make learning how to use SCRIPT-64 a snap. This word processor is so complete we can't think of anything it doesn't have. When combined with the complete database you have a powerful mailmerge and label program that lets you customize any mailing list with personalized letters. List \$99.95. **Sale \$49.95.** \*Coupon Price \$39.00. (Disk only.)

## SCRIPT-64 20,000 WORD DICTIONARY

Allows you to check spelling on 20,000 most often misspelled words! List \$29.95 **Sale \$19.95.** \*Coupon Price \$10.00. (Disk only.)

## SCRIPT-64 COMPLETE DATABASE

**(PLUS MAIL MERGE AND LABELS)**

This powerful DATABASE is user friendly and makes any information easy to store and retrieve. The user defines the fields and then can add, change, delete, and search for any category wanted! When combined with the Executive Word Processor you can search out any category (zip codes, even hair color, etc.) and print super personalized letters! 600 names can be sorted and formulated on each disk in any order or category! Will handle any size mailing list by changing or adding disks! List \$69.00. **Sale \$34.00.** \*Coupon Price \$24.00.

- LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY
- BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • OVER 500 PROGRAMS • FREE CATALOGS

WE SHIP C.O.D. HONOR VISA AND MASTER CHARGE  
ADD \$3.00 SHIPPING FOR C.O.D. ADD \$2.00 MORE

SPECIAL SERVICES:

www.commodore.ca  
One Day — Express Mail add \$10.00

Circle 15 on Reader Service card.

**PROTECTO**  
**ENTERPRIZES** (WE LOVE OUR CUSTOMERS)

BOX 550, BARRINGTON, ILLINOIS 60010  
Phone 312/382-5244 to order

# COLOR MONITOR SALE!!!

(Lowest price in USA)

- Built in speaker and audio
- Front Panel Controls
- For Video Recorders
- For Small Business/Computers
- Apple-Commodore Atari-Franklin-etc.



- Beautiful Color Contrast
- High Resolution
- Sharp Clear Text
- 40 Columns x 24 lines
- List \$399  
**SALE \$199**

13" Color Computer Monitor

*15 Day Free Trial - 90 Day Immediate Replacement Warranty*

12" **ZENITH** HI-RESOLUTION GREEN OR AMBER TEXT DISPLAY MONITOR  
List \$249 **SALE \$119**

80 Columns x 24 lines, Hi-Resolution-crisp clear easy to read text with anti glare screen! A Must for word processing.

12" **SANYO** GREEN OR AMBER SCREEN MONITOR List \$199 **SALE \$99**

80 Columns x 24 lines, amber or green text display, easy to read, no eye strain, up front controls.

9" **SANYO** GREEN SCREEN DATA MONITOR List \$149 **SALE \$69**

80 Columns x 24 lines easy to read, up front controls metal cabinet.

Circle 15 on Reader Service card.

• LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY  
• BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • OVER 500 PROGRAMS • FREE CATALOGS

Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII orders. WE DO NOT EXPORT TO OTHER COUNTRIES.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. Visa - MasterCard - C.O.D.

**PROTECTO**  
**ENTERPRIZES** (WE LOVE OUR CUSTOMERS)  
BOX 550, BARRINGTON, ILLINOIS 60010  
Phone 312/382-5244 to order

From p. 12.

NCR at very high prices. A C-64 goes for close to \$500 U.S., a 1541 for close to \$400, if you can find one. I couldn't even get a delivery date from the people I spoke with about a disk drive. Consequently, most people down here use the Datassette.

Ralph S. Lees, Jr.  
St. Maarten  
Netherlands Antilles

**\$16F Jumpman jiminy**—Jumpman is one of the C-64's best commercial games, with great sound and challenging multi-level screens. Unfortunately, a lot of us never get to see the higher level screens because we always run out of jumpmen. Here's a way to avoid running out.

Load the game boot and run it. Exactly 90 seconds after hitting the return key, simultaneously press the run/stop and restore keys, which will reset your machine. Your screen will be blue, and the cursor will be flashing. Now enter:

```
POKE 24015,173 : POKE 54296,15 : SYS 9*4096
```

If all is well, the Options screen should come on. Proceed normally, playing the game as usual but with one exciting difference: You'll never run out of jumpmen! When one of your men is killed, a new one appears, while the number you have left remains at seven.

Tim Tan  
Winnipeg, Manitoba  
Canada

**\$170 Terminating games**—Many computer games end with the player's man, android or spaceship being blasted or otherwise put to death. Unlike the real-world variety, this death is generally reversible, often by pressing a key. Vigorous pursuers of realism will appreciate the routine below, which is a *real* android killer. Executing the appropriate version blacks out the screen, disables all keys and sounds, and thoroughly corrupts any Basic program in memory. There is *no* way to recover. The first routine is for the C-64, the second is for the VIC-20.

```
6400 REM ** KILLER FOR C-64 **
6410 POKE808,225:POKE53280,0:POKE53265,11:POKE649,0
6420 FORX = 54272TO54296:POKEX,0:NEXT
6430 FORX = 2048TOPEEK(61) + 256*PEEK(62)
STEP7:POKEX,PEEK(56324) :NEXT:WAITX,0

20000 REM ** KILLER FOR VIC-20 **
20010 PRINTCHR$(147):POKE808,127:POKE36879,8:POKE649,0
20020 FORX = 36874TO36878:POKEX,0:NEXT
20030 FORX = 4096TOPEEK(61) + 256*PEEK(62)STEP7:
POKEX,PEEK(162):NEXT:WAITX,0
```

Louis F. Sander  
Pittsburgh, PA

**\$171 Program password**—I recently devised a security lock system for my programs. Now, persons not knowing the secret code are prevented from using my programs. The code is any number; where the

program below says "code," just plug in a number. The program should be inserted before the main program.

```
1 POKE 800,100 : POKE 819,245
2 INPUT "{SHFT CLR}ACCESS CODE";A
3 IF A <> code THEN NEW
4 Continue the program here
```

Sean Fitzpatrick  
St. John's, Newfoundland  
Canada

**\$172 Magic program protector**—This procedure will give a rather secure no-list protection to any C-64 Basic program. First, enter the following line exactly, with no embedded spaces except where shown. Be careful, as the line is designed to list in a very tricky manner.

```
0 P{SHFT O}2126,98:P{SHFT O}2127,8:REM""{DELETE}
{CTRL RVS}{28 T's}{CTRL RVS OFF}
{SPACE}REM{SPACE}"PROTECTED BY MAGIC"
```

Once it is entered, do *not* run it. Instead, make this Direct mode entry:

```
FOR X = 2125 TO 2127 : PRINT PEEK(X) : NEXT
```

If three zeroes are printed, line zero is correct; otherwise, enter it again from the beginning. When you have the three zeroes, enter this line:

```
1 POKE 2126,0 : POKE 2127,0
```

Once again, do *not* run the program. *Do* save it, giving it some descriptive name, like Magic Protector.

Now you are ready to test the protection routine. Add some simple program to lines 0 and 1; something like

```
10 PRINT"HOUDINI"
```

is good enough, but the program can be as complex as you'd like. Run the program to satisfy yourself that it works, then try to list it. If all has gone well, nothing but the last part of line 0 will list, but the program will run perfectly. Any attempt to add or delete lines will corrupt the program.

Now, whenever you want to protect a program, just append it to Magic Protector. The first time you run it, everything but line 0 will disappear, and non-magicians will be hard pressed to crack your security. The program can be saved in its protected form, allowing you to give copies to others without letting them see the code.

Hugo Vasquez-Aragon  
Lima, Peru

**\$173 SX-64 TV display**—The SX-64 lacks a built-in RF modulator. To display its video signal on a TV, you can avoid an external modulator if you have a video cassette recorder. Just plug the video output of the SX into the input of the VCR, and look at the output of the VCR on your TV.

D.L. Jassby  
Princeton, NJ

**\$174 Soap opera computing**—Watching a blank screen during long cassette loads becomes very

# WHATEVER HAPPENED TO FAY WRAY



**Kong  
should have  
backed her up  
with the NEW  
Copy Q**

In the software jungle,  
no copy program for the Commodore 64™  
works better or copies more at any price!  
**Copy Q** is the fastest, most reliable, and easiest-to-use.  
And **Copy Q** even comes with a backup!

The NEW **Copy Q** contains a TRUE INTELLIGENT NIBBLER which copies all the information on a disk and even the newest copy protection including half tracks, track 36+, varying data density, misordered and extra sectors, gap and sync tracks, and much more.

**Copy Q** is fully automatic. There are no parameters to set. You don't even need to swap disks when using two drives.

And **Copy Q** makes the FASTEST backups by using intelligent scanning, data compression, and super-fast data communication. Most disks are copied in just three minutes. And many disks that require extensive nibbling are copied in less than five minutes.

**Copy Q** contains other features found nowhere else: **Copy Q** revirgins disks rather than erasing them. **Copy Q** also contains a utility that automatically backs up any data disk and removes all data errors in just two minutes.

It's a software protection jungle and your data and program integrity are at stake. So don't monkey around with the others. You can climb straight to the top with the NEW **Copy Q** by Q-R & D.

Now only **\$39.95**  
Seven day money back guaranteed.

**Copy Q** and other fine Q-R & D products are available at B. Daltons, La Belles, and more than 300 dealers nationally. For the name of the dealer nearest to you or to order direct call.

**612 831-1088**



ONE WEST LAKE STREET, MINNEAPOLIS MN 55408 - 612 922-7628

Circle 188 on Reader Service card.

Circle 192 on Reader Service card.

**ditto**  
COPY DISKS AUTOMATICALLY  
**\$39.95**

- Copies 99% of currently available Commodore 64 disks.
- Supports 1 for 2 1541 drives.
- Easy to use—menu driven.
- Future updates \$17.

**FLEX FILE** \$59.95  
DATA BASE  
with Report Writer and Mail Labels

- Easy to learn (takes about 2 hours)
- Save up to 1500 typical records on a 1541 disk drive.
- Sort on multiple keys & select records 9 ways.
- Print information on labels or in report format.
- Calculate report columns.
- Flexible structure, change record size, field number, ways the file can be ordered, etc. with ease.
- Compatible with many popular word processors to create form letters or reports. 1541 • 4040 • 2031 Disk \$59.95.

**1541 Physical Exam**  
**\$39.95**

- Checks electronics
- Speed disk clamping
- Radial head alignment
- Mechanical stop location
- Includes new quiet drive stop

**HOME FINANCE MANAGER** \$49.95

Keep records of tax deductions, bank payments, monthly charges, individual item expenses, and check transactions. User friendly, menu driven. Modify or delete records with ease. Data entry in dozens of categories (more than 200 transactions per month). Review by category, date, or tax status. Print monthly reports, sort information and print tax reports. Tape or disk \$49.95.

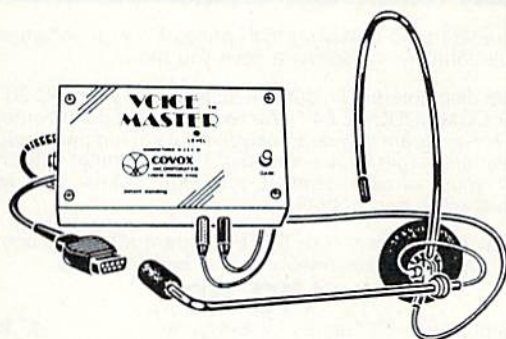
**PUT YOUR MESSAGES  
HERE IN MINUTES**

**THE BANNER MACHINE™** for the Commodore 64  
Menu-driven program works like a word processor. Great for businesses, schools, or organizations. Produces large signs up to 13" tall by any length. Make borders of widths up to 1/4". Eight sizes of letters from 1/4" to 8" high. Proportional spacing, automatic centering, right and left justification. Use with Gemini 1D or 10X, Epson MX with Graftraq, or the RK or FX, Commodore 1525E or MPS 801, and the Banana.  
The Banner machine on disk \$49.95  
8 extra fonts available \$19.95 each  
Special font disk containing 4 fonts \$39.95

ORDER TOLL FREE 10-6 MON-SAT  
**800-762-5645**  
**Cardinal Software**  
13646 Jeff Davis Hwy. 92101  
Woodbridge, VA  
Info. Call (703) 491-6502

Circle 300 on Reader Service card

## THE AMAZING VOICE MASTER



- Record & playback speech *in your own voice*
- Recognize your spoken commands
- Hum or sing to compose or play music in real time — notes and chords!

All this and more for only **\$89.95** Add \$4.00 for shipping & handling

*You won't believe it until you hear it!*  
**ASK YOUR DEALER NOW FOR A VOICE MASTER DEMONSTRATION**

Or call (503) 342-1271 for a telephone demonstration and receive a **FREE** audio cassette demo tape.

Note: Early Voice Masters have trade in value! Call for details.



**COVOX INC.**  
675-D Conger St., Eugene, OR 97402  
Telex 706017 (AV ALARM UD)

# 50% OFF EDU-TAX 50% OFF

EDU-TAX is a tax analysis program specifically designed for the average family.

Don't be caught surprised at tax time. Know exactly what your taxes will be all year long. EDU-TAX is a menu driven program with extensive on screen explanations. EDU-TAX includes these schedules and forms:

- Form 1040
- Schedule A — Itemized Deductions
- Schedule B — Interest/Dividends
- Schedule C — Business Income
- Schedule D — Capital Gains/Losses
- Schedule E — Supplemental Income
- Schedule G — Income Averaging
- Schedule W — Marital Deductions
- Form 2106 — Unreimbursed Employee Expense
- Form 2119 — Sales of Residence
- Form 4684 — Casualties and Theft Losses

EDU-TAX is currently 50% off the suggested retail price of \$50.00. EDU-TAX is now only **\$25.00** plus \$2.00 for shipping and handling. Direct only.



**EDU-TAX**  
P.O. Box 16785  
San Antonio, TX 78216

**CHECK  
OR  
MONEY  
ORDER**



Texas Residents add 5%.  
Commodore 64-Disk — Atari 48K-Disk

## R Magic

boring. If you are using a TV as a monitor, you can solve this problem by flipping the TV/computer switch and watching some television. Switch back when the cassette drive stops, and your computer program will be waiting.

**Steven J. Walsh**  
Seaford, NY

**\$175** **Flagrant chauvinism**—The accompanying C-64 program shows the colors on your video display. Vexillologists will love the picture, in spite of the flaw in the canton.

**Kevin D. Skorupa**  
Biloxi, MS

```

10 REM ** FLAGRANT CHAUVINISM **
15 A$="{4 SPACES}" + CHR$(18)
20 B$=CHR$(146)
25 C$="{16 SHFT SPACES}":C$=C$+C$
30 D$=" * * * * * "
35 E$="{HOME}{3 CRSR DNs}"
40 F$=A$+C$
45 G$=A$+B$+C$
50 H$=A$+RIGHT$(D$,13)+B$
55 J$=A$+LEFT$(D$,13)+B$
60 POKE53265,91:POKE53280,0:POKE53281,0
65 POKE53282,1:POKE53283,6:POKE53284,2
70 PRINT"{SHFT CLR}{CTRL 2}"E$
75 FORX=1TO6:PRINTF$CHR$(141)G$:NEXT
80 PRINTF$E$
85 PRINTH$,,,J$,,,H$,,,J$,,,H$,,,J$,,,H$
90 GOTO90
    
```

**\$176** **C-64 special effect**—This one-liner will blow your socks off. Watch it run for a while, then press and hold down the space bar. You need a color display to see the full effect.

```

1 FOR X=0 TO 1 STEP 0 : POKE 53280,3 : POKE 53280,6 :
NEXT
    
```

After replacing your socks, you can try replacing the 3 and the 6 with different numbers.

**Mark Mankins**  
Malvern, OH

**\$177** **Color-coded disks**—For easy identification of disks, use colored strips of electrical tape. Use different colors for each type: blue = games, red = utilities and so on.

**David Barrowman**  
St. John's, Newfoundland  
Canada

**\$178** **Magnetic fields**—We've all heard about the danger of storing your disks close to the monitor or TV. Possible magnetism could wipe out your

## LOW COST SOFTWARE

Are you tired of paying high prices for your software? Let John Henry Software save you money!

We distribute public domain software for your VIC 20™ or COMMODORE 64™. We've tested and documented each program to guarantee you hours of fun and useful learning experiences. We specialize in prompt delivery of your software, even if you order tapes, and we guarantee our product.

You'll also receive our **FREE** program reference book containing documentation for all our programs.

### VIC 20

- Group VG 62 Games for Everyone ..... \$7.95
- Group VP 54 Programming, Demo, Business and Home ..... \$7.95
- Group VE 35 Educational Programs ..... \$7.95

### \*COMMODORE 64

- Group CG 26 Games for Everyone ..... \$7.95
- Group CP 30 Programming, Demo, Business and Home ..... \$7.95
- Group CE 16 Educational Programs ..... \$7.95
- Group CA 5 Adventure Games (disk only) ..... \$7.95

\*For a limited time only, when you purchase 3 COMMODORE 64 disks, we'll send you the 4th one free!

When ordering, specify group and tape or disk. Send check or money order payable to:

**John Henry Software**  
P.O. Box 39021  
Cincinnati, Ohio 45239

Don't wait! Order your software today! Or write for your free program reference book. You'll be glad you did!

whole library. If you worry about this sort of thing, place a small magnetic compass between the set and the proposed location of the disk box. If the magnetic field is dangerous to the disks, the needle will swing whenever it's in the field.

Jim Stephens  
Nashville, TN

**\$179 Inexpensive disk mailers**—To make my own disk mailers, I cut two squares of corrugated cardboard slightly larger than a disk and its envelope. Then I put the disk between them, making sure the corrugations on the two pieces run at right angles to each other. When I tape the four corners, the resulting sandwich is strong, light and compact, and can be mailed in any envelope large enough to hold it. Photographers have used this method for years, and their valuable prints are seldom damaged in the mails.

Alan Sperling, Esq.  
Mount Lebanon, PA

**\$17A Appending to files**—There is a command that can be used on the 1541 disk drive to add data onto an existing sequential file.

```
200 OPEN 3,8,3,"0:FILENAME,S,A"
```

The A stands for append; for some reason, this command is not in the owner's manual for the 1541.

Keith Marshall  
San Juan, Trinidad

**\$17B Printed disk directories**—If you set your printer on condensed pitch with a small line feed, the printed directories will be physically compact. These small printouts can be taped to the disk sleeve or put into a binder. On my Gemini printer, I do this:

```
LOAD"$",8  
OPEN 4,4 : CMD4  
PRINT CHR$(15) CHR$(27) CHR$(48)  
LIST
```

On the Commodore 1526, a similar effect can be gotten by entering:

```
OPEN 6,4,6 : PRINT#6,CHR$(22) : CLOSE6  
LOAD"$",8  
OPEN 4,4 : CMD4 : LIST
```

The characters won't be any smaller than normal, but the line spacing will be very tight.

George Hu  
Renton, WA

**\$17C Underlining with the 1526**—There's a rumor going around that the 1526 won't underline. But CHR\$(141) gives you a carriage return without a linefeed, allowing you to overprint the line from the beginning. Try this for a demonstration:

```
10 OPEN 4,4  
20 PRINT#4,"THIS IS A COMMODORE  
www.Commodore.ca
```

May Not Reprint Without Permission

```
PRINTER"CHR$(141)"{10 SPACES}{9 COMD @}"  
30 CLOSE4
```

Marion Deland  
New York, NY

**\$17D Programming trick**—While programming, if you are not sure whether a line must be deleted, just insert a REM statement at the beginning of that line. This way, the line will not be executed if you run your program, and you'll be able to know if you have to keep it in.

Alain Niquet  
Alma, Quebec  
Canada

**\$17E Printing quotes**—If you want to print quotation marks, you'll soon discover that you can't put them inside a Print statement. The solution is to Print CHR\$(34).

Andrew Apold  
Panama Canal Zone

**\$17F Program delays**—To halt your program until a key is pressed, try this:

```
10 PRINT "PRESS ANY KEY TO CONTINUE"  
20 POKE 198,0 : WAIT 198,1:POKE 198,0  
30 Program continues here
```

Andres Rios  
Montevideo, Uruguay

**\$180 Easier C-64 sound**—To get good ADSR settings, you don't need to go to the manual and spend all afternoon adding numbers until you get a sound you like. Instead of that, you can do this (for voice #1):

```
100 POKE 54277,16*A + D : POKE 54278,16*S + R
```

where A = attack, D = decay, S = sustain and R = release. The values must be between 0 and 15.

Sergio Daniel Freue  
Buenos Aires, Argentina

**\$181 Speedy execution**—There are two ways of putting polynomial calculations into a Basic program. One closely duplicates the normal algebraic notation, while the other uses parentheses and looks somewhat unusual. The unusual-looking method is illustrated below, along with proof that it is much more rapidly executed than the standard method.

```
10 A=2 : B=3 : C=4 : D=5 : X=2.5 : T=TI  
20 FOR I=1 TO 100  
30 Y=A*X + B*X12 + C*X13 + D*X14  
40 NEXT
```

```
50 PRINT "TIME="TI-T,"ANSWER="Y
60 T=TI:FOR I=1 TO 100
70 Y=((D*X+C)*X+B)*X+A)*X
80 NEXT
90 PRINT "TIME="TI-T,"ANSWER="Y
```

Dennis P. Dykstra  
Vienna, Austria

**\$182 Calculated GOTO**—This routine lets you go to a line number that is calculated within your program. To use it, just set variable GL equal to the line number to be executed, then enter GOTO 63000. The routine can be put in any three consecutive lines, provided the third line is typed exactly as shown here, with no spaces between any of the characters.

```
63000 GL$=STR$(GL):LN=LEN(GL$)-
1:GL$=RIGHT$("0000"+RIGHT$(GL$,LN),5)
63010 FOR DI=1TO5:BY(DI)=ASC(MID$(GL$,DI,1)):
NEXT DI
63030 AD=PEEK(62)*256+PEEK(61):FORDI=
1TO5:POKEAD+51+DI,BY(DI):NEXT:GOTO00000
```

The routine works by Poking memory to change the last characters of the third line. You can test the routine by setting GL, then executing it, then listing it. In the listing, the 00000 should be replaced by the value of GL.

Douglas Johnson  
Evesham, England

**\$183 Normal distribution**—The normal distribution, or bell-shaped, curve is a useful tool in statistics and quality control. If ME is the mean of the distribution, and SD is the standard deviation, this line will produce Xs that are randomly distributed.

```
100 X=ME+SD*((-2*LOG(RND(0)))
{UP ARROW}.5*COS(2*PI)*RND(0)))
```

Put the line in a For. . .Next loop, and it will generate as many numbers as you'd like. INT(X) could be used to generate integers, if that's your pleasure.

Frank Biondi  
Pittsburgh, PA

**\$184 Toggling**—If you need to toggle between two values in a program, set the toggle variable to one of the values, then use:

```
TG=[sum of the two values]-TG
```

For instance, if the two values were 3 and 7, you'd execute TG=10-TG each time you needed to toggle the value.

There's also a quick way of toggling between three or more values, as long as there's a regular relationship between them. Without going into the details, the formula for values of 1, 2 and 3 is:

```
TG=TG+1+(TG=3)*3
```

With a little work, the formula can be adapted to work with any regular sequence of values.

Clay Carr  
Westerville, OH

**\$185 C-64 cursor tricks**—You can speed up your cursor with POKE 56341,1. You can slow it down with POKE 56341,255. If you combine these tricks with POKE 650, any value over 127, you'll discover some real fun.

Harry I. Papatheofilopoulos  
Peristeri, Greece

**\$186 VIC time clock**—If you have the Super Expander, you can find out what time it is by pressing the f1 key. Just set TIS to the current time, then enter:

```
KEY1,"TIME="+TIS
```

Reinaldo Martinez  
Rio Piedras, Puerto Rico

**\$187 Reset tip**—The C-64 Reset command SYS 64738 will not disturb most machine language programs in memory, but it does seem to wipe out anything in the cassette buffer, locations 828-1019 decimal. Safe areas for machine language programs are Basic RAM, 2048-40959, and alternate RAM, 49152-53247.

Peter Heine Jorgensen  
Aarhus, Denmark

**\$188 C-64 uncrasher**—When your keyboard locks up while you are typing, try typing {SHIFT 3}. The screen should respond with "Press Play On Tape," and if you follow those instructions then press the stop key, you should be able to continue your work.

Douglas P. Oesterle  
Agana, Guam

**\$189 Error messages**—Memory location 157 (\$9D) controls whether or not error messages and control messages will be displayed on the screen. In Direct mode, for instance, Loading, Searching and Found messages are displayed, while in Program mode they are suppressed, all because of different values Poked into location 157. You can control the display yourself as follows:

```
POKE 157,0—Suppress all messages
POKE 157,64—Enable error messages
POKE 157,128—Enable control messages
POKE 157,192—Enable error and control messages
```

Mike Tranchemontagne  
Nashua, NH



**\$18A If...Then...Else**—Unfortunately, Commodore Basic doesn't have this useful construction, which allows you to redirect the program if the If statement fails. You can use the ON...GOTO statement to give a similar effect, as in this example:

```
400 GET AS : IF AS = "" THEN 400
500 ON((AS = "Y") + 2) GOTO 600 : ON ((AS = "N") + 2) GOTO 700 :
    GOTO 400
600 PRINT "YES" : END
700 PRINT "NO" : END
```

Note how the two tests have been put on the same program line.

Mike Sokolewicz  
San Francisco, CA

**\$18B STOP and CONT**—These two commands can be used as valuable debugging tools. CONT will restart a program that has been halted by the stop key, or by an End or Stop statement. Execution will continue from the statement following whatever caused the halt.

You can put STOP into your program at various test points. When the program encounters a Stop command, the number of the last line executed will be shown on the screen, proving that the program reached the line in question. While the program is halted, you can check the value of variables, and can even change them if you'd like. A Direct mode CONT will, of course, resume program execution.

Charles Brogdon  
Dalton, GA

**\$18C Uses for REMS**—REM statements are much more helpful than just describing a subroutine or giving credit to the program originator. I use them at the beginning of each program to list the source and location of the program, plus any special instructions that may be required in using it. It saves me from having to dig through stacks of magazines trying to find the article. For example:

```
10 REM FILE HANDLER—RUN FEB 84 PAGE 48
20 REM USE SPACE BAR TO SKIM PAGES. USE RETURN TO
    SKIM CATALOG.
```

Howard VanDover  
Trenton, MI

**\$18D Timekeeper**—For an easy way to keep track of time while programming, try this: As soon as you turn on your computer, type the following in Direct mode.

TIS = "hhmms"

where hhmms is the correct time in hours, minutes and seconds. Then, whenever you want to know the time, just type PRINT TIS, and your built-in clock will tell you. You should note that the clock isn't extremely accurate and will be slowed down by tape operations, but it's good enough for most purposes.

Darren Atwater  
Delta, British Columbia  
Canada

100,000 **CHOOSE COMAL**  
50,000 **USERS** †

**(1) DISK BASED COMAL Version 0.14**

- COMAL STARTER KIT—Commodore 64™ System Disk, Tutorial Disk (interactive book), Auto Run Demo Disk, Reference Card and COMAL FROM A TO Z book. \$29.95 plus \$2 handling

**(2) PROFESSIONAL COMAL Version 2.0**

- Full 64K Commodore 64 Cartridge  
Twice as Powerful, Twice as Fast  
\$99.95 plus \$2 handling (no manual or disks)
- Deluxe Cartridge Package includes:  
COMAL HANDBOOK 2nd Edition, Graphics and Sound Book, 2 Demo Disks and the cartridge (sells for over \$200 in Europe). This is what everyone is talking about. \$128.90 plus \$3 handling (USA & Canada only)

**CAPTAIN COMAL™ Recommends:**

The COMAL STARTER KIT is ideal for a home programmer. It has sprite and graphics control (LOGO compatible). A real bargain—\$29.95 for 3 full disks and a user manual.

Serious programmers want the Deluxe Cartridge Package. For \$128.90 they get the best language on any 8 bit computer (the support materials are essential due to the immense power of Professional COMAL).

**ORDER NOW:**

Call TOLL-FREE: 1-800-356-5324 ext 1307 VISA or MasterCard ORDERS ONLY. Questions and information must call our Info Line: 608-222-4432. All orders prepaid only—no C.O.D. Send check or money order in US Dollars to:

**COMAL USERS GROUP, U.S.A., LIMITED**  
5501 Groveland Ter., Madison, WI 53716

TRADEMARKS: Commodore 64 of Commodore Electronics Ltd. Captain COMAL of COMAL Users Group, U.S.A., Ltd  
† estimated

Circle 327 on Reader Service card.

**Now there's PASCAL  
for the Commodore 64.  
And at a mini price.**

Kyan PASCAL is a full-featured implementation of PASCAL — not a subset! With these features:

- high-performance compiler and comprehensive set of error messages for faster debugging
- speeds up to 40 times faster than Commodore Basic
- built-in full screen editor
- support for files, pointers, record types, sets and ordinal types used in sophisticated data structures.
- plus, a comprehensive tutorial manual illustrating the speed and power of PASCAL through sample programs.

Kyan PASCAL lets you develop programs on your Commodore 64 that are transportable to most mainframes. So it's perfect for students and working at home.

**Try it for 15 days.**

Order Kyan PASCAL, and if you're not completely satisfied, return the diskette and manual within 15 days for a full refund.

**Kyan PASCAL with complete tutorial manual . . . \$49.95**  
(Add \$4.50 per copy for postage and handling. \$9.50 outside North America. California residents add 6.5% sales tax.)

**To order, call 415/775-2923.**

(VISA and MasterCard accepted.)

Or send check or money order to: **Kyan Software, Suite 183, 1850 Union Street, San Francisco, CA 94123.** Sorry, no C.O.D. orders accepted.

**kyan**

# COMMODORE CLINIC



JIM STRASMA

*Commodore Clinic is a monthly column designed to help you through any troubles or questions you have as you use your Commodore computer. Send questions to:*

*Jim Strasma  
Commodore Clinic  
1238 Richland Ave.  
Lincoln, IL 62656*

*So this column can help as many people as possible, please try to send no more than one question a month, and ask about topics of general interest. Including a full-sized (#10) self-addressed stamped envelope will ensure a reply even if your letter does not appear in print. I do ask that you not call, though, because my telephone does not know how to type, and only questions that get typed can help others through this column.*

## Software

**Q:** I recently bought a B-128 computer from Protecto Enterprises. I'm happy with the various components and their performance, but I need better documentation. The book that came with it is very poor. It mentions a programmer's guide, but I haven't been able to find it. You once mentioned your *PET Personal Computer Guide*. Could you steer me in the right direction to obtain documentation on the B-128?

**Bob Wingerter**  
Raceland, KY

**A:** I recommend two reference books for CBM computers. One is my own *CBM Professional Computer Guide*, a sister volume to the *PET Personal Computer Guide*, both from Osborne/McGraw-Hill. If your local dealer doesn't have it in stock, I have nine copies available for \$18 each, postpaid. The other is *Programming the PET/CBM* by Raeto West, available from Holford Enterprises (6065 Roswell Road, Suite 1398, Atlanta, GA 30328), for \$28 postpaid. It begins where my book ends, and serves as its Volume 2. I've never seen an unfavorable review of either book.

Unfortunately, both were written just before the actual release of the B-128, so neither book covers all of the new features, nor do their memory maps apply. Since the B-128 is a discontinued machine, other manuals specific to it are unlikely to appear. You could try phoning Commodore about the *Programmer's Reference Guide*. I have seen parts of it, but haven't seen a completed copy.

Since many have asked, here's one more word on the B-128. If you are willing to be limited to the few excellent programs already available for it, Protecto's price is a real bargain.

**Q:** Can you suggest a program or system that would save the machine language program that I understand is developed by Basic and that the 64 actually executes. I'm looking for increased speed.

**Charles Pocatille**  
Clifton, NJ

**A:** To compile your programs, you need a compiler, such as Blitz, from

Skyles Electric Works (Mountain View, CA), DTL Basic, from Cimmarron, or PETSPEED64, from Commodore. Without one of these, or some other compiler, the process you describe doesn't actually happen; rather, each instruction is converted to machine language as it is interpreted, then obeyed and forgotten. If it is seen again, as it might be in a loop, the whole process must be repeated. That's the reason for Basic's lack of speed as well as its ease of use.

**Q:** I own a 64 and a Datassette. Is there any word processing program I could obtain that comes on a cassette tape?

**David Amaral**  
Barrington, RI

**A:** I can recommend at least two cassette-based word processors: Text Master 64, from Universal Systems (Box 126, Urbana, IL 61801), and Totl.Text 2.5 (VIC) or 2.6 (64), from Totl Software (Walnut Creek, CA). For a bit more money, you might also want to consider Write Now!, from Cardco (300 S. Topeka, Wichita, KS). It comes on a cartridge, in versions for the VIC or 64, and has a cassette load and save option.

**Q:** Can you save a picture made by a light pen and use it in another program; for example, in a graphics adventure?

**Marinus Schouten**  
Harlem, The Netherlands

**A:** There's no automatic reason you couldn't, but it depends on the features of the controlling program. Flexidraw, for example, easily lets you save

# FLOPPY HOUSE

16 S. Chestnut Street, Suite A Palmyra, PA 17078

PROGRAM NAME	PRICE
Beach Head (D)	\$24.95
Blue Max (D)	24.95
Championship Loderunner (D)	24.95
Deadline (D)	24.00
Doodle (D)	28.95
Flight Sim. II (D)	35.95
Inter. Soccer (C)	24.95
Koala Touch Tab. (D)	65.95
Mirage Word Proc. (D)	68.95
Muppet Learning Keyboard (D)	57.95
Night Mission Pinball (D&C)	24.95
Raid Over Moscow (D)	28.95
Solo Flight (D&C)	24.95
Starcross (D)	24.00
Suspended (D)	24.00
Trivia Fever (D)	28.95
Ultima III (D)	42.95
Vidtex (D)	24.95
V.I.P. Terminal (D)	37.95
Zaxxon (D&C)	24.95
Zork 1, 2 and 3 (D)	24.00 ea.

**\*\*\* FREE! \*\*\***  
**Christmas gift with any order** - an excellent Public Domain version of an arcade hit game on its own disk.

**TOLL FREE**  
 1 (800) 633-8699  
 In Pa. Call  
**A.C. 717**  
**838-8632**

### ORDERING & TERMS

\* VISA & M.C. accepted with no charge in the continental U.S.A.  
 \* \$2.50 shipping charge on orders under \$100.00  
 \* Pa. Residents add 6% Sales Tax  
 \* Prices subject to change w/o notice  
 \* 48 hour shipping for cashier check - Money Order - charge  
 \* Allow 3 weeks shipping for personal checks

Circle 350 on Reader Service card.

## GET FAST RELIEF FROM IRS HEADACHES!

With TAX COMMAND Income Tax Preparatory Software Series!

On disk for Commodore 64: TAX COMMAND PROFESSIONAL: high-speed tax computation, with a wide variety of schedules, at your finger tips.

- Fast line-by-line Federal Tax information entry
- All mathematical calculations done automatically
- Built-in tax tables
- Prints on the official U.S. Tax forms
- Forget something? Tax Command Professional is flexible enough to quickly recalculate
- Cost of program is tax deductible

This menu driven program covers the 1040 Form, Schedule A, B, C, D, E, G, R, RP, SE, W, and Forms 2106, 2119, 2441, and 3903.  
 \$49.95

TAX COMMAND for income tax computation. On tape for Vic 20 & Commodore 64.

Tax Command is the abridged version of Tax Command Professional with the 1040 form Schedule A, income averaging and tax tables.  
 \$24.95

On disk for Commodore 64: NEW! TAX COMMAND PLANNER for quick, easy planning of tax strategies.

- Specifically designed for your tax planning
- Decide how to depreciate assets
- Whether to sell stock
- How to make contributions at the lowest cost
- Six different options for five years.

\$49.95  
 Registered owners receive next year's update at a reduced cost.

Practical Programs Inc. stands behind its products, and will replace any defective disk.

Double Discount! Buy Tax Command Professional and Tax Command Planner for one low price of \$89.99.



Send me fast relief! Enclosed is my check or money order for the amount specified below plus \$2.00 for shipping and handling. Please send me:

- Tax Command Professional (\$49.95)
- Tax Command (\$24.95)     Vic 20     Commodore 64
- Tax Command Planner (\$49.95)
- Double Discount! Send Tax Command Professional and Planner (\$89.99)

Credit card customers call (414) 278-0829.

Name \_\_\_\_\_ Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Mail to: Practical Programs, Inc. • P.O. Box 93104  
 625 North Milwaukee Street • Milwaukee, Wisconsin 53203 RN



## Dreams CAN come true!

Back in June of 1983, Kelvin Lacy had a dream. He dreamed of creating one integrated program that would include a spreadsheet, business graphics and a database. A program with the power of Lotus 1-2-3. On the Commodore 64. People laughed! He had just finished OmniWriter/OmniSpell, to be marketed by HESWARE. Ignoring the skeptical, he began VIZASTAR.

Now, after 15 months, his dream has come true. VIZASTAR has a full-featured spreadsheet, as good as Multiplan. But much faster—faster than many spreadsheets on the IBM PC! It is written 100% in 6502 machine language code and is ALWAYS in memory. It is menu-driven, using the latest techniques in user-friendliness. It is compatible with virtually all printers and most word processors. Up to 9 windows can be open simultaneously, anywhere. Remarkably, 10K of memory is available for spreadsheet use.

The database is equally impressive. Create file layouts by simply painting a picture of the layout on up to 9 screens, showing where a field starts and ends; VIZASTAR does the rest.

Imagine the power of a spreadsheet integrated with a database. Now add graphics — bar, line, and multi-color pie and 3-D "skyscraper" graphs. You could access a customer's profile in the database, transfer the data to the worksheet, and let it calculate discounts, sales tax etc. and then transfer the updated data back to the database. Open up a window anywhere and display a graph of your data, instantly. This integration is the key to VIZASTAR's power—the first and only program of this kind on the C-64. All commands can be automated, so you can "program" your own applications and run them with one keystroke.

Cell Sheet File Print Data Graph  
 Copy, Move, Insert, Delete, Title  
 Window, Scroll, Sort, Cross, Key

Names	1984	1985	1986
Tuesday	200.00	122.67	310.56
Molly	312.40	212.98	45.00
=====			
	512.4	335.65	355.56

	C	D	E
1	122.67	310.56	346.44
2	212.98	45.00	64.00
=====			
3	335.65		

335.65 Oldies But goodies Inc  
 R. Tuesday - Royalties

Actual screen dump taken by VIZASTAR

VIZASTAR comes with a cartridge, a 1541 diskette with a backup, Reference and Tutorial manuals. VIZASTAR is normally \$119.97 but at a Special Introductory Price, it's now only \$99.97. We are so positive you will be delighted with VIZASTAR that we offer a 15 day money-back guarantee. Try it risk-free! Compare VIZASTAR to any other spreadsheet or database. So order today. Call or send a check or Money Order. Calif. residents add 6.5% sales tax. Add P&H: UPS—\$3; COD, Canada—\$5

### SOLID STATE SOFTWARE

1253 Corsica Lane, Suite R  
 Foster City, CA 94404  
 (415) 341-5606 (24 Hours)  
 Dealer & Distributor Inquiries Welcome

Trademarks: Lotus 1-2-3/Lotus Development, Commodore 64/Commodore Electronics Ltd, Multiplan/Microsoft.

a picture, but its manual does not describe loading pictures into another program. Even so, it can be done. Paint Magic, a similar joystick drawing program from Datamost (Chatsworth, CA), was used to draw the pictures loaded and displayed at the start of their games for the 64. Specifics of saving and loading will depend on the light pen and program you use.

## Hardware

**Q:** I have a problem. I bought a CP/M cartridge for the 64 and found out that it does not work on my new 64, which has the -03 Kernal ROM. The CP/M works on older models.

Zoltan Szepesi  
Pittsburgh, PA

**A:** The CP/M problem is apparently caused by timing changes in the new Revision 8 of the VIC II chip, not by the -03 Kernal ROM. If so, it should work fine in your new 64 as soon as you swap VIC chips with someone who has an older Revision 2 or 5 chip. Unless he plans to use CP/M, a dealer or another user should be glad to make the swap, since the Revision 8 chip is in all other respects an improvement on the earlier designs.

**Q:** I have one Commodore 64 system at home and another at the office. I recently discovered that disks formatted on one 1541 drive will not load reliably from the other, and vice versa; however, both drives will load disks formatted on their own particular drive. Each unit passes the performance test program on the demonstration disk that comes packed with the unit.

I assume the trouble lies with a calibration problem on one or both drives. I have heard rumors of a software package that provides instructions for calibrating malfunctioning 1541 disk drives. Is such a product available commercially?

Albert Wellman  
Santa Rosa, CA

**A:** I agree with your diagnosis. One or, more likely, both of your 1541s are

somewhat out of alignment—not enough not to load a disk formatted by a properly aligned drive, such as the test/demo disk, but enough to be incompatible with each other.

To make sure, you could buy the new 1541 Physical Exam program from Cardinal Software (Woodbridge, VA 800-762-5645). It will quickly and easily show you whether or not your drives are properly aligned, and, if they're not, will show you in a simple graph which direction they are off and how far. It will also test the Track 0 stop and the motor speed. If you are mechanically inclined, you can use this information to make corrections. In addition, the brief manual does include instructions on the necessary steps involved. Surprisingly, Cardinal also reports that the 1541 is designed to operate at 310 rpm, not 300 rpm like other drives.

**Q:** There's a man in Mesa, AZ, who just invented something he calls the miracle chip, with up to 512K for about \$50. Fits any microcomputer. My question: with 512K and a few lines of graphics definition, would my VIC perform as well as, or better than, a 64?

Ken Lansing  
Sierra Vista, AZ

**A:** 512K bytes of RAM memory in 1985 would indeed be a miracle. I rather expect the man is offering 512K bits of memory for that price, a far lesser bargain (512K bits = 64K bytes). And, no, a 64K VIC, modified with any amount of special programming, is *not* a 64. On the other hand, it may be quite adequate for your needs. There's no need to pitch or change any computer that still does what you need it to do. Are you sure this isn't the new W655C802 microprocessor from Western Design Center, rather than a memory chip?

**Q:** My 1541 drive will load, but will not save, programs. Something may be out of alignment, because shortly before this, the write-protect tab on a disk came loose in the drive; it had to be pulled out and offered some resistance. Does this seem likely to be the cause? If so, do you think

it's a problem that can be corrected at home?

James Grossie  
Houston, TX

**A:** Yes, a write-protect tab caught in the drive can indeed cause the drive to load but not save programs. The write-protect sensor in the 1541 is optical (triggered by the breaking of a beam of light by an opaque object). Any opaque object trapped within the path of that beam will prevent the drive from saving programs.

As for correcting this situation, the first thing to try would be a can of compressed air with a narrow flexible nozzle that can be inserted into the disk slot. Use it to blow any dust or other foreign materials out of the write-protect sensor, which is located at the left end of the disk slot.

If this fails to correct the problem, you or a dealer may have to disassemble the drive and pick any remaining debris out of the sensor. This is a matter of removing about a half dozen screws, so you might be able to handle it yourself if you are mechanically inclined and your 1541 is out of warranty.

If, however, anything has been moved out of position or broken in the mechanism itself, you will probably need the help of a dealer's service department to fix things properly. But unless something is broken or other work is needed, the time required should be minimal.

**Q:** Recently the carriage returns on my 1525 printer became slower and slower. Now the head doesn't reach the next line without a nudge. Can you tell me what's wrong?

James Ryan  
Winthrop, MA

**A:** Unlike most printers, Commodore's 1515, 1525 and MPS 801 use a spring to return the head to the left end of the print line after finishing a line. One of two things has probably happened to your printer. Either the spring has become fatigued after use (it's less springy) or it is binding due to foreign matter in the mechanism or lack of lubrication (it's more sticky).

First, open the cover and use a can of compressed air to blow out any paper,

dust or other contaminants that may have accumulated. That may do it. If not, see if there is an adjustment for the spring, to make it tighter, or if your manual mentions a lubrication procedure. I don't have a 1525, so I can't be more specific. If you don't find the solution, take the printer to a full-service dealer for repair.

**Q:** Recently, my 64 broke down and I sent it in to be exchanged. A couple of days' testing produced no problems with the replacement. Then I connected a Dinset (from Public Domain, Inc.) to it. The first time I used it, the screen turned blank, then returned colorless except for a light green line at the top. I had to turn the computer off and on several times to get the normal blue screen.

I stopped using the Dinset, but occasionally after a long session and a program lock-up that requires turning the computer off and on, I have to turn it off and on three to four times to get a normal screen. I wrote Commodore, but their only comment was, "If your computer has a problem, return it and we'll replace it."

I don't want to risk another long wait for exchange if the problem isn't serious. However, neither do I want to wait until the warranty expires, only to have the computer break down again.

Should I return it? And does the Dinset harm computers?

James Barnes  
Dallas, TX

**A:** If it were mine, I'd exchange it. Something inside the computer has definitely been cooked enough to fail when hot. If the delay is a problem, some full-line Commodore dealers will do the exchange over the counter for a fee.

As for how it happened, there is a chance that it was a preexisting problem in the exchange unit, but I doubt it. It was most likely caused by your plugging in the Dinset while the computer was turned on. You can't safely plug any accessories into the 64 while the computer is powered up. Always turn the computer off before switching plugs. Even swapping joysticks from one port to the other with the power on has been known to blow chips.

Less likely, but still possible, is a fail-

ure from using the Dinset after plugging it in with the power off. In that case, your Dinset might be defective, perhaps shorted out. Another possibility is that the Dinset is working normally, but that its use still results in a failure. If the reset line of the microprocessor is simply grounded to initiate a reset, there is a small chance of harming the microprocessor. To prevent this, some reset circuits include a small resistor to ease the shock to the chip when doing a reset. I don't know whether or not the Dinset includes such protection.

The traditional reason for using a reset switch on Commodore computers—preventing the stress of turning the display off and on—doesn't apply to the 64. Therefore, unless you are using an expansion motherboard with multiple cartridges, I see no reason for using a reset switch on the 64. If you *do* use a motherboard, those I've seen already include a reset button.

**Q:** Recently, my VIC has blown three fuses. It also gets very hot. Why does this happen?

Mike Wickett  
Sacramento, CA

**A:** My first guess is that you've added some accessories to your VIC—enough to cause the problem. Everything you connect to a VIC adds to the power it requires. This includes cassette recorders, modems, joysticks, expansion motherboards, added memory, program cartridges, 80-column cards and some interfaces. The VIC's power supply was not designed to operate a system that tries to operate several of these accessories at once. The cure is to unplug some of the extras when using others.

If yours is an early version of the VIC, it may run hot even without lots of accessories connected. Units made in the last year or two run cooler than the original design. Those of you with older VICs may want to consider getting one of the commercially available cooling kits advertised occasionally in the magazines. Unfortunately, I've not tested any, so can't recommend one.

If you aren't using any more accessories than when your VIC didn't blow fuses, another possibility is that some

component of your computer is failing. If so, the unit needs repair.

**Q:** We hooked up our 64 to a TV whose screen is 10¼ inches wide, and whose border area is 1¼ inches, leaving the background we type on only 8¾ inches wide. It seems too small. Is this correct, and is there any way to make the border smaller and the usable area larger?

Frank Ross  
Willcox, AZ

**A:** It's correct for the C-64 to have a wide border. This is to accommodate TVs with a high degree of overscan. To ensure that every TV can display the entire text area, the text is limited to the central portion of the screen.

To make the text area more completely fill the screen, you could have the overscan on your TV adjusted by your TV dealer. Or perhaps another reader has found a way to modify the VIC II chip to do the same thing on the Commodore 64.

**Q:** My next priority purchase will be a keypad, but I can't get sufficient information to make a decision as to which to buy. Does Cardco's just plug in like a joystick? I would prefer a keypad that feels like a ten-key calculator, with plus, minus, decimal and so on.

John and Coral Williams  
San Saba, TX

**A:** The only plug-in keypad I've tested is the Cardco. Yes, it can just plug in like a joystick. Connected that way, you'll need to load a small machine language driver program each time you want to use the keypad.

Occasionally, you'll find that a commercial program won't work together with the driver program. In such cases, or to avoid the inconvenience of loading a program each time you use the keypad, Cardco offers an optional internal connector that plugs into the keyboard connector inside the 64. Except for the minor inconvenience of having to open up the 64's case to install it (thereby voiding the warranty if the

computer is new), this is probably the best solution for those who will use the keypad regularly.

**Q:** I have heard that it is possible to upgrade the VIC-20 a little by replacing the 6502 with a chip known as a 65C02, which is 100% compatible with existing software and so on. Is it a drop-in replacement?

P. Meehan  
Yagoona, Australia

**A:** The Rockwell 65C02 is a CMOS version of the 6502, with some added instructions. It is used in the Apple IIc computer, and I, too, have heard it is a drop-in replacement for the 6502 on other computers. However, I haven't heard from anyone who has actually used it.

As for 100% compatibility, the added commands will keep that from being quite true. Some programs use unimplemented operation codes on the 6502, typically as part of a misguided protection scheme. Previously unimplemented operation codes that are used by the new chip for its added commands may cause such programs to fail.

Even more interesting is the still newer W65SC802 chip from the Western Design Center (Mesa, AZ). It, too, claims to be pin-for-pin compatible with the 6502 and offers 16-bit registers like the IBM PC's 8088 microprocessor. It includes so many new commands that there are no unimplemented operation codes on it at all. It also has a Default Emulator mode that lets it run existing 8-bit programs unless they use unimplemented operation codes. Apple has been rumored to be planning to use it in an as yet unreleased new version of the IIc.

This is one time VIC owners have it over 64 users. The 64 uses the 6510 rather than the 6502. Therefore, the 6510 can't easily be replaced with the new substitutes.

**Q:** I would like to use a Radio Shack CGP-220 7-color ink jet printer with my 64. I'm having difficulty finding what I need for an interface, especially in light of the

need for color graphics dumps. Can you help?

Charles Baker  
Topeka, KS

**A:** Designing software to handle the color graphics dumps will be up to you—those supplied for Radio Shack computers will need modifications to work with the 64. You might write the various companies with paint (drawing) programs for the 64, to see if any of them have a suitable color screen dump for the CGP-220 in the works. At last summer's MARCA Fair, for instance, I saw a new Okidata color printer printing a picture made by Doodle (from City Software, Milwaukee, WI) in full color.

As for the hardware, the CGP-220 is listed as using a standard Centronics parallel interface. Many suitable interfaces that plug into the serial bus are on the market now, including Micro W's MW-350 (Butler, NJ), Tymac Control's The Connection (Franklin, NJ) and Cardco's Card/? + G (Wichita, KS). However, none I've seen provide Commodore graphics characters on Radio Shack printers as yet, so you'll have to do without full emulation of the 1525 printer.

**Q:** Can I hook up my 64 to a video recorder? I was considering video birthday cards.

Joe Sleeting  
N. Aurora, IL

**A:** Yes, the 64 works fine connected to a VCR—that is one way of improving its video quality on some TVs. The 64 can be plugged into either the VHF-IN jack, using an RCA phono-to-RCA phono cable and RCA phono-to-F Connector adapter (Radio Shack sells both), or can be plugged into the video- and audio-in phono plugs from a standard monitor cable for the 64. (If your C-64 has individual chrominance and luminance pins, you'll have to use a "Y" connector to connect them both to the video-in on the VCR.)

**Q:** I have a VIC and recently went to a Sakata monitor, which has no speaker. I made a video cord using a 5-pin DIN plug and pins 2 and

4 for the monitor. Could you please tell me how to tie in an external speaker? I tried a 9-volt battery speaker/amp, but got very poor results, with a lot of static and annoying interference.

Alan Hurlbut  
Omaha, NE

**A:** So much for my recommendation last month (get a battery speaker/amp, which Radio Shack sells in low- and high-power versions, and which I've used successfully). The next two alternatives, also mentioned last month, would be to connect the audio-out wire from the monitor cable to the auxiliary input of a stereo system, or trade for a monitor with a built-in speaker. However, I'd like to suggest one more alternative. Your homemade cable could be the source of the noise and interference you report, either because it is miswired, has a cold solder joint or some other problem. Find a friend with a Commodore monitor cable and see if that one works better for you.

**Q:** A friend saw an ad for a VIC interface that simulates a BSR-X10 controller. With such a system, you can send signals through existing house wiring to modules that turn lights and appliances on or off. With the VIC, you could build some intelligence into such a system. I cannot locate the device, though I know a similar device exists for the Apple and TRS-80. Can you help?

Mack Cullen  
Bethany, CT

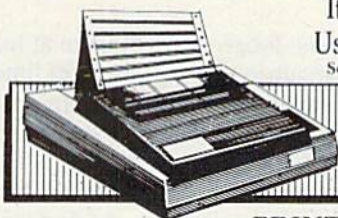
**A:** One advertiser of what you're seeking is Genesis Computer Corp. (Box 152, Hellertown, PA 18055). The product is called the VIController, and is advertised in versions for both the VIC and 64. Last summer, Genesis displayed one at the MARCA Fair, but didn't seem interested in demonstrating it or having it reviewed.

**Q:** I have a VIC and am going to buy a 64. I'd like to connect both computers to two terminals in the house. How could I do this?

Ismael Juan  
Madrid, Spain

# Our Customers Call Us The Commodore Consultants!

It's A Great Computer.  
Use It for All It's Worth!  
Send For Our Complete Catalog



**GEMINI 10X**  
120 CPS with Cardco + G **\$31900**

### PRINTERS

- |   |   |
|---|---|
| <b>Powertype</b> Daisywheel 18 CPS with Cardco B . . . . . <b>\$369</b> | <b>Epson RX 80</b> with Tymac Connection . . . <b>\$299</b>                   |
| <b>Okidata 92</b> 160 CPS with Tymac Connection . . . . <b>449</b>      | <b>Commodore MPS 802</b> . . . <b>279</b><br>Call for prices on other models. |

**FREE STARTER KIT:** Be ready to print with 150 sheets laser-perf paper, 50 mailing labels & replacement ribbon with every printer combo.

### DISK DRIVES

- |  |  |
|--|--|
| <b>MSD Super Drive</b> . . . . . Call    | <b>Commodore 1541</b> . . . . . Call   |
| <b>Indus GT</b> . . . . . Call           | <b>Phonemark Datasette</b> <b>\$29</b> |
| <b>One Kay Data Drive</b> . . . . . Call |  |

### MONITORS

- |  |  |
|--|--|
| <b>Teknika MJ10</b> . . . . . <b>\$239</b> | <b>Sakata 12"</b> Gr/Amb . <b>\$99/109</b> |
| <b>Commodore 1702</b> . . . . . Call       |  |

**COMPUERVE STARTER KIT**  
with purchase of Westridge or Mighty Mo **\$1995**



### MODEMS

- |   |   |
|---|---|
| <b>Westridge 6420</b> . . . . . <b>\$79</b> | <b>VIP Terminal</b> . . . . . <b>\$44</b> |
| <b>Mighty Mo</b> . . . . . <b>79</b>        | <b>Vidtex</b> . . . . . <b>27</b>         |

### DATABASE MANAGERS

- |   |  |
|---|--|
| <b>The Consultant</b> . . . . . <b>\$65</b> | • <b>NEW</b> • <b>NEW</b> • <b>NEW</b> • |
| <b>Super Base 64</b> . . . . . <b>59</b>    | <b>PFS:File</b> . . . . . <b>\$59</b>    |
| <b>The Manager</b> . . . . . <b>35</b>      | <b>PFS:Report</b> . . . . . Call         |

### WORD PROCESSORS

- |   |  |
|---|--|
| <b>Paper Clip</b> . . . . . <b>\$59</b> | <b>Easy Script</b> . . . . . <b>\$35</b> |
| w/speller . . . . . <b>79</b>           | <b>Easy Spell</b> . . . . . <b>17</b>    |

### SPREADSHEETS

- |   |
|---|
| <b>Calc Result Easy</b> . . . . . <b>\$35</b>   |
| <b>Calc Result Advanced</b> . . . . . <b>65</b> |
| <b>MuultiPlan</b> . . . . . <b>65</b>           |

### ACCOUNTING

- |                                |             |
|--------------------------------|-------------|
| <b>Commodore</b>               |             |
| G/L, A/P, A/R, INV, PR module  | <b>\$34</b> |
| • <b>NEW: Peachtree</b>        |             |
| G/L, A/P, A/R . . . . . system | <b>139</b>  |



**CHALKBOARD**  
\*With Software Purchase **\$2900**

\*One or more at \$15: Leo's Links, BearJam, MusicMaestro, Leo's Paintbrush, LogicMaster, Programming

### ACCESSORIES

- |   |   |
|---|---|
| <b>Com Cool Drive Fan</b> . . . . . <b>\$49</b> | <b>Com Cool Plus w/ surge</b> <b>\$69</b> |
|---|---|

### BLACK NAUGAHYDE COVERS

- |  |   |
|--|---|
| <b>C-64 or 1541 Drive</b> . . . ea. <b>\$5</b> | <b>1702 Monitor</b> . . . . . <b>\$10</b> |
| <b>MSD Drives 1/2</b> . . . . . <b>5/6</b>     | <b>1525/MPS 801</b> . . . . . <b>7</b>    |
| <b>Gemini 10X</b> . . . . . <b>9</b>           | <b>1526/MPS 802</b> . . . . . <b>8</b>    |

**MOST ORDERS SHIPPED WITHIN 48 HOURS!** Advertised prices are for bank check or money order. VISA/MC orders add 3.5%. NO C.O.D. ORDERS. Personal or company checks delay orders 21 days. All sales are final - defective merchandise exchanged for same product only. Add 3% for shipping (12.50 min.). Please call for shipping on monitors. Ohio residents add 5.5% sales tax. Prices & availability subject to change.

**HOURS: MON-FRI 10 AM to 10 PM • SAT 10 AM to 5 PM • SUN Noon to 5 PM**

**800-638-2617**

INFORMATION & IN OHIO 216/758-0009

# DIG BYTES

1301 BOARDMAN-POLAND ROAD POLAND, OHIO 44514

# FANTASTIC FILER

COPYRIGHT 1984 BY DAVID M. SMITH  
A SOPHISTICATED AND EASY TO USE FILE  
MANAGEMENT SYSTEM FOR THE COMMODORE  
64 AND 1541 DISK DRIVE. PACKAGE INCLUDES:

- 1) Complete Menu Driven sub-sections.
- 2) Simple One Stroke Key Commands
- 3) Free form record layout design to place data anywhere on the screen.
- 4) Maximum of 50 fields per record.
- 5) Maximum of 256 characters/record.
- 6) Average of 1000 records per disk.
- 7) Fast 3 second search using index match or specific search criteria on all field combinations.
- 8) Full arithmetic calculations between fields.
- 9) Built in multifunction columnar report and mailing label generator.
- 10) Ability to create sequential disk sub files for merging data with popular word processors.
- 11) Complete and thorough users manual.



**SO MUCH SOFTWARE  
FOR ONLY \$2995**

All in all Fantastic Filer is a Fantastic Data Base Program at an even more Fantastic price. Why pay more for others when Fantastic Filer will fill your data base needs?

Available from:

**Micro-W.**  
DISTRIBUTING, INC.

1342 B Route 23  
Butler, N.J. 07405

Call: (201) 838-9027 To Order

**VIC 20™**  
Vic 20 collections #1 thru 12  
50+ programs per collection: Tape or Disk \$10.00 each

**COMMODORE 64™**  
64 collections #1 thru 12  
25+ programs per collection: Tape or Disk \$10.00 each

**PET®/CBM®** Software Available

**DINSET™: Reset Switch**  
Works on Vic 20 or Commodore 64 — \$5.00

**SERIAL CABLES**  
10 FT. — \$10.00  
15 FT. — \$15.00

**LOC-LITE™** Operation Status Indicator  
Assembled and Tested \$20.00  
Kit w/instr. \$15.00  
Board w/instr. \$7.50

Prices include U.S. shipping and handling only.  
**CHECK MONEY ORDERS, VISA and MASTERCARD**  
accepted. NO C.O.D.'s

Write For A Free Flyer Or Send 60¢ In Coin Stamps For A Complete Catalog.

**'PUBLIC DOMAIN™', INC.**  
Dept. - PRO

5025 S. Rangeline Rd., West Milton, OH 45383  
10:00 a.m.-5:00 p.m. EST - Mon. thru Fri.  
(513) 698-5638 or (513) 339-1725

## 'PUBLIC DOMAIN™' — SOFTWARE —

Supporting all COMMODORE computers  
★ GAMES ★ UTILITIES ★ EDUCATIONAL ★

**HAMLET COLLECTION #5**  
Type or Disk Only \$10.00  
COMMODORE 64—Ar. Indicators, DB Calc, 64 & Duga, 64 & E, Big 64  
L, First Thr, 64 & 8, 64 & 8, 64 & 8, 64 & 8, 64 & 8, 64 & 8, 64 & 8, 64 & 8, 64 & 8  
Reg. D Supply, Reg. 64 & 8, Rty, 64 & 8, Rty, 64 & 8, Rty, 64 & 8, Rty, 64 & 8  
VIC 20—Ar. Indicators, 80's & 80's, 80's & 80's, 80's & 80's, 80's & 80's  
C-64—Ar. Indicators, 80's & 80's, 80's & 80's, 80's & 80's, 80's & 80's  
Electronics 1 & 2, Ham. Contest Log, Ham. Formulae #1, 2, 3, 4, 5, 6, 7, 8, 9, 10  
J20 Hex, T, J20 Recv/Tx, Lo Pass Filter, QSG Directory, QSG Vic  
Quad Antenna, Resistor, Fray, Toroids, Rty, Vic 20, Rty, Vic 16, Inst

**GA Now Available**  
For Vic Owners, Too  
Disk Only \$10.00

Now GA available for the Vic. Pet & 64 owners.  
The original, Cavern Adventure on GA, has been modified for those Vic 20 owners that are Disk Based and have 16K memory.

**P.D.I. PROGRAM MANUAL**  
**\$10.00**

Each program on volumes 1 thru 12 of our Commodore 64 or Vic-20 Collections is given a review. If a program requires additional hardware, such as memory, printers, disk or printers, we make note of it. If a program requires special instructions, other than those in the program you will find them here.

**A:** It is possible for both a VIC and C-64 to share a common disk drive, printer and other serial bus accessories via a networking adapter. The only one I've tested is the VICSwitch, by Handic Software, a Swedish company with a U.S. branch at 520 Fellowship Road, Mt. Laurel, NJ 08054. The VICSwitch links up to eight devices on the serial bus, and works well as long as no one turns his computer off and on while the network is in use or leaves disk files open when not actually reading or writing data.

I'm not sure, but would rather expect you could get a European version of the VICSwitch from the parent company, if not from the U.S. office.

## Programming

**Q:** My Commodore 64 goes dead for several minutes after running a program for a little while. The larger

the program's arrays, the longer the dead periods. I have run the program on four different C-64s with the same result.

Dan Walsh  
Windsor, CT

**A:** You have discovered garbage collection. It is found in nearly all Microsoft Basics. Although the usual delay ranges from a few seconds to a few minutes, I once heard of an Apple owner who managed to lock up his machine in garbage collection for two entire days.

When you run a program that uses calculated strings, Basic finds room for them at the top of memory. Then, when you change a string, Basic makes a new copy of it, a bit lower in memory. Eventually, you run out of memory, since it is filled with strings you no longer need. To correct this, a special garbage collection routine inside Basic packs the still-valid strings as close to the top of memory as possible, overwriting those

that are no longer needed. Even at machine language speeds, this takes time.

One advantage of Commodore's new Plus/4 and 16 models, as well as the CBM and PET Basic 4 models, is that they have a much faster way of handling garbage collection. As for your 64, garbage collection can be minimized, but not eliminated. The guiding principle is this: Don't create any more strings than you have to, and change them as infrequently as possible.

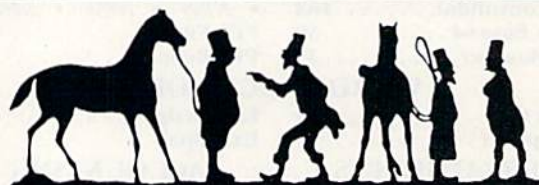
**Q:** I use my VIC-20 with a 1525 printer to do my billing for a small company. My program works well, with one problem. I would like my billing to print out the two zeroes after the decimal point if there are no cents in the amount. Instead of \$10, I would like it to print \$10.00. Is this possible?

Gerald Wagner  
Germantown, WA

## The Magic World Of Printer Art!



Turn your printer into an artist with this delightful program for the Commodore 64! Imagine the fun you and your kids will have creating these and scores of other drawings! Save your printer art file to tape or disk, too. **Printer Artist** includes 12 ready-to-run drawings, a utility for creating your own art, and instructions for 40 additional pictures. Complete instructions include discussion of printer art programming techniques. Hours of fun for home or classroom—teaches typing skills, too. Works with any 80-column printer. Only \$34.95, tape or disk.



## The Handicapper

**Now for Thoroughbreds, Harness Horses and Greyhounds!** Use your Commodore 64 to improve your performance at the track! Separate programs for thoroughbreds, trotters and greyhounds will have you handicapping races in minutes, even if you've never done it before!

The handicapper programs use information readily available from the thoroughbred Racing Form, harness or greyhound track program to rank the horses or dogs in each race. Factors include speed, past performance, class, post position, jockey or driver ability, favorite box (for greyhounds), class, maneuvering ability, beaten favorite, stretch gain and other attributes. Data entry is quick and easy. We even provide a chart showing you where to get the information you need!

You may be able to buy a more expensive handicapper, but our satisfied customers say you won't find a better one. Complete instructions and betting guide included. Thoroughbred, Harness or Greyhound, just \$34.95 each on tape or disk. Any two handicappers, \$54.95. All three, only \$74.95. MC/VISA welcome.

Federal Hill Software 825 William St. Baltimore, Md. 21230 301-685-6254 VISA/MC Welcome

Circle 84 on Reader Service card



**A:** Yes, but it will take a small subroutine. Given a number to be printed out, zeroes and all, in variable N, the following subroutine will print it.

```
1000 REM PENNY FORMATTER
1010 C = INT(100*N):REM CONVERT TO
      CENTS
1020 C$ = MID$(STR$(C),2):REM
      CONVERT TO STRING
1030 LN = LEN(C$):REM FIND ITS
      LENGTH
1040 PRINT "$";LEFT$(C$,LN-2)
      ;".";RIGHT$(C$,2)
1050 RETURN
```

If your program will use the same formatted number several times, you could change line 1040 to:

```
1040 N$ = "$" + LEFT$(C$,LN-2) + "." +
      RIGHT$(C$,2)
```

and Print N\$ later as needed. The reason for doing it the first way I've shown is to minimize the number of strings created, and thus the time required for garbage collection.

**Q:** When I am making a program, my keys freeze up and don't work the way they are supposed to. Could you tell me what you think the problem is? I own a 64.

Rodney Lloyd  
Gary, IN

**A:** I can think of two likely causes. One is the "push-wrap crash" we've discussed before in the Clinic; you avoid it by changing the cursor color to white when writing a program or when you're upgrading to the current -03 Kernal ROM.

The other cause is premature testing of a program that contains a Poke statement. If, for example, your program includes POKE X,Y but you haven't assigned any value to X or Y yet, Basic will do a Poke 0,0, since 0 is the default value of unassigned numeric variables. Poking to location 0 on a 64 changes the data direction register that controls what chips are in and out of the memory map, which may eventually result in losing control of the machine, unless you know what you're doing there.

To avoid this and similar problems with Poke, always save a copy of your program before typing RUN, then if it crashes, you haven't lost anything but the time it takes to load it again.

**Q:** I am writing my own database program and have run into trouble. I want to use random files, instead of sequential files, because I will be continually adding data. I tried the programs on pages 31 and 32 in the disk drive user's manual. After several tries, all I got out was garbage. Can you help?

Jim Smith  
Charlton, MA

**A:** I have spent the last month re-writing and expanding the 1541 manual, in hopes of making it accurate, readable and comprehensive. By the time you read this, the result should be available from Commodore. The programs you tried use random files, and have been dropped from the new edition in favor of relative files, which are far easier for most people to use and still allow random access to data. I would suggest you alter your program to use relative files.

To go with the revised manual, there is also a revised test/demo disk, including a relative file demonstration program, improved versions of some programs on the original disk and several other new programs I've found useful. That, too, should be available from Commodore, or I can supply it for my usual \$15 copying fee.

**Q:** I recently bought a Brother Compactronic 60 electronic typewriter, along with their IF-50 interface and the proper cables. I also got the Commodore 1011A (RS-232) interface. I am using Easy Script, which takes RS-232 interfacing, but it asks for control and command register numbers, which I am having trouble discerning from the interface manual. The IF-50 also includes DIP switches.

I fear a compatibility problem lurking here. The only thing I can get the system to do is the internal test of the IF-50 (automatic after warm-up). I have a continual pattern of "@" signs for whatever file is to be printed.

Jeffrey Prescott  
Panorama City, CA

**A:** Let me refer you to my article on buying a printer in this month's RUN. It includes a section on calculating control and command register values for RS-232 accessories such as your printer.

Your immediate problem is a mismatch of baud rates (the printing speed of the interface and printer must match exactly). I don't know the switch settings of the Brother, but its manual will tell you which switches to set to get the following setting, which should work: 300 baud, 8-bit data, no parity, 1 stop bit, full duplex and XON/XOFF (3-wire) handshake. The matching numbers for the control and command registers are 6 and 0, respectively.

**Q:** I have seen many programs with an XOR command in them. The Commodore 64 does not have this command in Basic. Could you please explain its use and show how it can be created using PET Basic?

Robert Oesterreich  
Costa Mesa, CA

**A:** XOR stands for eXclusive OR, a logical operation in which binary digits are compared and set to 0 (false) if they are the same, and to 1 (true) if they differ. The practical value of this ability is in flipping specified bits from on to off to on again.

For instance, it can easily be used to flip the screen into reverse field and back again, because doing so only involves flipping one bit in each byte of screen memory. A further advantage is that EOR (as it is known in assembly language) is nondestructive. That is, any change caused by its use may be undone by repeating the same command.

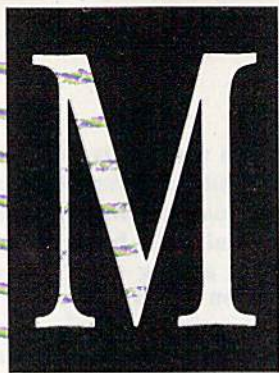
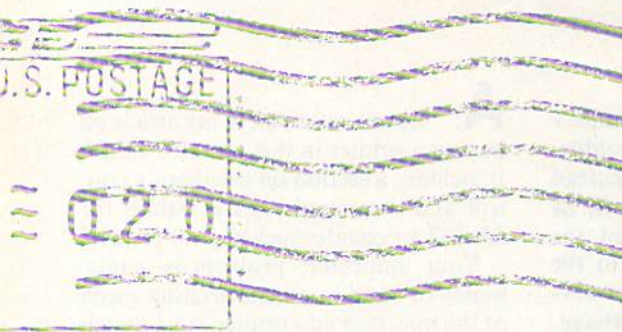
Given a value, A, that we wish to EOR with another value, B, we could use the following code, in assembly language and in Basic, respectively:

Assembly  
LDA #A  
EOR #B

Basic

A = (A OR B) AND NOT (A AND B)

In both cases, the result ends up in A (the A register in the assembly language version). This is one time assembly language is simpler than Basic. [R]



## CP/M Compatible?

I, and probably hundreds of other Commodore 64 computer buyers, have a problem you should know about: My C-64 will not work with the Commodore 64 CP/M package.

According to Commodore's service department, Commodore is trying to fix the problem, but they have no estimates on how much time this will take. They took my name, address, telephone number, and the serial numbers of my computer and CP/M package. They also told me they would contact me when they had the problem corrected, but they didn't indicate what process I had to go through to get my machine fixed. One service person even suggested that I take my CP/M package and get my money back!

However, according to Commodore, there is a test you can perform to indicate whether your computer will or will not work with CP/M. Type the following line into your C-64, and then press the return key:

PRINT PEEK(65408)

If you receive the value "3," your computer probably will not work with CP/M. Values of "0" and "170" indicate that your C-64 probably is compatible with CP/M.

Although this test is nonconclusive, it may give you an indication of whether or not your computer is operative with CP/M.

**Todd N. Ryan**  
Boulder City, NV

*For a hardware solution to this problem, see "Commodore Clinic," p. 120 of this issue.*

**Editors**

## About Pascal

I was delighted that someone should finally point out that Pascal is available for the C-64 (*RUN*, October 1984,

"Pascal," by Margaret Morabito). However, you made Pascal sound very difficult, when the procedures are actually quite similar. For example, it is true that you can't compile a Pascal program that refers to a procedure that doesn't exist. This is essentially the same as trying, in Basic, to GOSUB to a line number that doesn't exist.

I am also writing to provide a *buyer's beware* tip. I have had ZOOM Pascal for around a year, and would not recommend it. The author of ZOOM Pascal also wrote (or helped to write) KMMM Pascal.

Anyway, I would suggest, as you did in your article, Oxford Pascal. The compiler can compile to disk (which means you can have enormous Pascal programs that link to each other) or memory. It has extra commands for sprites and so on. Also, it costs only about \$49.95, while KMMM Pascal costs \$99.95. For comparison, ZOOM Pascal costs \$39.95. Seen from all points, Oxford Pascal is definitely the best buy, and the better product. Keep up the good work!

**Robert Hayes**  
Irving, TX

## Commodore in South Africa

Congratulations on a superb magazine. I like *RUN* because you supply us readers with all sorts of programs. As I read your July issue, I came across a letter from James Llanos of Ketchikan, AK: he wants to know more about Commodore users outside the United States.

Well, I, too, am a Commodore computerist, and I live in SWA/Nambibia, which is in South Africa. The computerist is reasonably supported by some stores here in Nambibia. We've got a chain of stores that exclusively sell Commodore products at a fairly reasonable price. However, we lack the support of good tape-based soft-

ware. (When I see all the software advertisements in your magazine, I wish I were in the United States.) Therefore, I write my own programs and send them to a South African firm, where I get some pocket money.

Mr. Llanos also wanted to know how non-English-speaking people use English as a computer language. Well, I'm also not English speaking (I speak German), but I've been writing my own programs for 14 years. It is not that difficult to learn Basic in English.

Regarding hardware, we are better supported than with software. I own a C-64, which is the absolute hit over here. Also, I have an Epson FX-80, of which I am very proud, as not many people own this type of printer here.

If Mr. Llanos wants to know more about me and us Commodore users, he can write to me and ask for some detailed information.

I wish you Commodore fanatics luck, and I hope you always buy a Commodore, because it's number one!

**Joern Staby**  
PO Box 9502, Eros  
Windhoek 9000  
SWA/Nambibia  
South Africa

## A Vote for Panasonic

I would like to pass along some advice to those who are looking for an inexpensive Commodore-compatible dot-matrix printer that will print all of the Commodore graphics.

Recently, I purchased a Panasonic KX-P1090 and connected it with Cardco's Card/? + G interface. It works great. The printer can print in over 20 different print styles, including pica and elite. It will print in double-width elongated print or small compressed print. It faultlessly obeys all print commands I send it, and the best part about it is that it is comparatively inexpensive. I paid \$267.

I have seen many reviews of printers, but no one ever mentions the Panasonic. My friends have Gemini 10X, but after seeing mine in action, they prefer the Panasonic.

**George A. Bilinsky**  
New York, NY

## Try the Turboprint/GT

It seems so rare nowadays to buy a product that is fully backed by the manufacturer that I felt compelled to write and pass on the following experience.

I had been using a non-graphics interface to connect my Prowriter to my C-64, but I wanted to change to one with graphics capabilities. While browsing in a local computer store, I noticed a new interface that I had not heard of before—Turboprint/GT by Telesys, Inc. After reading the advertising flier, I decided to take a chance and buy it (the promise that I could return the interface if I wasn't satisfied also influenced my decision).

After getting the interface home, I experienced some problems with printer switch settings. I couldn't get the included screen dump program to work. I called Telesys and was referred to Bill Karoly, who was more than willing to help me solve any and all problems. (In addition, Telesys provides a

toll-free number for you to call—800-252-4733.)

With Bill's assistance, I was soon using my new interface with all my software. He solved my problem with the screen dump program by copying the program on a blank disk that I sent him (I had made errors in typing in the program). Bill also provided me with the latest edition of their owner's manual and an updated ROM for the interface.

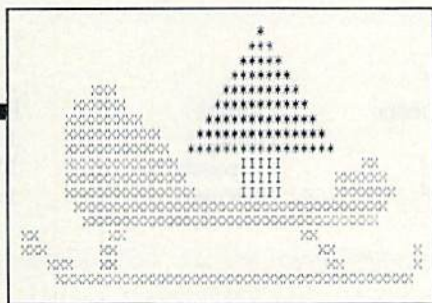
If you want a printer interface that most emulates a Commodore printer and total backing from the manufacturer, give the Turboprint/GT a try. You'll like it.

**Bill Griffith**  
Boise, ID

## The Sled

I am 12 years old and I love to work on my Commodore 64. Well, during the winter I love to ski and sled a lot. On Christmas, my grandpa and I put a lighted-up Christmas tree on a sled and pushed it around the block, and some people clapped when we walked by their house, and that is where I got my idea for the sled.

**Robby Dahlby**  
Sparta, WI



```

10 REM THE SLED
20 PRINT
30 PRINT
40 OPEN6.4
50 CMD6
60 PRINT
70 PRINT TAB(31): "*"
80 PRINT TAB(30): "****"
90 PRINT TAB(29): "*****"
100 PRINT TAB(28): "*****"
110 PRINT TAB(12): "XXXX"
120 PRINT TAB(10): "XXXXXXXX"
130 PRINT TAB(9): "XXXXXXXXXX"
140 PRINT TAB(9): "XXXXXXXXXXXX"
150 PRINT TAB(9): "XXXXXXXXXXXXX"
160 PRINT TAB(9): "XXXXXXXXXXXXXX"
170 PRINT TAB(9): "XXXXXXXXXXXXXXX"
180 PRINT TAB(9): "XXXXXXXXXXXXXXX"
200 PRINT TAB(10): "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
210 PRINT TAB(11): "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
220 PRINT TAB(4): "XX"
230 PRINT TAB(4): "XXX"
240 PRINT TAB(6): "XXX XX"
250 PRINT TAB(8): "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
260 PRINT
270 PRINT
290 PRINT
300 PRINT
310 LIST
320 END
    
```

READY.

Circle 345 on Reader Service card

## DOUBLES DISK CAPACITY!



**Cuts Your Cost 50%!**

Now! The back of 5 1/4" diskettes can be used for data storage even with single head disk drives.

- **NIBBLE NOTCH** makes it easy
- Adds the notch needed.
- **SATISFACTION OR MONEY BACK.**

### NIBBLE NOTCH I

Cuts square notch for Apple, II, II+, IIe, IIc, III, Franklin and Commodore.

only **\$14.95\***

\*add \$2.00 each order (\$5.00 foreign)  
For Postage and Handling  
**Florida Residents Add 5% Sales Tax**

**ORDER TODAY!**

Toll Free 1-800-642-2536



FLORIDA: 1-305-493-8355



OR SEND CHECK OR MONEY ORDER TO:

**NIBBLE NOTCH® COMPUTER PRODUCTS**

4211 NW 75th TERRACE, - DEPT. 1 G  
LAUDERHILL, FL 33319

PATENTED

ALL TRADEMARKS ARE ACKNOWLEDGED

Circle 332 on Reader Service card

## TAXES MADE EASY with TaxVision™

Use Multiplan to do your taxes fast and easy!

TaxVision is an integrated set of templates that operates under Multiplan, the powerful, best selling spreadsheet program. Each template represents an IRS form or schedule that prints in an approved format. You can even modify and expand TaxVision yourself!

TaxVision supports 23 Forms and Schedules: 1040, 2106, 2119, 2210, 2441, 3468, 4562, 4684, 4797, 5695, 5251, 6252, A, B, C, D, E, F, G, R&RP, SE & W. COMPARABLE TAX PROGRAMS cost \$180 to \$250. You can own BOTH Multiplan AND Tax-Vision for the same cost. We think you will agree: You get a lot more for your money with TaxVision.

TaxVision (tax deductible) ..... \$79 \*  
Multiplan (save \$16 off list price) ..... \$84 \*  
Both for only ..... \$155 \*  
Other Spreadsheet Products ..... CALL \*  
\* Add \$4.50 P&H. CA. res. add 6% sales tax.  
\*\*\* FOR COMMODORE 64 \*\*\*

FOR INFORMATION AND ORDERS, WRITE OR CALL:

VISION INFORMATION PRODUCTS, INC.  
5500 Atherton St., Suite 306  
Long Beach, California 90815  
(213) 431-5284  
Commodore 64 is a trademark of Commodore Business Machines, Inc.

**DEALER INQUIRIES INVITED**

## Subscription Problem?

RUN does not keep subscription records on the premises, therefore calling us only adds time and doesn't solve the problem.

Please send a description of the problem and your most recent address label to:

**RUN**

Subscription Dept.  
PO Box 954  
Farmingdale, NY 11737

Thank you and enjoy your subscription.

# RUN

## 1984 Index

<i>Title</i>	<i>Author</i>	<i>Issue</i>	<i>Page</i>	<i>Computer</i>
<b>Applications</b>				
Database Deluxe	Stilwell	Feb	48	VIC/C-64
Play Ball!	Howe	Jul	32	C-64
Radio-Active Software	Thurber	Jul	48	VIC/C-64
Check It Out	Schmoyer	Jul	72	C-64
Post a Notice	Voight	Aug	78	VIC/C-64
Datafile	Konshak	Nov	74	C-64
Datafile	Konshak	Dec	80	C-64
<b>Buyer's Guides</b>				
Hardware Buyer's Guide		Nov	140	
Software Buyer's Guide		Dec	104	
<b>Communications</b>				
Reach Out and Touch-Tone Someone	Grubbs	Feb	128	C-64
The Joy of Modems	Hinshaw	Jun	42	VIC/C-64
Working the Nets	Converse	Jun	48	VIC/C-64
Morse Code Medley	Meixner	Jul	58	VIC/C-64
<b>Education</b>				
Fun with Math Facts	Jacobs	Jan	36	VIC/C-64
Straight A Program	Levitt	Feb	114	C-64
Scaling Ivy-Covered Walls	Ecton	Mar	74	C-64
Long Multiplication on the VIC-20	Lane	Mar	94	VIC
Mad Bomber	Fields	Mar	106	C-64
Funky Monkey	Taylor	Apr	58	VIC
Time Waits for No Man (or Child)	Smith	Apr	62	VIC/C-64
Bugs for the Counting	Miller	Jun	68	VIC
Tri-Math	Adamec	Aug	30	C-64
Math Blaster	Adamec	Aug	32	C-64
Piece of Cake	Adamec	Aug	32	C-64
Space Math	Adamec	Aug	34	C-64
Speller	Fields	Sep	48	C-64
Geography Invaders	Busch	Oct	28	VIC/C-64
Trains	Adamec	Oct	34	C-64
The Factory	Adamec	Oct	34	C-64

<i>Title</i>	<i>Author</i>	<i>Issue</i>	<i>Page</i>	<i>Computer</i>
Alphabet Zoo	Adamec	Oct	36	C-64
Spills and Fills	Adamec	Oct	37	VIC
Spelling Friend	Braun	Dec	62	VIC

## Games

Target Shoot	Busch	Jan	26	VIC/C-64
Canyons of Zelaz	McClellan	Jan	42	C-64
The Riddle of the Symbol Code	Petroustos	Jan	92	C-64
Sea Battle	Gardner	Jan	132	VIC
Draw	Busch	Feb	26	VIC
Speedy Mosquito	Kowal	Feb	44	C-64
Sure-Shootin' Gallery	Rocke	Feb	56	VIC
Iron Hand or VIC-20?	Shaughnessy	Feb	76	VIC
Computer Wars	Benford	Mar	28	VIC
Submarine Commander	Benford	Mar	28	VIC
Neutral Zone	Benford	Mar	29	C-64
Beach-Head	Benford	Mar	30	C-64
Archon	Benford	Mar	31	C-64
Tunnel Run	Busch	Mar	32	VIC/C-64
Serpent of Death	Hoppe	Mar	58	VIC
Baja 1000	Gordon	Mar	68	VIC
Mad Bomber	Fields	Mar	106	C-64
Fast Eddie	Benford	Apr	22	VIC/C-64
Donkey Kong	Benford	Apr	22	VIC
Squish 'Em	Benford	Apr	23	VIC/C-64
Hard Hat Mack	Benford	Apr	23	C-64
Nerves	Busch	Apr	36	VIC/C-64
Drol	Annucci	May	21	C-64
Jumpman	Olsen	May	28	C-64
Centipede	Benford	May	30	VIC
Worms	Benford	May	32	C-64
Dragon's Den	Benford	May	34	C-64
Frogger	Benford	May	35	C-64
Masterpiece	Busch	May	36	VIC/C-64
Dragon Quest	Meixner	May	74	VIC
Flash Glance	Szepesi	May	82	C-64
Caves of Alpha-Ceti	Keyser	May	90	VIC
Reflex	Busch	Jun	30	VIC/C-64
Munchin' Mushrooms	Stilwell	Jun	58	VIC
Word Search	Busch	Jul	26	VIC/C-64
Crush, Crumble and Chomp!	Benford	Jul	28	VIC/C-64
Labyrinth of the Creator	Benford	Jul	30	C-64
Temple of Apsai	Benford	Jul	30	C-64
Playing the Ponies	Gargiulo	Jul	64	VIC
Lost in Space	Gardner	Jul	96	VIC
Deadline	Busch	Aug	28	VIC/C-64
Battleship War	Meade	Aug	36	C-64
Slide	Rossa	Aug	96	C-64
Sky Pilot	Busch	Sep	24	VIC/C-64
Watch Your Sidestep	O'Gorman	Sep	54	C-64
Geography Invaders	Busch	Oct	28	VIC/C-64
The Mystery of Lane Manor	Sanders	Oct	70	C-64
Find the Word	Caron	Oct	84	VIC/C-64
Word Probe	Busch	Nov	24	VIC/C-64
I Am the President	Calamar	Nov	46	VIC
Money Grubber	Smook	Nov	68	C-64
Touchdown!	Smith	Nov	98	VIC/C-64
Buck Rogers	Salamone	Dec	14	C-64
Slalom!	Salamone	Dec	18	C-64
Seven Cities of Gold	Benford	Dec	20	C-64
Satan's Hollow	Benford	Dec	24	C-64

<i>Title</i>	<i>Author</i>	<i>Issue</i>	<i>Page</i>	<i>Computer</i>
Jack Attack	Benford	Dec	27	C-64/Plus 4/C-16
Trivia Craze	Jermaine	Dec	28	VIC/C-64
Nimbots	Buckley	Dec	46	VIC

### General Interest

A Cure for the Ailing Doctor's Office	Boyd	Feb	136	C-64
In Search of a Tenth Planet	Kowal	Mar	42	C-64
Bringing Up Commodore	Thurber	Mar	100	VIC/C-64
Land of Silicon and Glitter	Benford	Apr	118	
Behind the Scenes at Commodore	Benford	May	42	
The 91st Day	Wright	Jun	36	C-64
The Incredible Jeremy Landers	Brown	Jun	50	VIC
Beale's Buried Treasure	Nicklow	Aug	48	C-64
Cops, Robbers and Computers	Adamec	Sep	86	C-64
The Latest Look in Software	Strasma	Dec	94	
Penny-Pinching Software	Thurber	Dec	102	

### Graphics

Customize Your VIC	Knott & Prochnow	Jan	120	VIC
Draw	Busch	Feb	26	VIC
C-64 Graphics Galore	McClellan	Feb	32	C-64
Spritin-Up	Rager	Feb	124	C-64
Create a VICasso Part 1	Erwin	Feb	132	VIC
Create a VICasso Part 2	Erwin	Apr	114	VIC
64 Joystick Artist	Platt	Jun	90	C-64
Color Me Creative	Bryner	Jun	98	VIC
Super Sprite Builder	Clifford	Jul	82	C-64
Sprite Control	Clifford	Aug	64	C-64
Spwriter	Meade	Oct	92	C-64
The Many-Colored VIC	Tillman	Dec	52	VIC
Plenty of K	Oman	Dec	74	C-64

### Hardware Interfacing

Gateway to the World Part 1	Grubbs	May	88	VIC/C-64
Quick Switcher	Thurber	Jun	66	VIC/C-64
Gateway to the World Part 2	Grubbs	Jun	134	VIC/C-64
Chatterbox	Lewart	Jul	88	C-64
Custom Keyboard	Kula	Jul	108	VIC/C-64
Easy Keypad	Stephens	Oct	76	C-64
Direct Connection	Hurwitz	Nov	124	VIC/C-64
Monitor Madness	Filby	Nov	130	VIC/C-64
Vivid Video	Zavalishin	Nov	132	C-64
The VIC-20/Atari Connection	Lowrey	Nov	136	VIC
Gateway to the World Part 3	Grubbs	Dec	168	VIC/C-64

### Hardware Reviews

A Touch-Sensitive Issue	Aker	Mar	86	C-64
Unveiling of the TED	Benford	Mar	93	Plus 4
Impact Printer	Wright	Mar	144	C-64
C-64 Link	Baker	Mar	145	C-64
VIC-20 Expansion	Henry	Mar	146	VIC
Tune Up Your Commodore	Benford	Apr	42	VIC/C-64
Weather Forecaster	Adamec	May	50	VIC/C-64
The Robots Are Coming	Herrington	Aug	70	VIC/C-64

<i>Title</i>	<i>Author</i>	<i>Issue</i>	<i>Page</i>	<i>Computer</i>
Ramax Memory Expansion Board	Wright	Aug	124	VIC
Commodore Does It Again!	Butterfield	Nov	30	Plus 4/C-16
Meet the Plus/4 and C-16	Benford	Nov	36	Plus 4/C-16
Bridging the Gap... Printer Interfaces	Benford	Nov	92	VIC/C-64

## Languages

Comal	Thompson	Oct	40	C-64
Logo	Eisenberg	Oct	46	C-64
Pascal	Morabito	Oct	54	C-64
Pilot	Llanos	Oct	62	C-64
Fortran	Baker	Oct	66	C-64
Forth	J. Moore/R. Moore	Dec	28	VIC/C-64

## Music/Sound

Tune Up Your Commodore	Benford	Apr	42	VIC/C-64
Easy Music Maker	Fields	May	132	C-64
Know Those Notes	Colosimo	Jun	82	VIC/C-64
Sound Off with Your Joystick	Cotton	Aug	90	C-64
SIDAID	Clifford	Sep	92	C-64
Sid Serenade	Clifford	Oct	80	C-64
Master Composer	Quigley	Dec	16	C-64
Play Me a Color	Woyton	Dec	148	VIC
Commodore Christmas Carol	Forrester	Dec	160	VIC

## Programming Tips

Conversion Magic—Double Your Pleasure	Black	Jan	82	VIC/C-64
Keep in Step with the Quick VIC	Spahitz	Jan	101	VIC
Beyond the Manual Part 1	Mills	Jan	138	C-64
Shortcut to Color	Stanfield	Feb	40	C-64
A Taste of Arrays	Aker	Feb	64	C-64
Fancy Fingering on the Function Keys	Tanzini	Feb	70	VIC
Be a VIC Memory Miser	Baker	Feb	84	VIC
Triple Threat	Atkins	Feb	94	VIC/C-64
Tips You Won't Forget	Leonard	Feb	96	VIC
Beyond the Manual Part 2	Mills	Feb	138	VIC/C-64
Basic Speedup	Tanzini	Mar	116	VIC/C-64
Don't String Me Along	Aker	Mar	122	VIC/C-64
Beyond the Manual Part 3	Mills	Mar	133	C-64
Mix and Match Programs on the C-64	Olsen	Apr	94	C-64
It's All Relative Part I	Brooks	Apr	100	VIC/C-64
C-64 Superkeys	Simmons	Apr	108	C-64
Color Combo Dilemma	Thurber	Apr	112	VIC/C-64
Beyond the Manual Part 4	Mills	Apr	141	C-64
Journey to the Center of Your C-64 Part 1	Nelson	May	58	VIC/C-64
The Art of Flowcharting	Moser	May	124	VIC
Relatively Speaking Part II	Brooks	May	138	VIC/C-64
Journey to the Center of Your C-64 Part 2	Nelson	Jun	74	VIC/C-64
Relatively Speaking Part III	Brooks	Jun	108	VIC/C-64
Scroll Your Rows	Urso	Jun	118	C-64
Quick Change Artist	Jaeger	Jul	44	C-64
Pokes Without Pain	Howarth	Aug	58	VIC/C-64
The Art and Science of Programming	Kula	Aug	104	VIC/C-64
Mysteries of the Wedge Revealed	Sander	Sep	58	C-64
Lister Filter	Kapauan	Sep	82	VIC/C-64
Hurry Up!	Braun	Oct	118	VIC/C-64

<i>Title</i>	<i>Author</i>	<i>Issue</i>	<i>Page</i>	<i>Computer</i>
<b>Software Reviews</b>				
David's Midnight Magic	RUN Editorial Staff	Jan	18	C-64
Rescue at Rigel	Gunn & Zimmerman	Jan	20	VIC
Choplifter	Diprete	Jan	21	VIC
Snake Byte	Diprete	Jan	21	VIC/C-64
River Rescue	Goldstein	Jan	22	VIC
Sword of Fargoal	Diprete	Jan	23	VIC
C-64 Word Processing Demystified	Salkind-Baker- Raab-Wright	Jan	58	VIC/C-64
Turmoil	Busch	Feb	18	VIC/C-64
Turtle Graphics II	Aker	Feb	20	C-64
Logo	Salkind	Feb	20	C-64
Vanilla Pilot	Salkind	Feb	21	C-64
Nukewar	Cherry	Feb	23	VIC/C-64
Get Four	Diprete	Feb	25	VIC
Bandits	Diprete	Mar	18	VIC/C-64
The Blade of Blackpoole	Olsen	Mar	20	C-64
Delta Drawing	Adamec	Mar	21	C-64
VIC Forth	Tanzini	Mar	22	VIC
Benji's Space Rescue	Adamec	Mar	24	C-64
Computer Wars	Benford	Mar	28	VIC
Submarine Commander	Benford	Mar	28	VIC
Neutral Zone	Benford	Mar	29	C-64
Beach-Head	Benford	Mar	30	C-64
Archon	Benford	Mar	31	C-64
Spreadsheets Uncovered	Shaughnessy	Mar	46	VIC/C-64
Fast Eddie	Benford	Apr	22	VIC/C-64
Donkey Kong	Benford	Apr	22	VIC
Squish 'Em	Benford	Apr	23	VIC/C-64
Hard Hat Mack	Benford	Apr	23	C-64
Calc Result	Heck	Apr	26	C-64
Final Orbit/Bumper Bash	Henry	Apr	29	VIC
Insta-Writer	Wright	Apr	30	C-64
Victory Casino	Diprete	Apr	32	VIC
The Hypnotist	Adamec	Apr	52	C-64
Magic Desk I—Type and File	Ware	May	18	C-64
Drol	Annucci	May	21	C-64
Disk Directory Manager	Jassby	May	22	VIC/C-64
Personal Finance Forecaster	Flescher	May	24	C-64
Jumpman	Olsen	May	28	C-64
Centipede	Benford	May	30	VIC
Worms	Benford	May	32	C-64
Dragon's Den	Benford	May	34	C-64
Frogger	Benford	May	35	C-64
Get Organized!...Database...	Salkind & Bihlmeyer	May	96	C-64
Suspended	Wright	Jun	18	C-64
Speed Reader II	Adamec	Jun	20	C-64
Pooyan	Salamone	Jun	24	C-64
Math Marauders	Diprete	Jun	26	VIC
Sky Blazer	Spahitz	Jun	26	VIC
International Soccer	Laflamme	Jul	16	C-64
Moon Shuttle	Salamone	Jul	18	C-64
Multiplan	Bihlmeyer	Jul	20	C-64
Doodle!	Bihlmeyer	Jul	23	C-64
IFR Flight Simulator	Beck	Jul	24	C-64
Crush, Crumble and Chomp!	Benford	Jul	28	VIC/C-64
Labyrinth of the Creator	Benford	Jul	30	C-64
Temple of Apshai	Benford	Jul	30	C-64
Solo Flight	Stephens	Aug	18	C-64



<i>Title</i>	<i>Author</i>	<i>Issue</i>	<i>Page</i>	<i>Computer</i>
Turtle Toyland Jr.	Adamec	Aug	21	C-64
Software Automatic Mouth	Grubbs	Aug	22	C-64
Mothership	Salamone	Aug	23	C-64
Smithwriter	Wright	Aug	24	C-64
Tri-Math	Adamec	Aug	30	C-64
Math Blaster	Adamec	Aug	32	C-64
Piece of Cake	Adamec	Aug	32	C-64
Space Math	Adamec	Aug	34	C-64
Program Generators	Rotello	Aug	80	C-64
Flight Simulator II	Stephens	Sep	14	C-64
Super-Text	Salamone	Sep	18	C-64
Pit Stop	Guerra	Sep	20	C-64
Quintic Warrior	Bihlmeyer	Sep	21	C-64
Eliza	Beck	Sep	21	C-64
Back to Basics	Salkind	Sep	26	C-64
Terminal Programs	Strasma	Sep	68	VIC/C-64
Summer Games	Jermaine	Oct	14	C-64
Star League Baseball	Wright	Oct	18	C-64
Omniwriter and Omnispell	Bihlmeyer	Oct	19	C-64
Castle Wolfenstein	Salamone	Oct	22	C-64
Typing Tutor III	Hinshaw	Oct	22	C-64
Zaxxon	Baker	Oct	25	C-64
Trains	Adamec	Oct	34	C-64
The Factory	Adamec	Oct	34	C-64
Alphabet Zoo	Adamec	Oct	36	C-64
Spills and Fills	Adamec	Oct	37	VIC
Star Trek	Cotone	Nov	14	C-64
Spitfire Ace	Bihlmeyer	Nov	14	C-64
Computer Football Strategy	Fields	Nov	14	C-64
Voyage of the Mayflower	Salamone	Nov	14	C-64
Hot Accounts	Peterson	Nov	14	C-64
Buck Rogers	Salamone	Dec	14	C-64
Master Composer	Quigley	Dec	16	C-64
Slalom!	Salamone	Dec	18	C-64
Write Now! Mail Now	Silverstein	Dec	19	C-64
Seven Cities of Gold	Benford	Dec	20	C-64
Satan's Hollow	Benford	Dec	24	C-64
Jack Attack	Benford	Dec	27	C-64/Plus 4/C-16
Trivia Craze	Jermaine	Dec	28	VIC/C-64
Plus/4's Word Processor	Morabito	Dec	144	Plus 4

### Utilities (see also Programming Tips)

The Commodore Connection	Kowal	Jan	54	VIC/C-64
Disk-O-VIC	Henry	Jan	102	VIC
Mystery of the Black Box Revealed	Sander	Feb	88	VIC/C-64
Disk Master Revisited	Baker	Feb	100	C-64
Disk Editor 64	Lampton	Apr	71	C-64
Maze of Intrigue	Stilwell	Apr	76	VIC
Calling Disk Directories to Order	Broussard	Apr	122	C-64
Risk-Takers, Beware	Olsen	Apr	126	VIC/C-64
Disk Directory Manager	Jassby	May	23	VIC/C-64
Disk-O-64	Overhulser	Jun	54	C-64
Line Squeezer	Baker	Nov	54	VIC/C-64
Line Expander	Baker	Nov	62	VIC/C-64
Maze of Intrigue	Stilwell	Nov	110	C-64
Print Your Screen	Franzel	Dec	154	VIC/C-64

# NEW PRODUCTS RUNDOWN

Compiled by SHAWN LAFLAMME

## You're the Suspect

In *Suspect*, you are a newspaper reporter who has been invited to an elegant masquerade ball. You're a friend of the hostess, wealthy socialite Veronica Ashcroft-Wellman, and your editor has asked you to record the event for the Sunday Living section of the paper.

In the magnificent ballroom of Ashcroft Farm, an historic mansion in Maryland, you mingle with blue bloods and power brokers, sampling caviar and champagne, enjoying the fine orchestra and the exotic costumes. It's a delightful evening—until murder halts the festivities and fingers begin pointing at you.

You have only a few hours to convince the police of your innocence. To bring back a good story for your editor, you'll have to figure out who committed the crime, and why.

*Suspect* is available on disk for the C-64. Retail price is \$39.95. Infocom, Inc., 55 Wheeler St., Cambridge, MA 02138.

Check Reader Service number 400.

## Breakin' with Your Commodore

Epyx, Inc. (1043 Kiel Court, Sunnyvale, CA 94089) has released *Breakdance*, a new game on disk for the Commodore 64.

The program contains four separate games, each with graphics, animation and original, computer-generated music. In the free-form section of the program, you must choreograph your dancer's moves to match the rhythm of one of five different songs.

The game lets you use moves such as poppin', moon walking, up rocking and breakin'.

Check Reader Service number 401.

## On the Campaign Trail

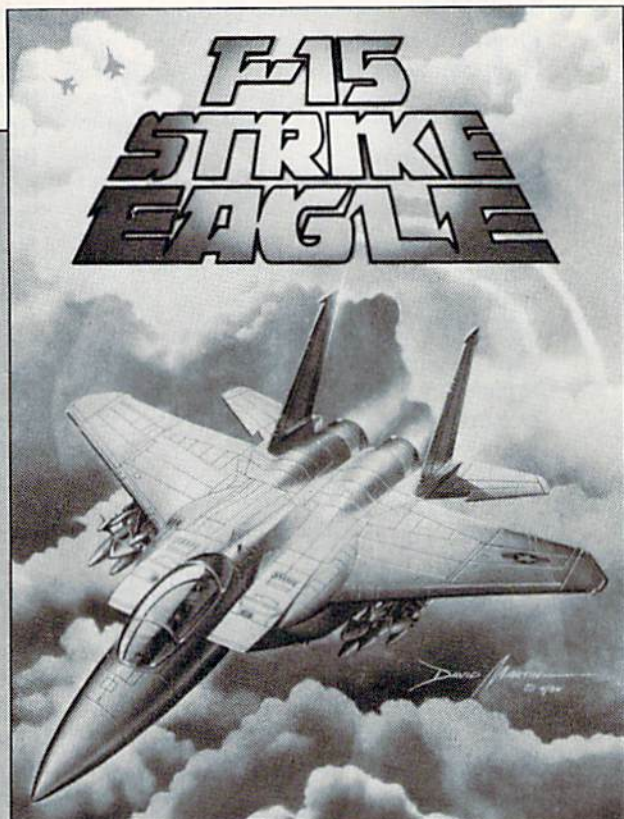
Strategic Simulations, Inc. (883 Stierlin Road, Bldg. A-200, Mountain View, CA 94043) has released a Commodore 64 version of *President Elect*.

With *President Elect*, you can reenact any presidential election from 1960 to 1984, using any of the 45 actual, historical candidates (including Ronald Reagan and Walter Mondale). You can also program your own candidates, based upon responses to over 20 political and social issues. The computer reflects the prevailing political climate of the specified time, based upon economic factors and U.S. and foreign news.

The game can be played by up to three players, each assuming the role of a campaign manager/candidate. The game proceeds through nine weekly turns (Labor Day to election night), during which candidates must decide how to allocate campaign funds. Weekly polls are provided to give you a rough idea of how you're doing.

*President Elect* is available on disk for \$39.95.

Check Reader Service number 402.



## Combat Flight Simulator

*F-15 Strike Eagle* is a combat flight simulation program, from MicroProse Software (10616 Beaver Dam Road, Hunt Valley, MD 21030).

The program puts you in the cockpit of an F-15 Strike Eagle, one of the world's most advanced fighter planes. Many of the F-15's actual flight weapons and information systems are simulated in the program. The threats of modern air combat, such as enemy aircraft, missiles (radar-guided, infrared-guided and air-to-air) and well-defended ground targets, are included.

Seven different combat missions are included, from defending the fleet in the Gulf of Sidra against Colonel Kaddafi's forces, to protecting the strategic Persian oil routes in the Strait of Hormuz.

*F-15 Strike Eagle* is available on disk for the C-64. Retail price is \$34.95.

Check Reader Service number 403.

## Commodore Customizer

The Operating System is a cartridge-based customizing component for the Commodore 64, from Hacker's Hardware (PO Box 7933, San Diego, CA 92107).

The component reconfigures the C-64's operating system, providing you with the following features: escape keys, quick load keys, default to disk drive, automatic machine language loading (with display of load addresses) and improved video displays. Over 18 resident utilities, including numerous DOS commands, programming aids and a directory function, are available during normal computer use.

The Operating System is available in either a standard model, or with an individually customized text display. Retail prices are \$54.95 and \$64.95, respectively.

Check Reader Service number 404.

## C-64 Professor

Progressive Peripherals & Software (2186 South Holly, Suite 2, Denver, CO 80222) has introduced The Professor, a tutorial for the Commodore 64.

The Professor is designed to familiarize you with all the basic functions of the C-64. The program comes complete in two volumes on a two-sided disk.

Four general aspects of the C-64 are covered in this tutorial—the fundamentals of Basic, the keyboard and the functions of the individual keys, Music theory and simple to advanced graphics. The Professor is available on disk for \$34.95.

Check Reader Service number 405.

## Search and Destroy

Sonar Search is an action/strategy game that simulates the battle for control of the North Atlantic shipping lanes during World War II.

With your three destroyers, you must direct a search-and-destroy mission against five enemy submarines. Contacts are established with submarines as they come within your destroyer's sonar range. The submarines prefer to avoid contact with your destroyers, but they may attack with torpedoes when pursued. You must listen for torpedoes

and take evasive action before they appear on your display.

To sink a submarine, you must maneuver your destroyer directly above it before launching a depth charge salvo. The game ends when all five submarines have either been sunk or have escaped to the open ocean, or when all three of your destroyers have been put out of action.

Sonar Search is available on disk or cassette for the Commodore 64. Retail price is \$29.95. Signal Computer Consultants, PO Box 18222, Pittsburgh, PA 15236.

Check Reader Service number 406.

## Save that Picture

The Graphics Magician Picture Painter allows you to store pictures in a minimal amount of space on a disk, so that you can recall them quickly from your own programs.

With this program, the computer stores the directions to draw a particular image, as opposed to storing the actual image, thus saving space on the disk. With the use of a joystick, you can choose from 16 basic and 71 blended shades to color in each character zone (the screen is made up of 1000 character zones). Eight "brushes," ranging in size from a small, precision brush to a large airbrush, can add detail and shading to your picture.

Available on disk for the Commodore 64, the Graphics Magician retails for \$39.95. Penguin Software, 830 4th Ave., PO Box 311, Geneva, IL 60134.

Check Reader Service number 407.

## Sticky Situation

Broderbund Software (17 Paul Drive, San Rafael, CA 94903) has released the Commodore 64 version of Gumball.

The game places you in the role of an apprentice at the Sticky Sole Gumball Factory. It's your job to sort all the gumballs. However, your supervisor, Mr. Nitpicker, is always attempting to undo your best efforts. Also, overzealous dental assistants try to blow up the factory using gumballs laced with explosives. When the four o'clock whistle blows, you'll have only one more hour to meet your quota.

# C-64 COPY!

## COPY CLONE with Utilities

Copy protected disks in 5 min. or less  
Works with over 80% of software  
Will not damage disk drive

**\$19.95**

Over 20 utilities, including  
professional disk drive  
analysis•30 sec. formatting  
sophisticated disk editor

**\$19.95**

## POWER PLUS

Utility adds 40+ commands, doesn't use BASIC memory•100% machine.

• SCREEN DUMP to printer•UN-NEW  
• MACHINE LANG. MONITOR•Adds BASIC commands AUTO LINE NO., RENUMBER, FIND, CHANGE, DELETE, more.

## 14 ACTION GAMES

When you order both programs

**FREE**

Send check or m.o. (include \$2.00 p.h.) CA res. add 6% sales tax to: **EDUCOMP** 2139 Newcastle Ave., Cardiff, CA 92007•942-3838.

Circle 292 on Reader Service card.

## RAVICS Bulletin Board System

The fastest and most complete BBS is now available for C-64 owners.

### Features include:

- Full Security control on all levels.
- Supports 999 users.
- Up to 9 Message-bases.
- May be used on 1 or more disk drives and any modem.
- A complete E-Mail System.
- Supports Multiple Menus.
- Conference Tree System.
- Complete Uploading and Downloading of prog and seq files, with error checking.
- Comes with a compatible Terminal prog. (Not needed for normal use.)
- Sysop has full control of the BBS from the console or from a remote site.
- Complete Manual and support programs.
- Hot-line for any questions you might have.

Order now, special price \$99.95. (includes shipping).

For a complete demo on the BBS, you can call (714)522-3197.

For information and ordering:  
Computer Era  
206 S. Emerald  
Anaheim, CA 92804  
(714)778-4858

# Subscription Problem?

RUN does not keep subscription records on the premises, therefore calling us only adds time and doesn't solve the problem.

Please send a description of the problem and your most recent address label to:

## RUN

Subscription Dept.  
PO Box 954  
Farmingdale, NY 11737

Thank you and enjoy your subscription.

## R New Products RUNdown

If you are successful, you'll be rewarded with a promotion and a colorful cartoon illustrating a dramatic increase in your standard of living.

Gumball is available on disk for \$29.95.

Check Reader Service number 408.

### Interactive Biology Program

Cell Defense is an interactive human biology program for the Commodore 64, from Human Engineered Software (150 North Hill Drive, Brisbane, CA 94005). It is designed to teach students aged 10 and up how the body defends itself from disease and adverse conditions caused by age, stress, drugs and alcohol.

The program simulates the spread of a virus through the body. The student must control the cell's defense system to prevent the body from being destroyed by virus infections carried in the blood.

The effects of age, stress, drugs and alcohol must be considered to determine the cell's ability to resist virus in-

fection. Three types of cells need protection (skin, inner tissue and nerve), and the student can choose from interferon, macrophages, T-Cells, B-Cells and antibodies as defenses against the virus.

Cell Defense is available on disk for \$29.95.

Check Reader Service number 409.

### Join the Freedom Fighters

Datasoft, Inc. (19808 Nordhoff Place, Chatsworth, CA 91311) has released Meridian III, a futuristic war game for the Commodore 64.

Joining the ranks of the bravest Freedom Fighters, you must guide your heavily armed cruisers through enemy territory. Multicolored lights on your instrumentation panel give you instant energy reports and warn you of impending danger.

Your ultimate destination is the Dragon Lord's fortress city, which is heavily guarded by insidious Energy

Globes and dreaded Space Mines. You must also survive the hazards of the Warp Tunnel before you can confront the Dragon Lord himself.

Meridian III is available on disk for \$29.95.

Check Reader Service number 410.

### Word-Search Game

Sher-Tek Computer Systems (PO Box 6808, Station J, Ottawa, Ontario K2A 3Z4 Canada) has released Word Hunter for the Commodore 64.

Word Hunter is a family word-search game, appropriate for ages 10 and up. Players are given a specified amount of time to find words hidden in a matrix. The game includes widely varying challenge levels. Help and clue keys are also available to solve problems.

The package includes Generator programs that allow you to create your own new matrices. Word Hunter is available on disk for \$14.85 and cassette for \$9.95.

Check Reader Service number 411.

# ATTENTION COMMODORE 64 OWNERS We'll pay for your mistake!

We know that it's difficult, especially since everyone is trying to come out with one. Now that error track protection is going the way of the dinosaur, you probably purchased an obsolete piece of software. Well we will give you \$25.00 credit\* for any original copy utility software disk that you would like to trade in for the "NEW REVISED CLONE MACHINE." Our program can now back up non-standard sectors with complete control, detect and reproduce density-frequency alterations, alter the number of sectors on a track, sync to particular reference sectors (including a single sync Bit copy) PLUS reformat a single track.

Other back up programs have only recently caught up with our ability to reproduce errors. Included is Fast Clone as well as all of the other standard Clone Features, we've even made it more user friendly too! THE CLONE MACHINE was the first utility of its kind and others followed. Well, we still feel that it's time for the others to try to play catch up again.

**OUR SPECIAL MSD VERSION NOW AVAILABLE TOO!!** **STILL ONLY \$49<sup>95</sup>**

\*NOTE: Micro-W reserves the right to cancel this offer at any time without notice



Available from:

**Micro-W**  
DISTRIBUTING, INC.  
1342B Route 23  
Butler, N.J. 07405  
CALL: (201) 838-9027

## Unearthly Captors

Infinity Software (536 Curie Drive, San Jose, CA 95123) has introduced *Escape*, a text adventure for the Commodore 64.

You are held captive on an alien spaceship, guarded by robot sentries. Using your logic and problem-solving abilities, you must find a way to escape from your jailors. But be careful—the fate of the earth hangs on your every move.

Available on disk, *Escape* retails for \$25.

Check Reader Service number 412.

## Musical Keyboard from Waveform

Waveform Corp. (1912 Bonita Way, Berkeley, CA 94704) has introduced the *ColorTone Keyboard* for the Commodore 64.

The *ColorTone Keyboard* consists of a touch-sensitive membrane keyboard with 25 piano-like keys, a touch strip that performs as a musical harp and 14 function keys. Selections are made with the help of color pictures describing the use of each function key. The keyboard lets beginners play music in correct keys and tempos, choose different instrumental sounds and scales and play along with preprogrammed melodies without hitting dissonant notes.

Driven by the keyboard's accompanying software, the function keys let you choose any of eight different instrumental sounds; you can play along with 12 different preset background songs ranging from classical to "technopop." The program displays musical notation on a staff that scrolls by on the screen as you play. The keyboard can also be used with Waveform's *MusiCalc* software.

The *ColorTone Keyboard*, with accompanying software on disk, is available for \$79.95.

Check Reader Service number 413.

## Home Library

Prentice-Hall (PO Box 819, Englewood Cliffs, NJ 07632) has introduced the *IMSI Home Library*, a series of three software packages for the Com-



modore 64. The programs in the series are *InfoManager*, *4-Point Drawing Pad* and *Electronic Address Book*.

*InfoManager* is a record management system that sorts, retrieves and updates information. Files, properties, stocks and other data can be stored on the disk.

The *4-Point Drawing Pad* is a graphic sketch program equipped with four colors. You can create boxes, circles, ellipses and parabolas, and store

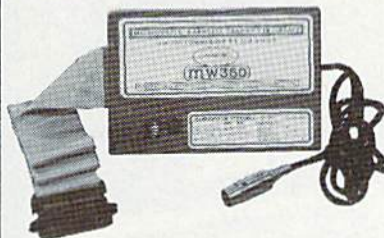
them for later use. Drawings can be sent to a printer or plotter.

The *Electronic Address Book* maintains a file of your personal contacts. Information is filed, indexed and stored on disk, and any record can be searched. The program also allows you to print mailing labels and phone lists.

Each program in the *IMSI Home Library* series is available on disk for \$39.95.

Check Reader Service number 414.

Circle 177 on Reader Service card.



### NEW! Universal Parallel Graphics Interface

- Switch selectable Commodore graphics mode for Epson, StarMicro, C. Itoh, Prowriter, Okidata, Seikosha, Banana, BMC, Panasonic, Mannesman Talley & others.

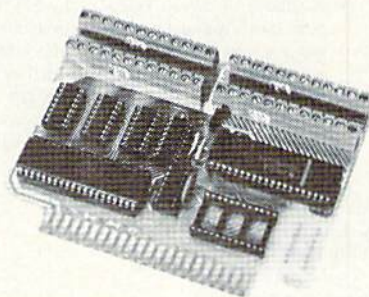
- Built-in self-test with status report
- Optional RAM printer buffer
- Provides virtually total emulation of Commodore printers for compatibility with popular software
- ASCII conversion, total test, Emulate & transparent mode
- Fully intelligent interface that plugs into standard Commodore printer socket
- Exclusive graphic key-match function

Micrografix MW-350 ..... \$129.00  
MW-302C Printer Interface also available at \$79.95

### Universal Input/Output Board for VIC-20/64

- 16 channel 8-bit A/D converter with 100 micro-second sampling time.
- 1 D/A output.
- 16 high voltage/high current discrete outputs.
- 1 EROM socket.
- Use multiple boards for additional channels up to 6 boards

VIC-20 uses MW-311V ..... \$205.00  
CBM-64 uses MW-311C ..... \$225.00



Dealer Inquiries invited

**Micro World Electronix, Inc.**



3333 S. Wadsworth Blvd., # C105,  
Lakewood, CO 80227

(303) 987-9532  
or 987-2671

## R New Products RUNdown

### Telecommunications System

TeleLearning Systems, Inc. (505 Beach St., San Francisco, CA 94133) has released Total Telecommunications for the Commodore 64. The package includes a modem and intelligent modem software, giving you access to over 50 databases.

The intelligent software allows for single-keystroke communications—sign-ons, protocols and codes are not needed. The software is menu-driven, featuring 300-baud auto dial/auto answer and auto log-on capabilities. It reads and downloads text, programs and data.

The package provides direct connection to 52 databases, covering news, sports, finance, science and medicine, education and reference materials. It also gives you access to other information services, such as The Source, CompuServe and Dow Jones. Retail price is \$124.95.

Check Reader Service number 415.

### Peek A Byte

Peek A Byte 64 is a disk and memory utility for the C-64, from Quantum Software (PO Box 12716, Lake Park, FL 33403).

The program features a track/sector and computer memory display and an editor with cursor control, allowing you to examine and modify disk sector data. You can read and write data to any sector on a disk.

Help screens are available with a sin-

gle keystroke. Keyboard errors and disk read/write errors are reported. The program resides in high memory, and it won't lock up the computer. It is compatible with many Basic programs and the DOS Wedge 5.1.

Peek A Byte 64 operates with the 1541 disk drive (or compatible serial bus drive) and an optional serial bus printer. It is available on a copyable disk for \$29.95.

Check Reader Service number 417.



### New Disk Drive from Indus Systems

Indus Systems, Inc. (9304 Deering Ave., Chatsworth, CA 91311) has released the Indus GT disk drive for the Commodore 64 and the VIC-20.

The Indus GT is designed to handle all Commodore software. Features of the unit include: readouts that display track location, drive number and error codes; four AccuTouch buttons that control the digital readouts and electronic write-protect. The unit is housed in a smoked plexiglass dust cover.

Each unit is shipped in a molded plastic case that converts into an 80-disk storage library. Included with the drive is a software package featuring database management, a spreadsheet and a word processor. A one-year parts and labor warranty is also included. Retail price is \$399.00

Check Reader Service number 420.



... experience the XETEC family of printer interfaces

Available in three models — the SPI, SPI/B, GPI — These models feature a complete user's manual with software examples, command channels, an internal micro processor for maximum speed and intelligence, and an internal 2K buffer to allow more computing time (not included in the SPI). These models interface Centronics parallel compatible printers with the VIC 20, C-64 and SX-64 serial bus. The FONTMASTER, an optional software package, includes a word processor, 15 different type styles, plus a utility to create custom fonts.

SPI-SPI/B features:

- 2K buffer (SPI/B only)
- Centronics compatible
- 10 printing modes
- 10 additional commands
- 4 user-accessible switches
- CORRESPONDENCE QUALITY on the Gemini, Delta, Epson and Panasonic printers

SPI - \$59.95 . . . SPI/B - \$69.95 . . . GPI - \$89.95  
FONTMASTER . . . \$39.95

GPI features:

- Standard 2K buffer
- Centronics compatible
- Graphic printer interface
- 7 printing modes
- 22 additional commands
- Supports more than 21 printers
- 6 user-accessible switches
- 54 SECOND hi-res screen dump
- 100% COMPATIBLE with software written for the VIC 1525 printer

Circle 96 on Reader Service card.  
VIC 20, C-64 & SX-64 ARE TM OF COMMODORE BUSINESS MACHINES, INC.

XETEC 3010 ARNOLD • SALINA, KS. 67401 • (913) 827-0685

### On-Court Tennis

Gamestar, Inc. (1302 State St., Santa Barbara, CA 93101) has released On-Court Tennis for the Commodore 64.

The game is designed to give you the visual perspective of the player on the court. You have full racket control over

## **R** New Products **RUN**down

groundstrokes (angle and spin), serves, lobs and smashes.

In the solitaire game, the skill level of the computer-controlled player varies according to your own skill. You can choose from three different playing surfaces: Grass (fast-paced), Hard Court (consistent) and Clay (slow-paced). You can also choose the length of the match.

The program provides four superstar challengers, each with his own particular playing style. If you beat the computer, you can join Gamestar's exclusive Top Seeds Tennis Club. On-Court Tennis is available on disk for \$29.95.

Check Reader Service number 418.

### **Software from Uptown**

Uptown Software (310 Franklin St., Suite 339, Boston, MA 02110) has released *Compuzzler*, a strategy game developed from the traditional crossword puzzle.

The program generates a puzzle that must be filled in by competing teams. Up to four teams can play, each occupying one of the corners of the board. To branch from their respective corners, teams can fill in words either down or across. Clues are displayed at the bottom of the screen, below the puzzle grid.

Points are scored for each correct letter or word filled in. Each team can build only from their own words, leading to chains of words advancing from the corners. Teams can use blocking strategies and challenge their opponents' entries.

The game can also be played in a non-competitive solitaire mode. Seventy puzzles (easy, intermediate and advanced) are included on the starter game disk. Additional puzzle disks are also available.

*Compuzzler*, with the starter game disk, is available for the Commodore 64. Retail price is \$39.95.

Check Reader Service number 421.

### **New Editions of Northland's Taxaid Programs**

Northland Accounting, Inc. (606 Second Ave., Two Harbors, MN 55616) has



released new, revised editions of their Taxaid series of income tax preparation programs for the C-64 and the VIC-20. The new editions include all the latest changes in the tax laws.

Taxaid is designed for home use; the manual leads you step-by-step through data entry. Editing features allow you to make changes at any time during the data entry process. Data files can be saved and reloaded during any phase of the program.

Calculations are made automatically, and all tax tables (including income averaging) are built in. The program will prepare any IRS Form 1040. The results can be directed to the monitor or the printer.

Taxaid is available on disk or cassette for the C-64 and the VIC-20 (16K), with a retail price of \$29.95. A smaller version (with fewer features) is available for the unexpanded VIC-20, with a retail price of \$24.95. Updates for future tax years will be published yearly.

Check Reader Service number 419.

### **Simple IF**

Proteus Electronics, Inc. (Spayde Road RD2, PO Box 693, Bellville, OH 44813) has introduced the Simple Interface System (Simple IF) for the Commodore 64.

The Simple IF card allows you to connect up to eight switches and eight

loads (lamps, relays, etc.) to your C-64 to make your own light displays, security systems and energy controllers.

The card plugs into the C-64's expansion port. It includes data, sample programs and diagrams; operation is achieved through Basic commands or machine language. The following optional plug-in conditioning boards are also available for use with the Simple IF: an 8-input optoisolated board, an 8-output optoisolated board, a barrier strip board and a 4-position spst relay board.

The Simple IF card is available for \$34.95.

Check Reader Service number 422.

### **Spelling Proficiency Program**

Spell It! is a spelling proficiency program for the Commodore 64, from Davidson & Associates (6069 Groveoak Place #12, Rancho Palos Verdes, CA 90274).

Spell It! is appropriate for ages 10 through adult. It contains 1000 of the most commonly misspelled words. Four separate exercises are included in the program, each building up to the next. The final exercise is a spelling game that uses the spelling words covered in the previous exercises.

Spell It! also contains an editor, allowing you to add your own word lists and customize the exercises to suit your needs. The program is available on disk for \$49.95.

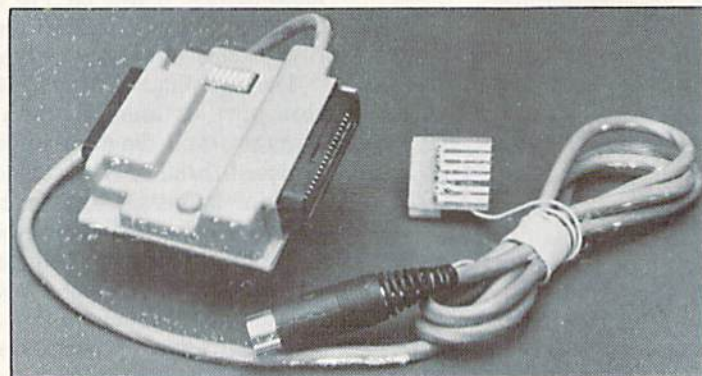
Check Reader Service number 423.

### **New Printer Interface from Cardco**

Cardco, Inc. (300 S. Topeka, Wichita, KS 67202) has released the Card/?PS, a universal parallel/serial printer interface for the C-64 and the VIC-20.

The Card/?PS can be used with any standard parallel or serial printer. It plugs into the serial bus port on the back of the computer or disk drive. The interface uses the standard Commodore Print format; software driver programs are not needed.

The Card/?PS includes all necessary cables for connection to a standard



printer using standard parallel input. Retail price is \$79.95. Check Reader Service number 424.

deep! has been announced by Parker Brothers (50 Dunham Road, Beverly, MA 01915).



Frogger II features three distinct screens, each filled with peril. You must navigate Frogger to the haven of his home bay. In the underwater screen, you must make your way through waters infested with alligators and bar-

racuda, getting occasional help from a friendly giant turtle.

In the surface screen, Frogger's foes include swiftly moving sharks and very protective mother ducks. Poisonous black butterflies, Clyde the Dragon and a dangerous prop plane are Frogger's foes in the air screen.

Frogger II: Threedep! is available for the Commodore 64 and retails for approximately \$30.

Check Reader Service number 425.

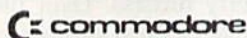
## Threedep in Danger

The release of Frogger II: Three-

Circle 139 on Reader Service card.



# Software Shack



## GAMES

F-15 Strike Eag.	\$25.57	Summer Games (D)	\$27.57	Grtst Baseball (D)	\$25.57
BreakDance (D)	\$25.57	Monster Trivia (D)	\$17.57	Trivia Fever (D)	\$28.57
Imp. Mission (D)	\$25.57	Pitstop II. (R)	\$27.57	Questron (D)	\$27.57
Hes Games (D)	\$27.57	Bungeling Bay (D)	\$22.57	Castle Dr. Creep (D)	\$22.57
Archon (D)	\$31.57	Music Const. (D)	\$31.57	M.U.L.E. (D)	\$31.57
One on One (D)	\$29.57	DeBug (D)	\$26.57	ARCHON II (D)	\$31.57
Hot Wheels (D)	\$27.57	Pitfall II (D)	\$24.57	Zeppelin (D-T)	\$24.57
Zaxxon (D-T)	\$28.57	Space Shuttle (D)	\$24.57	Millionaire (D)	\$28.57
Flight Sim. II (D)	\$38.57	Solo Flight (D)	\$27.57	Wizard (D)	\$29.57
Lode Runner (R)	\$26.57	Op. Whirlwind (D)	\$28.57	Spy vs Spy (D)	\$23.57
Boulder Dash (D)	\$27.57	Flip Flop (D)	\$17.57	Rails West (D)	\$28.57
Suspect (D)	\$30.57	Witness (D)	\$27.57	Seastalker (R)	\$27.57
Beachhead (D-T)	\$24.57	Raid on Moscow (D)	\$24.57	Miner 2049r (R)	\$26.57
Congo Bongo (D)	\$32.57	Tapper (D)	\$32.57	Spy Hunter (D)	\$32.57
Cstl Wolfstn (D)	\$24.57	Beynd Wolfstn (D)	\$24.57	Carrier Force (D)	\$45.57
Pro Tour Golf (D)	\$26.57	Ringside Seat (D)	\$26.57	Tigers in Snow (D)	\$26.57
Spelunker (D)	\$25.57	Ultima III (D)	\$39.57	MultiCalc I (D)	\$36.57
Stealth (D)	\$18.57	Pro Blackjack (D)	\$48.57	Dallas Quest (D)	\$23.57

## BUSINESS

Superbase 64 (D)	\$68.57	Practicalc (D)	\$38.57	MultiPlan (D)	\$68.57
Practifile (D)	\$38.57	Cut & Paste WP (D)	\$36.57	Fleet Sys. 2 (D)	\$68.57
C.P.A. (D)	\$57.57	WriteNow WP (R)	\$36.57	PaperClip WP (D)	\$66.57
Net Worth (D)	\$49.57	Financial CkBk (D)	\$38.57	FileWriter (D)	\$37.57
Micro Cookbk (D)	\$23.57	Super Text (D)	\$62.57	Homeword (D)	\$58.57

## EDUCATIONAL

Step by Step (D)	\$48.57	C-64 Tutor (D-T)	\$22.57	Rocky's Boots (D)	\$38.57
Wiztype (D)	\$25.57	Mastertype (D)	\$27.57	Chatterbee (D)	\$28.57
Word Wizard (D)	\$25.57	Jggl's Rainbow (D)	\$22.57	Moptown Hotel (D)	\$22.57
Evelyn Wood (D)	\$52.57	Anim. Station (D)	\$62.57	The Ranch (R)	\$24.57
TechSketch LP (D)	\$38.57	Total Health (D)	\$21.57	Doodle (D)	\$27.57

If it's for the C-64 we have it!!

If you don't see what you want—Call and ask for it! You Will Be Glad You Did!!!

## SOFTWARE SHACK

449 EAST 146th STREET  
CLEVELAND, OHIO 44110

216/953-9141

SHIPPING AND TERMS: Add \$3.00 per order. No COD. Cash, certified check or money order (personal checks allow 3 wks. to clear). Ohio residents add 5.5% sales tax. Visa or MasterCard phone orders only.

## The Font Factory

The Font Factory is a printer utility program, compatible with the VIC-1525 and MPS-801 printers.

The Font Factory will read any standard Commodore 1541 ASCII sequential file. It will automatically format and print your document in any font desired.

You have control over all page formatting, such as page length, line width, left margin, top margin, line spacing, headers, footers, page numbering and justification.

Fifteen different fonts can be mixed within a single document. Thirteen commands are available for reformatting text. Eight preformatted fonts are provided, including one with true lowercase descenders.

The Font Factory is available on disk for the C-64. Retail price is \$29.95. Micro-W. Distributing, Inc., 1342B Route 23, Butler, NJ 07405.

Check Reader Service number 428.



# COMING ATTRACTIONS

- **Cover Story** The results are all in; the votes have been counted; and the winner is... Next month we will announce the winner of the recently completed joystick contest, in which readers voted for their favorite joystick. You'll find out which joysticks are the most popular among our readers and examine the features of the various joystick entrants.

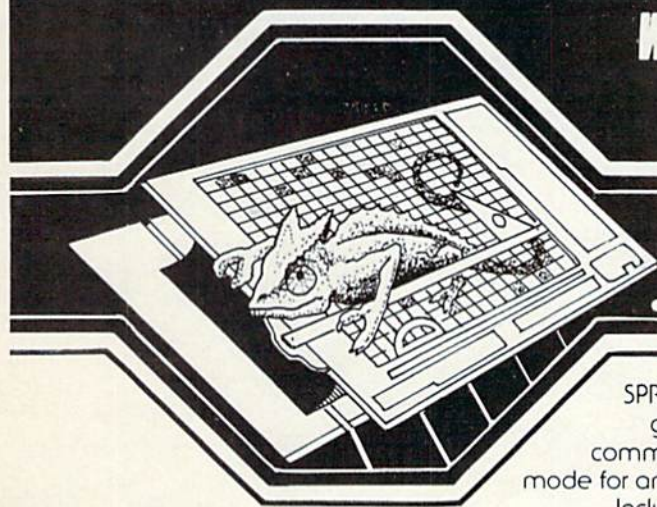
In addition, the February issue will also feature several joystick-related articles, including:

  - how to repair a broken Commodore or Atari joystick after it has lost its fire power and movement control.
  - how to speed up joystick routines and how to program a joystick routine into a game.
  
- **A Taxing Situation** Just in time for getting your tax records in order for the April 15 deadline, *RUN* will present Tax Records 64. Just load this program into your C-64, and tax day will be a lot easier, and perhaps cheaper, to face.
  
- **You're It!** This long-time favorite children's game takes on a new dimension in the computer version. Tag lets you and a friend chase each other around the screen; when you're tired of running, this colorful program provides hiding places where you can catch your breath.
  
- **Spotlight on Productivity** This series on the built-in software for the Plus/4 continues. The Spreadsheet, which can be combined with the word processing and graphing programs, lets you prepare financial and budgeting reports for home or business.
  
- **Anagram Program** How good are you at unscrambling words or phrases? In this word game, you must decipher a computer-scrambled word or phrase entered by your opponent. Points are awarded based on the length of the word or phrase and the number of tries taken to correctly unscramble it.
  
- **Fly the Grand Canyon** Barnstorming action at its best. For the VIC-20.

Circle 72 on Reader Service card.

# IDEA TO CREATION IN ONE STEP

WITH...



## SpryteByte™

SPRYTEBYTER makes sprite design simple and fast! 60 commands give you total control at maximum efficiency. The fantastic turn command generates a series of rotated sprites for animation! Movie mode for animated review. Creates as many as 184 sprites in a single file. Includes THE GAME MAKER to add your sprites to a basic program!

FOR THE DESIGNER IN ALL OF US ..... SPRYTEBYTER

Commodore 64\*

**MICROTECHNIC SOLUTIONS**

Disk \$34.95

\*Commodore 64 registered trademark of Commodore Business Machines Inc.

P.O. BOX 2940, NEW HAVEN, CONN. 06515

Dealer Availability  
Call (203) 389-8383



# CARDCO "NOW" SOFTWARE

... available now for your Commodore-64™ and more!

A fine line of software developed by CARDCO for your Commodore-64 computer with all the features you should expect in much more costly software. CARDCO's "NOW" Series provides many unique and exclusive features and are packaged for easy reference, simple storage, instant recognition.

**"WRITE NOW" ... WORD PROCESSOR SOFTWARE** ... An excellent time saver, CARDCO offers the "Write Now" C/02 word processor program with built-in 80 column display. You see exactly what will print. All special codes can be transmitted to printers maintaining justification. Easy full-screen editing; works with any printer.

**"MAIL NOW" ... MAILING LIST SOFTWARE** ... CARDCO's D/01 "Mail Now" quickly (in memory) sorts by zip, category, name and state; fully compatible with "Write Now". Other fine features include: user-oriented; menu-driven operation; each disk supports 600 entries. Format can print single, double or triple labels across.

**"SPELL NOW" ... Cardware D/04** ... a fine program designed as a spell checker for use with "Write Now" on the Commodore-64. A 34,000 word dictionary with two additional user constructed dictionaries. Menu-driven operation for ease of use. And "Spell Now" allows you to see each misspelled word in the context of your document for correction.

**"FILE NOW" ... D/05** ... is a totally integrated, menu-driven database software package which interfaces with both the "Write Now!" for the 64 and the "Spell Now." 40K of working storage space is available with "File Now". "File Now"

appears on the screen as index cards for easier manipulation of your data base; you see 5 index cards at a time. Cards are user definable, i.e., user determines what goes where on the "index cards" and can sort by any given field. Every card has a general topic field which allows for quick sorting through cards.

**"GRAPH NOW" INCLUDING ... "PAINT NOW" ... D/06** ... This disk-based graphic/logo generator is totally menu-driven. Allows for the development of pies, charts, bar graphs and other vivid graphic illustrations. Also has the ability to design, and print logos and high resolution pictures. "Commodore-ready"; interfaces with CARDCO'S "Write Now" Word Processor, "Mail Now", "Spell Now" and "File Now".

Write for illustrated literature and prices or see CARDCO Computer Accessories and Software wherever Computers are sold.



**cardco, inc.**

300 S. Topeka Wichita, Kansas 67202 (316) 267-6525

**"The world's largest manufacturer of Commodore accessories."**

Circle 85 on Reader Service card.

Commodore™ is a registered trademark of Commodore Business Systems, Inc.

# LOOK WHAT'S ON TELEVISION TONIGHT.

6:00

## THE HULK

The first comic attraction in the QUESTPROBE™ Adventure Series. You become a super hero. A joint (adventure of Scott Adams, Inc. and Marvel Comics Group. (Diskette)



7:30

## SOLAR FOX

It's erase or be erased as you navigate spaceship over a grid of colorful pulsating entities, armed with laser. Unlimited levels. A BALLY MIDWAY original. (Cartridge)



9:00

## MAGIC DESK I

The scene opens on an office desk, complete with digital clock, typewriter, wastebasket and file cabinet. Select functions (typing, filing, editing) by pointing animated finger. (Cartridge)



6:30

## MATH FACTS

(Ages 5 to 10) (Micro School) Educational TV Practice in basic math facts. Several levels. (Easy to hard) (Diskette)



8:00

## EASY SCRIPT

Our best wordprocessor. Displays 764 lines by 40 characters. Prints over 130 columns. Global/local search/replace/hunt/find. Super/subscripts. Insert/delete characters, lines, sentences, paragraphs. (Diskette)



9:30

## INTERNATIONAL SOCCER

(Gold Medallion Game) Sports highlight. With passing, kicking, diving goalies, even trophies! Great color, 3-D realism. No locker room interviews. (Cartridge)



7:00

## FRENZY/FLIP FLOP

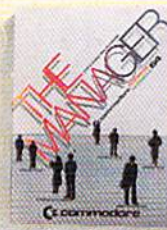
(Ages 6 to 14) (Milliken Edufun) FRENZY (subtraction and division) The hungry gator arrives... save the fish... play the BONUS game... FLIP FLOP (transformed geometry) look at the two figures, do they need to flip, turn or slide? (Diskette)



8:30

## THE MANAGER

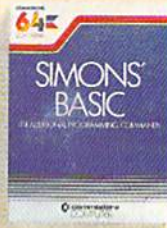
A powerful database management system. For business, educational or personal files. Not for Rockford's files. With four built-in applications. Or design your own. (Diskette)



10:00

## SIMONS' BASIC

Rated PG. Expands Commodore BASIC by an additional 114 commands. Convenient programming commands such as RE-NUMBER and TRACE plus graphics plotting command. (Cartridge)



Announcing the most exciting variety show on television.

Featuring many of the stars of arcade games, education and the business world.

Produced by (and for) Commodore, the people who bring you the Commodore 64™, a 64K computer that would be a value at three times its price. In fact, many of its competitors are three times its price.

Produced in living high resolution graphics with 16 available colors and with eight 3-dimensional sprites.

With a real high fidelity sound that covers a 9-octave range.

And a supporting cast of low-price, high capacity disk drives, printers, monitors (a better way to watch Commodore 64) and modems.

So, if you're not pleased with what's on your tv set tonight, simply turn on your Commodore 64.

## COMMODORE 64

IT'S NOT HOW LITTLE IT COSTS, IT'S HOW MUCH YOU GET.

