

RUN

THE **COMMODORE** 64/128 USER'S GUIDE

November 1990
An IDG
Communications
Publication

FREE
SOFTWARE
You Can Own (see p. 29)

How to Harness **PRINTER** **POWER**

- 10 Solutions to Your Problems
- Jazz Up Your Printouts
- Which Is Better: 9- Vs. 24-Pin?

PLAQUE ATTACK!
C-64 Arcade Action

Plus:

- ▶ Macro Mania
- ▶ Machine Language Magic
- ▶ geoStripper



U.S.A. \$2.95
CANADA \$3.95
U.K. £2.00

Ultima VI

The False Prophet



In a cataclysm of sound and light, a bolt of searing blue fire strikes the earth!



This #1
Best Seller
Now Available For
Commodore 64/128



SPECIAL Limited Edition OFFER

Celebrating ULTIMA's 10th Anniversary!

Ultima VI: The False Prophet

- EXCITING SPECIAL FEATURES at No Additional Cost... still only \$69.95
- Personally autographed by Lord British
- Exclusive taped interview with Lord British
- Unpublished game clues and hints
- Specially selected high quality moonstone
- FAST, FREE delivery - direct from Origin
- This "Special Edition" is not available in stores
- Hurry! Supply is limited

Call: 8am - 5pm (central). MC/Visa accepted. **1-800-999-4939**

ORIGIN
We create worlds.

Why do over 17,000* Commodore® owners like you buy *Loadstar*™ every month?

See why with a three-month trial
subscription for only \$19.95!

Loadstar is the monthly software collection created for users of Commodore® 64/128 computers. Each month, *Loadstar* subscribers receive two 5¼" disks packed with six to ten original programs. Here are eight reasons why more and more Commodore owners are subscribing to *Loadstar*.

1. Variety.

No where else will you find this quality and quantity of ready-to-run software. Each issue contains personal productivity tools, games, educational software, utilities, GEOS® programs, and more delivered to your home! Plus the friendly, interactive *Loadstar* format makes it easy for every member of the family to run programs quickly!

2. Demonstrations.

Periodically *Loadstar* offers Special Previews of limited-use programs so you can "try-before-you-buy". Major software companies from around the world offer our subscribers advanced previews of what's to come in commercial software.

3. Program Integrity and Tech Support.

Every issue of *Loadstar* passes through dozens of quality checks, all to ensure you of error-free enjoyment. When necessary, you can count on the *Loadstar* technical staff to answer your questions quickly!

4. Create Your Software Library.

With so many original programs at your disposal, it won't take long to collect an entire software library. *Loadstar* is packed with all the exciting graphics and games that Commodore is famous for. You can spend hours of enjoying your software, even use your Commodore as a learning tool for children.

5. Super Discounts on Commercial Software.

Loadstar subscribers automatically become members of our *Software Savers Club* and receive periodic sales flyers with information on the latest products from leading software companies at up to 40% off retail price! You can also select back issues of *Loadstar* to fill in the holes of your software collection.

6. Reasonably Priced.

A three-month trial subscription to *Loadstar* is only \$19.95 (three big issues). That's just \$6.65 an issue! Just think, one time-saving or entertaining program is worth more than that. You simply can't lose!

7. Low Subscription Price.

Order your *Loadstar* trial subscription within ten days and receive free, *The Best of Loadstar, Vol. 4*. This bonus disk is a fantastic selection of the best programs from recent issues.

8. Money-Back Guarantee.

If for any reason you're not completely satisfied, simply return your first issue for a fast refund (keep *The Best of Loadstar, Vol. 4* as our gift). *Loadstar*, like every product from the Softdisk Publishing family, comes with an iron-clad satisfaction guarantee!



3-Month Trial
Subscription
only **\$19.95**

Contents of Issue #72
(Available as a back issue)

Triangulation—A unique game of strategy for the sophisticated puzzler.

The Source Generator—Turn machine language code into source code in any three standard formats.

Who Sang "Teen Angel?"—Test your memory of the greatest hits!

Wordpacker—Pack text files and save valuable disk space!

Plus 4 more great programs!

"*Loadstar*...should dispel the adage about there not being any decent software available anymore at a decent price. I give *Loadstar* five stars."

—McCook Commodore Users Group

"If you can afford only one disk service, make it *Loadstar*."

—Commodore Microcomputers

Call Toll Free
1-800-831-2694

ORDER TODAY!

Send in the order form now or call toll free for a trial subscription. Three sample issues are only \$19.95, and you get the free bonus disk. So fill in the coupon or call 1-800-831-2694 for even faster service.

*As of press time, but growing by leaps daily.

**SOFTDISK
PUBLISHING**

monthly software

YES! Rush my free bonus, *The Best of Loadstar, Vol. 4*, and start my three-month trial subscription to *Loadstar* for only \$19.95, postage paid. *Canada/Mexico, \$24.95; Other foreign, \$27.95.* Make check or money order payable to Softdisk Publishing in U.S. funds. (Louisiana residents, add 4% sales tax).

Each issue contains two 5¼" disks.

Name _____

Street Address _____

City _____ State _____ Zip+4 _____

Phone # _____

Discover Visa/MC AmEx Payment Enclosed (U.S. funds only).

Card # _____ Exp. Date _____

Signature _____

SOFTDISK PUBLISHING • P. O. Box 30008 • Shreveport, LA 71130-0008
318-221-8718 • 1-800-831-2694

RU110

Loadstar: 64K required or Commodore 128 in 64 mode.

FOR ORDERS AND INFORMATION IN USA & CANADA CALL ORDER HRS. MON-THURS, 9-7 / FRI, 9-4 / SAT-CLOSED / SUN, 9:30-6(ET)

1-800-759-6565

WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS. DISCOUNTS FOR QUANTITY ORDERS. RUSH SERVICE AVAILABLE!

MONTGOMERY GRANT

RUN 11/90

OUTSIDE USA & CANADA CALL **(718)692-0790**

OR WRITE TO:
RETAIL OUTLET

MONTGOMERY GRANT, MAIL ORDER DEPARTMENT
P.O. BOX 58 BROOKLYN, NY 11230
FAX #7 186923372 / TELEX 422132 MGRANT
PENN STATION, MAIN CONCOURSE
(Beneath Madison Sq. Garden) NYC, NY 10001
Store Hrs: MON-THURS, 9-7:00 / FRI, 9-3, SAT-CLOSED, SUN, 9:30-7

ESTABLISHED 1967
23 YEARS OF EXPERIENCE

FOR CUSTOMER SERVICE CALL: (718)692-1148
CUSTOMER SERVICE HOURS: MON-THURS, 9am-5pm / FRI, 9am-3:00pm



NO SURCHARGE FOR CREDIT CARD ORDERS
WE INVITE CORPORATE AND EDUCATIONAL CUSTOMERS. DISCOUNTS FOR QUANTITY ORDERS / RUSH SERVICE AVAILABLE

TOLL FREE TECHNICAL SUPPORT

Certified check, Bank Check Money Orders, Approved P.O.s, Visa, Mastercard, Amex, Optima, Diners Club, Carte-Blanche, COD's & Wire Transfers accepted. Please call before submitting P.O.s. Non-certified checks must wait 4-6 weeks for clearance. Prices and availability subject to change without notice. Not responsible for typographic errors. Return of defective merchandise must have prior return authorization number or returns will not be accepted. Shipping & Handling additional. Second Day & Next Day Air available at extra cost. Canadian orders please call for shipping rates. APO FPO orders please add 10% shipping & handling. (Over \$1200 - 8%, over \$3000 - 6%). All APO FPO orders are shipped first class priority air. All orders can be shipped air express, call for details. We check for credit card theft. DCA #800233



COMMODORE 64C COMPUTER

Includes:
GEOS Program,
Quantum Link Software,
1 Joystick (Necessary for
GEOS - a \$19.95 value)

\$139⁹⁵

C=64C

64C STARTER PACKAGE

C/64-C Computer w/Excelsior Plus FSD-2 Disk Drive
Geos Program 1 Joystick
Quantum Link Software

\$249

64C COMPLETE PACKAGE

Commodore C-64/C Computer
Commodore 1541 Disk Drive
Commodore Color Printer
12" Monitor Geos Program
Quantum Link Software

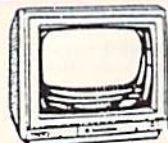
\$339

64C TEST PILOT PACKAGE

Commodore C-64/C Computer
Commodore 1541-II Disk Drive
Geos Program Ace Joystick
Quantum Link Software

\$279

5 SOFTWARE PACKAGES INCLUDE:
Advanced Tactical
Fighter Inferior II
Homer Crazy Cars
Tomahawk



Commodore 1571 Disk Drive

CALL



Excelsior Plus FSD-2 Disk Drive

\$119



Commodore 1084 Color Monitor

\$279

Commodore 1581 Disk Drive

\$199

Commodore 1541III Disk Drive

\$149

Magnavox 13" RGB Composite Color Monitor

\$225

Commodore 1750 RAM Expander

CALL

Magnavox 13" Color Composite Monitor #8702

\$174

64C COLOR PACKAGE

Commodore C-64/C Computer
Commodore 1541 Disk Drive
Commodore Color Printer
Color Monitor Geos Program
Quantum Link Software

\$449

PERIPHERALS for Commodore!

1700 RAM Expansion.....	\$119.95	COMMODORE 1351 Mouse.....	\$49.95
1764 Expansion Module.....	\$129.95	XETEC S. Graphix Jr. Interface.....	\$29.95
CARDCO G-WIZ Interface.....	\$49.95	XETEC S. Graphix Sr. Interface.....	\$49.95
C-64/C & 64C Power Supply.....	\$29.95	XETEC Supergraphix Gold.....	\$74.95
Excelsior Plus Power Supply.....	\$39.95	XETEC Lt. Kernel 20MB Hard Drive for:	
C-128 Power Supply.....	\$79.95	C-64C, C-128 & C-128D.....	\$549
C-1670 Modem.....	\$79.95	XETEC 40MB Hard Drive for:	
COMMODORE 1350 Mouse		64C, 128, 128D.....	\$699
(128, 128D only).....	\$16.95		

COMMODORE 128D COMPUTER w/Built-in Disk Drive

CALL
C=128=D

128D COMPLETE PACKAGE

Commodore C/128-D Computer w/Built-In Disk Drive
Commodore Color Printer
12" Monitor

CALL

128D DELUXE PACKAGE

Commodore C/128D Computer w/Built-In Disk Drive
Magnavox RGB Color Monitor
Commodore Color Printer

CALL

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

PRINTER SPECIALS



EPSON

LX-810.....	\$189.95
LQ-510.....	\$289.95
FX-850.....	\$334.95

CITIZEN

GSX-200.....	\$199.95
GSX-140.....	\$304.95
Color Option Kit for GSX Printer.....	CALL

SANYO
PR-3000 Letter Quality Daisy Wheel Printer **\$69**

STAR

NX-1000C.....	\$189.95
NX-1000II.....	\$159.95
NX-1000 Rainbow.....	\$199.95
NX-1000C Rainbow.....	\$227.95

BROTHER

HR-5 80 Column Thermal Printer **\$59⁹⁵**



COMMODORE

MPS-1230.....\$189.95

PANASONIC

KXP-1180.....	\$149.95
KXP-1191.....	\$229.95
KXP-1124.....	\$289.95
KXP-1624.....	\$339.95

AMIGA™

AMIGA 500

Amiga 500 Computer
Built-in 3.5" Disk Drive
Mouse System Software

\$519

AMIGA 500 RGB COLOR PACKAGE

Amiga 500 Computer
Built-in 3.5" Disk Drive
Mouse RGB Color Monitor
System Software

\$669

ALL MODELS IN STOCK

AMIGA 2000

A-2000 Computer w/Keyboard
1MB Expandable to 9MB
Built-in 3.5" Disk Drive Mouse
System Software

\$1249

AMIGA 2000HD

\$1799

ALL AMIGA COMPUTERS & PERIPHERALS, HARD DRIVES, MEMORY EXPANDERS & ALL OTHER ACCESSORIES IN STOCK!

NEX

OPEN

PAGE 38



PAGE 29

COVER PHOTOGRAPHED BY LARRY DUNN

RUN (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly, except July and September, by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. Phone 603-924-9471. Second-class postage is paid at Peterborough, NH, and at additional mailing offices. Canadian second-class mail registration number is 9565. Subscription rates in U.S. are \$22.97 for one year, \$34.97 for two years and \$48.97 for three years. In Canada and Mexico, the one-year subscription rate is \$27.97, with U.S. funds drawn on a U.S. bank. Foreign surface mail subscriptions are \$42.97 for one year, and foreign air mail one-year subscriptions are \$77.97, with U.S. funds drawn on a U.S. bank. *RUN* is nationally distributed by International Circulation Distributors. **Postmaster:** Send address changes to *RUN*, Subscription Services, PO Box 58711, Boulder, CO 80322-8711. (Canadian address changes to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8.)

FEATURES



- 18 PRINTER PRESCRIPTION** by *Tim Walsh*
Answers to ten commonly asked questions about printers.
- 20 TWO WORTH NOTING** by *Tim Walsh*
Here's the lowdown on the Star Micronics NX-2410 Multi-Font and Citizen 200GX printers.
- *24 PRINTER CONTROLLER 64/128** by *William McLeod*
Get away from commonplace printouts! This program lets you use more attractive styles by making it easier to input printer control codes.
- 29 FREE SOFTWARE** by *Stephen Dirschauer*
Virtually thousands of C-64 and C-128 public domain programs are available, from disk utilities to arcade games. And they're all free!
- 30 Q-LINK SEXTET** by *Saul Cohen*
Six top-notch public domain programs available on QuantumLink.
- *32 PLAQUE MAN** by *David Martin*
A twist on the classic arcade game, Pac Man, this program is filled with fun and fast action for the C-64!
- *38 MACRO MANIA** by *Stephen Dirschauer*
These Basic commands and functions are yours at a single stroke of a key. For the C-64.
- *42 MACHINE LANGUAGE MAGIC** by *Brandon Corfman*
Now your C-64 programs can make use of the speed of machine language code, without the hassle.

DEPARTMENTS

- 4 RUNNING RUMINATIONS**
RUN's editors present 64 things to be happy about in the world of Commodore computing.
- 6 MAGIC**
The *exclusive source* of hints and tips for performing Commodore computing wizardry.
- 8 NEWS AND NEW PRODUCTS**
Recent developments and releases in the world of Commodore computing.
- 12 MAIL RUN**
Readers question publishing costs and applaud ProTips.
- 14 SOFTWARE GALLERY** *Reviews of:*
 - Champions of Krynyn
 - TV Sports Football
 - X-Men: Madness in Murderworld
 - Ghostbusters II
 - Heatwave
- 48 128 MODE** by *Mark Jordan*
Check into these handy uses for Direct mode.
- 50 ProTips**
The number of productivity tips keeps growing! Here are some for GEOS, RUN Shell, and more.
- 52 GOLD MINE** by *Louis F. Sander*
Hints for a graphics role-playing adventure and some arcade action games are sure to improve your gaming strategies.
- *54 GEOWATCH** by *William Coleman*
Save memory and disk space while creating stand-alone programs with geoBasic.
- 58 COMMODORE CLINIC** by *Ellen Rule*
Answers to your questions about Commodore computing.
- 60 RUN'S CHECKSUM PROGRAM**
Run it right the first time.
- 64 COMING ATTRACTIONS; LIST OF ADVERTISERS**

• If you'd rather spend your time concentrating on the upcoming holidays than typing in these listings, you'll find the programs on the November/December 1990 ReRUN disk. See the card facing page 48.

VICE PRESIDENT/PUBLISHER
STEPHEN ROBBINS

EDITOR-IN-CHIEF
DENNIS BRISSON

MANAGING EDITOR
BETH S. JALA

SENIOR EDITOR
HAROLD R. BJORNSEN

TECHNICAL MANAGER
TIMOTHY WALSH

COPY EDITOR
PEG LePAGE

CONTRIBUTING EDITORS
**ELLEN RULE; JOHN RYAN
LOU WALLACE**

ART DIRECTOR
HOWARD G. HAPP

DESIGNERS
**ANN DILLON
LAURA JOHNSON**

PRODUCTION SUPERVISOR
ALANA KORDA

ASSOCIATE PUBLISHER AND
NATIONAL ADVERTISING SALES MANAGER
KENNETH BLAKEMAN

SALES REPRESENTATIVE
NANCY P. THOMPSON

SALES REPRESENTATIVE
CLASS AD SALES
HEATHER PAQUETTE
603-924-9471

ADVERTISING COORDINATOR
MEREDITH BICKFORD

PUBLISHER'S ASSISTANT
MARY MCCOLE

ADVERTISING ASSISTANT/
CUSTOMER SERVICE REPRESENTATIVE
MARGOT SWANSON

WEST COAST OFFICE:
WESTERN STATES SALES MANAGER
GIORGIO SALUTI
2421 BROADWAY, SUITE 200
REDWOOD CITY, CA 94063
415-363-5230

CIRCULATION DIRECTOR
SUSAN M. HANSHAW
1-800-274-5241

ASSISTANT CIRCULATION MANAGER
PAM WILDER

MARKETING DIRECTOR
WENDIE HAINES MARRO

MARKETING COORDINATOR
LAURA LIVINGSTON

BUSINESS AND OPERATIONS ADMINISTRATOR
LISA LaFLEUR

Entire contents copyright 1990 by IDG Communications/Peterborough, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. Programs published in this magazine are for the personal use of the reader; they may not be copied or distributed. All rights reserved. *RUN* assumes no responsibility for errors or omissions in editorial or advertising content. *RUN* does not assume any liability for advertisers' claims.

Commodore Magazine is a registered trademark of Commodore Business Machines, Inc.

RUNNING RUMINATIONS

64 THINGS COMMODORE USERS SHOULD BE HAPPY ABOUT

We just couldn't resist. One of the hot-selling novelty books on the market today is entitled *14,000 Things to Be Happy About*. It is one woman's lifelong list of people, places, things, events and remembrances that make her feel good.

There is much in the Commodore world that should bring a good feeling to Commodore owners. In case you've forgotten, or have been too busy to notice, here's a reminder from *RUN*'s editors about what's good about being a 64/128 user.

- ▶ the network of users' groups
- ▶ C-128D
- ▶ Commodore's built-in Basic
- ▶ 1581 disk drive
- ▶ sound and music features of the C-64/128
- ▶ fast-load cartridges
- ▶ QuantumLink and other online networks
- ▶ VIC chip
- ▶ Basic 7.0 and its sound, graphics and disk commands
- ▶ SID chip
- ▶ classic games developed for Commodore
- ▶ Commodore-compatible hard disk drives
- ▶ Kernal routines
- ▶ printer interfaces
- ▶ sprite graphics
- ▶ RAM expansion
- ▶ 128 mode
- ▶ numeric keypad
- ▶ 64/128 compatibility
- ▶ the many publications—books, pamphlets, newsletters, magazines, catalogs—available for this market
- ▶ 1351 mouse and other input devices
- ▶ kids using Commodores
- ▶ reset switch
- ▶ menu-driven programs
- ▶ 80 columns
- ▶ productivity applications
- ▶ 1571 disk drive
- ▶ function keys
- ▶ graphics characters
- ▶ abbreviated commands
- ▶ 16 colors
- ▶ ease of use
- ▶ 40/80-column dual monitors
- ▶ Peeks and Pokes
- ▶ 2 MHz
- ▶ GEOS operating system
- ▶ desktop publishing
- ▶ bulletin board systems
- ▶ *RUN* readers
- ▶ computer shows
- ▶ educational applications
- ▶ programming in Basic
- ▶ disk utilities
- ▶ surge suppressors
- ▶ laser printing
- ▶ bundled software
- ▶ keyboard overlays
- ▶ video RAM
- ▶ 2400 baud
- ▶ MS-DOS conversion programs
- ▶ high-quality joysticks
- ▶ the many developers, manufacturers and mail order houses who have supported, and continue to support, the Commodore market
- ▶ multi-function cartridges
- ▶ continued availability of Commodore 64
- ▶ modems
- ▶ games, games, games!
- ▶ bargain prices
- ▶ public domain software
- ▶ eight bits
- ▶ integrated software
- ▶ users' group newsletters
- ▶ virus-free environment
- ▶ 80-column word processing
- ▶ having your dream of owning a computer come true with the purchase of a C-64/128

ACCESSORIZE!

**SAVE UP TO 70% EVERYDAY
ON COMPUTERS, SOFTWARE & ACCESSORIES**

CALL 1-800/BUY-WISE EXT. 15 ▼ FOR FAX ORDERING 708/382-7545

SPECIALY PRICED



5.25"

**SINGLE SIDED/DOUBLE
DENSITY DISKS!**

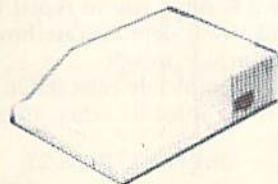
SOLD IN LOTS OF 10

OUR LOW PRICE

29¢ each



**100% HAYES COMPATIBLE
EXTERNAL MODEMS**



1200 BAUD

- Full or Half Duplex
- Auto Dial/Auto Answer
- RS232 Cable required (not incl.)

Mfr. Sugg. Retail \$199.95

\$54⁹⁵

2400 BAUD

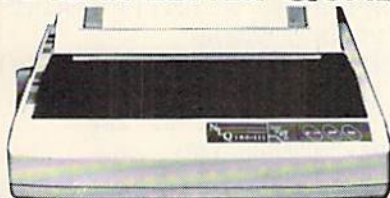
- Tone and Pulse Dialing
- Built-in Speaker with Volume Control
- Buffer that Holds 40 Characters
- Uses RS232 Cable (not included)
- For All Computers

Mfr. Sugg. Retail \$349.95

\$87⁹⁵



**NEW! 180CPS PRINTER
WITH NEAR LETTER QUALITY**



- NEW! Rear Feed Reduces Paper Drag!
- Automatic Load & Paper Parking
- 8K Print Buffer
- Pressure Sensitive Controls
- LIFETIME WARRANTY on Printhead

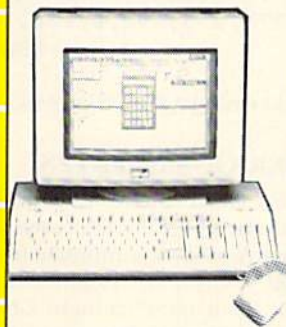
Mfr. Sugg. Retail \$299.95

\$149⁹⁵

**CALL
FOR YOUR
FREE CATALOG!**

**THE AMSTRAD® PC20
AT \$299, WHAT ARE YOU WAITING FOR?**

**FULL IBM XT®
COMPATIBILITY!**



- 512K RAM memory • 3.5" 720K disk drive • Monochrome graphics & CGA color graphics • Parallel & serial ports for printer or modem
- PC joystick port • Microsoft DOS™ Version 3.3 • Digital Research's GEM™ Desktop ("point & click")
- Digital Research's GEM™ Paint
- Microsoft compatible mouse

Mfr. Sugg. Retail \$749.95

\$299⁹⁵

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

Call 1-800/BUY-WISE (289-9473)

Outside Service Area Call 708/382-5058

COMPUTER DIRECT, INC.

22292 N. Pepper Road
Barrington, IL 60010

"We Love Our Customers"

MAGIC

Clear your C-64 screen, reverse a New command,
and find the value of any memory location.

By TIM WALSH

\$5A6 GATE CLEAR 64

Clearing your C-64's screen needn't be dull. Add some excitement with Gate Clear 64. After you've typed in and saved the listing, run it, and it will demonstrate how Gate Clear 64 clears the screen from side to side.

Best of all, Gate Clear 64 is completely relocatable to any memory location not already occupied by other programs.

```
Ø REM GATE CLEAR 64 - JEFFREY PANICI
:REM*169
1Ø PRINTCHR$(147):FORT=1 TO 1ØØØ:PRINT". ";
: NEXT :REM*249
2Ø FORI=49152TO49274:READZ:POKEI,Z:CK=CK+Z
: NEXT :REM*7Ø
3Ø IF CK<>13883 THEN PRINT"ERROR IN DATA..
." :END :REM*61
4Ø SYS 49152 :REM*214
5Ø DATA 162,Ø,16Ø,41,169,64,133,251,169,32
,157,Ø,4,153,4Ø,4,157,8Ø,4 :REM*222
6Ø DATA 153,12Ø,4,157,16Ø,4,153,2ØØ,4,157,
24Ø,4,153,24,5,157,64,5,153 :REM*211
7Ø DATA 1Ø4,5,157,144,5,153,184,5,157,224,
5,153,8,6,157,48,6,153,88,6 :REM*168
8Ø DATA 157,128,6,153,168,6,157,2Ø8,6,153,
248,6,157,32,7,153,72,7,157 :REM*45
9Ø DATA 112,7,153,152,7,157,192,7,232,136,
32,179,238,32,179,238,32,179 :REM*43
1ØØ DATA 238,32,179,238,32,179,238,32,179,
238,32,179,238,32,179,238,32 :REM*116
11Ø DATA 179,238,32,179,238,192,Ø,2Ø8,143,
96,153 :REM*32
```

—JEFFREY PANICI, SANDWICH, IL

\$5A7 LETTER/NUMBER GUESS 64/128

This program lets you guess either a letter or a number within a range. When you run the program, it gives you ten chances to guess a letter from A to Z or a number from 1 to 100. The computer will tell you whether to guess higher or lower after each guess. Not challenging enough? Change the value of the variables X (the number of guesses) and N (the highest number) in line 20. The program automatically adjusts itself when you change the high number range.

```
Ø REM LETTER OR NUMBER GUESS 64/128 - CALV
IN PRESLEY :REM*131
1Ø INPUT"{SHFT CLR}PLAY NUMBER OR LETTER (
N/L)";Q$ :REM*121
2Ø X=1Ø:N=1ØØ:T=1:IF Q$=""THEN 1Ø :REM*125
3Ø IF Q$="L"THEN N$="LETTER":M$="A-Z":N=26
:W=65 :REM*2Ø6
```

```
4Ø IF Q$<>"L"THEN:N$="NUMBER":M$="1 -"+STR
$(N):W=1 :REM*93
5Ø PRINT"{SHFT CLR}{2 CRSR DNs}{2 CRSR RTs
}I'M THINKING OF A "N$" FROM " :REM*124
6Ø PRINT"{2 SPACES}"M$". YOU SHOULD GUESS
IT":PRINT"{2 SPACES}IN"X"TRIES OR LESS"
:REM*38
7Ø L=INT(RND(Ø)*N+W):PRINT:PRINT :REM*99
8Ø AN$=STR$(L):IFW=65THENAN$=" "+CHR$(L)
:REM*14
9Ø PRINT"{CRSR DN}{COMD 7}";T;:INPUT"WHAT
IS YOUR GUESS";A$:IFA$=""THEN9Ø :REM*96
1ØØ IFW=65THENG=ASC(A$):IFG<65ORG>9ØTHEN9Ø
:REM*142
11Ø IFW=1THENG=VAL(A$):IFG>NORG<1THEN9Ø
:REM*6
12Ø IF G=L THEN 18Ø :REM*68
13Ø IF G>L THENPRINTTAB(3Ø)"{CTRL 2}LOWER"
:REM*29
14Ø IF G<L THENPRINTTAB(3Ø)"{CTRL 2}HIGHER
" :REM*2Ø5
15Ø IF T>=X THEN 17Ø :REM*2ØØ
16Ø T=T+1:GOTO 9Ø :REM*139
17Ø PRINT"{CRSR DN}THE ANSWER IS"AN$:GOTO1
9Ø :REM*224
18Ø PRINTTAB(3Ø)"RIGHT!!!":PRINT"YOU GUESS
ED IT IN"X"TRIES" :REM*32
19Ø PRINTTAB(12)"PLAY AGAIN (Y/N)?"
:REM*218
2ØØ GET P$:IF P$=""THEN 2ØØ :REM*132
21Ø IF P$="N"THEN END :REM*71
22Ø IF P$<>"Y"THEN 2ØØ :REM*59
23Ø RUN :REM*113
```

—CALVIN PRESLEY, BRIGHTON, MO

\$5A8 FAST UN-NEW FOR C-64

At one time or another, every computer user has unintentionally entered the New command. This means having to reload a program—or worse, losing a program not previously saved. Unfortunately, most un-new utilities and techniques for recovering your lost program assume you've loaded one before working on a program.

Since most computer users don't bother loading an un-new utility before any other program, I wrote Auto-Un-New 64. Type in and save this program, then insert a formatted work disk and run Auto-Un-New 64. A file will be created with the name Unnew.

The next time you accidentally enter NEW, just place the work disk in the drive and type LOAD "UNNEW",8,1. The

Continued on p. 51.

DAMARK

INTERNATIONAL, INC.

ORDER TODAY!
1-800-729-9000
 THE "GREAT DEAL" CATALOG

cordata 386SX COMPUTER with VGA MONITOR



- 100% IBM compatible.
- Includes 14" VGA color monitor.
- 80386SX-16/8 MHz speed, zero wait state, upgradable to 20 MHz.
- One 3-1/2" 1.44 MB floppy disk drive.
- One 5-1/4" 1.2 MB floppy disk drive.
- 40 MB hard drive/millisecond access time.

- 1 MB RAM on motherboard, expandable to 8 MB.
- Expansion slots: four IBM AT slots.
- Built-in VGA video support. Battery backed real time clock/calendar.
- Two serial ports.
- One parallel port.
- 80387SX-16 math co-processor socket.
- 101 key IBM style keyboard.
- Phoenix BIOS.
- Model # CPC8248.
- Includes MS-DOS 4.0.
- Dim.: 16"W x 18"D x 5"H.
- One Year Warranty through Cordata.
- Factory New!
- Does not include software shown on screen.

Mr. Sugg. Retail: **\$2,968.00**

DAMARK \$1,499.99
 PRICE

Item No. B-2416-143578
 Insured Ship/Hand.: \$49.00

KRAFT SYSTEMS INC. TRACKBALL



- Smooth moving Trackball mouse.
- 100% IBM compatible.
- Variable resolution up to 1150 D.P.I.
- Complete one-handed control.
- Easy to install; just insert disk and follow step-by-step menu driven instructions.
- Includes one 5-1/4" disk and one 3-1/2" disk.
- Includes Telepoint™ software with two 5-1/4" disks.
- Microsoft compatible. Software driver included.
- System requirements: IBM or compatible PC, DOS 2.0 or higher.
- Includes 9 to 25 adapter cable for installation on any RS232 serial port.
- 5 Year Limited Mr. Warranty!
- Factory New!



Mr. Sugg. Retail: **\$169.00**

DAMARK \$49.99
 PRICE

Item No. B-2416-148684
 Insured Ship/Hand.: \$6.00

Qume SCRIPTEN™ LASER PRINTER WITH ADOBE® POSTSCRIPT® FOR IBM® & APPLE®



- 100% IBM compatible.
- 3 MB RAM.
- 1 MB ROM.
- Adobe controller.
- 68000 microprocessor.
- Resolution: 300 x 300 dpi.
- 35 built-in typefaces including: Courier, Helvetica®, ITC Avant Garde Gothic®, ITC Bookman®, ITC Zapf Dingbats®, New Century Schoolbook®, New Helvetica Narrow®, Palatino®, Symbol®, Times®.

3 MB RAM!

- Emulates the HP LaserJet™.
- Type styles and sizes: Most characters can be printed from 2 pt. to 127 pt. Plain, bold, italic, underline, & combinations of these can also be printed.
- Supplies include: toner cartridge, developer cartridge and drum (all included).
- Interface/system compatibility: AppleTalk (RS-422), RS232 serial port, baud rates (1200, 9600, 19200), centronics parallel, HP LaserJet Plus.
- Dim.: 20" x 17-1/4" x 15".
- Weight: 90 lbs.
- 90 Day Mr. Warranty!
- Factory New!

Mr. Sugg. Retail: **\$4,595.00**
DAMARK \$1,999.99
 PRICE

Item No. B-2416-150730
 Insured Ship/Hand.: \$69.00

KRAFT SYSTEMS INC. JOYSTICK W/CARD

Compute with the trouble-free operation of this three button Joystick from Kraft.



- Three button joystick.
- Compatible with IBM PC, XT AT, PS/2 models 25 & 30.
- Apple® II, II+, IIe, IIc, IIgs and compatible systems.
- Dual-axis trim controls for fine tuning your joystick to individual computers & software.
- Instant cursor response.
- Micro-touch gimbals for accurate cursor movement.
- Dual axis trim controls for easy operation.
- Center lock feature for free-floating or spring-centered mode.
- Includes adapter card that allows use of 1 or 2" joysticks (* with separate "Y" cable) and will operate on a system utilizing clock speeds from 4.77MHz. to 16MHz.
- Model #: 820302-6.
- 5 Yr. Limited Mr. Warranty!
- Factory New!

Mr. Sugg. Retail: **\$79.90**

DAMARK \$29.99
 PRICE

Item No. B-2416-149310
 Insured Ship/Hand.: \$5.50

TOSHIBA 24-PIN DOT MATRIX PRINTER

- 24-pin letter quality printer.
- Print speed: 216 CPS draft; 72 CPS letter quality. 32K buffer.
- Includes: 12 Multi-Strike Ribbons PLUS 2 Font Cards—no choice on font cards received.
- Built-in rear tractor.
- Friction feed.
- Auto loading, single sheet guide for letterhead & cut sheets & friction feed.
- Front panel LCD display includes: type fonts, pitch, emulation, lines per inch, quiet mode and page length.
- 360 x 360 graphics.
- Tractor feed and tear bar for continuous forms.
- IBM emulation.
- Single or continuous feed paper loading.
- Parallel/serial interfaces included.
- Model #: P321SL.
- Dim.: 16.3"W x 3.9"H x 15"D.
- 1 Yr. Ltd. Mr. Warranty!
- Factory New!



Sheetfeeder
 • Model #: MS-17.

Mr. Sugg. Retail: **\$349.00**
DAMARK \$69.99
 PRICE

Item No. B-2416-149450
 Insured Ship/Hand.: \$6.00

Includes printer ribbon & font cards.

Mr. Sugg. Retail: **\$1019.00**
DAMARK \$299.99
 PRICE

Item No. B-2416-149468
 Insured Ship/Hand.: \$29.00

GoldStar 286 AT COMPUTER WITH 14" HIGH RESOLUTION VGA COLOR MONITOR & 30MB HARD DRIVE



- 80286 microprocessor, 12.5/6.25MHz switchable.
- One MB RAM on motherboard, expandable to four MB.
- 30 MB hard drive.
- One 5.25" 1.22MB floppy drive.
- High resolution VGA monitor: 640 x 480.
- Socket for 80287 math co-processor.
- 16-bit VGA card; 80X600 resolution.
- IBM compatible.
- 3 expansion slots—two 16-bit and one 8-bit.
- 1 serial port.
- 1 parallel port.
- PS/2 compatible 6-pin mouse port.
- Real time clock/calendar.
- Phoenix 286 ROM BIOS.
- AT style 101-key enhanced keyboard.
- Includes MS-DOS 4.01 with DOS Shell utilities and GW BASIC™.
- One Year Mr. Warranty!
- Factory New!

FREE BONUS SOFTWARE:
 Spinnaker "Easy Writer" word processing, "Ace2" interaction game & "Splash" demo program. Also includes coupon to buy "Splash" at great savings!

Mr. Sugg. Retail: **\$2,293.00**
DAMARK \$999.99
 PRICE

Item No. B-2416-149047
 Insured Ship/Hand.: \$49.00

FOR FASTEST SERVICE CALL TOLL FREE
1-800-729-9000

CUSTOMER SERVICE: 1-612-531-0082

QTY	DESCRIPTION	ITEM #	S/H/I	PRICE

NAME _____
 ADDRESS _____
 CITY _____ ST _____ ZIP _____
 PHONE _____
 CARD NO. _____ EXP. DATE _____

DELIVERY TO 48 U.S. CONTINENTAL STATES ONLY

SUB TOTAL



in MN add 6% Sales Tax

Total S/H/I

Check/Money Order

GRAND TOTAL

B-2416

Send To: DAMARK INTERNATIONAL, INC., 7101 Winnetka Ave. N., Minneapolis, MN 55428-1619

Copyright 1990, DAMARK International, Inc. All rights reserved.

NEWS AND NEW PRODUCTS

Explore Earth, die hard, join the Commodore users' movement, and play a full-color, C-128 80-Column mode game.

By HAROLD R. BJORNSEN

C-128 80-COLUMN MODE GAME

CHARLOTTE, VT—Silvasoft (PO Box 1006, Charlotte, VT 05445) has released an animated graphics adventure, written in Basic 8, for the C-128 in 80-Column mode. As Rodney, in **Maidstone Quest**, you've been chosen to undertake the quest for the Maidstone, an icon of power. The evil necromancer, Ganef, has stolen the icon and hidden it deep within the mines of the Grey Mountains. You must travel through 28 levels in search of clues and weapons you'll need to destroy Ganef and recover the Maidstone. An 80-column, RGB monitor, and either a C-128 with 64K VDC RAM and a 1571, or a 128D are required. \$25 plus \$3.50 s/h.

A STABLE SITUATION

COSTA MESA, CA—The **Stable Owners Option Module** expands the styles and strategies of the C-64 version of **Omni-Play Horse Racing**. It also adds utilities that let you join the elite class of thoroughbred owners and assemble your own stable of claiming, allowance and stakes horses. You can hire jockeys, matching their skills against the competition, and enter them in races. \$19.95. SportTime, 3187-G Airway Ave., Costa Mesa, CA 92626.

NOW I HAVE A MACHINE GUN, TOO!

MENLO PARK, CA—Based on last year's hit movie, **Die Hard** players assume the role of John McClane, the off-duty New York cop, who must race against the clock to rescue his wife and other hostages from terrorists occupying a high-rise building. As you defeat each terrorist, you'll obtain the guns and tools needed to win. It's available for the C-64 for \$29.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025.

PLANET EARTH

WEST UPTON, MA—Edgeworth Software (PO Box 418, West Upton, MA) has



Edgeworth Software's Earth Program also contains help screens and a quiz.

expanded its **Earth Program** to a two-disk set for the C-64. Disk one generates rotating Earth graphics. By simulating sunlight and the Earth's tilt, it illustrates concepts such as the changing length of days and the four seasons.

By adding the optional disk two, users get extra screens, along with the ability to transfer graphics into some popular paint programs like **RUN Paint**. Disk one is priced at \$19.90; disk two at \$9.

PREVENT COMPUTER CRASHES

RICHMOND HILL, ONTARIO, CANADA—**Stabilant 22** is an environmentally safe, nonconductive block polymer that, when applied to electromechanical contacts, helps prevent computer lock-ups and crashes that are caused by poor connections in the computer or keyboard. The heavy liquid improves conductivity and helps block the entry of contaminants. Price unavailable at press time. D. W. Electrochemicals, Ltd., 9005 Leslie St., Unit 106, Richmond Hill, Ontario, Canada L4B 1G7.

COMPUTER BREAKTHROUGHS FROM "SCIENCE DIGEST"

MARS FLIGHT SIMULATOR—Planetary scientists at the Jet Propulsion Laboratory in Pasadena, California have produced a computer simulation of data sent back from NASA's exploratory

spacecraft, *Viking*, as it orbited Mars. Scientists hope it renders a more complete picture of the planet than still photos can provide. The simulation "flies" viewers through Valles Marineris, a canyon that's as wide as the United States.

PERFECTLY SOUND SOUND—With the new knowledge of the physics of perfect sound that computer programs have given us, acousticians and architects are designing everything from great concert halls to quiet factories. One such computer program, developed at Cornell University, anticipates how any change in a room's design affects sound, allowing architects to evaluate different designs for sound clarity, volume and a number of other acoustic qualities.

MACHINE LANGUAGE DOCTOR

NORTH ARLINGTON, NJ—Arlington Software (PO Box 916, North Arlington, NJ 07032) introduces **Code Shadow Symbolic Debugger** for the C-64. Its features help debug, test and analyze machine language programs. Symbolic capabilities provide assembling and disassembling code, program stepping and addresses referenced in command arguments. This non-copy protected program can use a RAM expansion unit to leave computer memory free. You can get your machine language programs in shape for \$19.95.

ATTENTION, C-64/128 OWNERS

An association of 64/128 users' groups is being formed to provide support for these 8-bit computers. The first meeting will be held during the World of Commodore/Amiga Show in Toronto from November 30 through December 31, 1990.

Some of the association's aims are to provide a united force to ensure support for the 64 and 128, to become a clearinghouse of public domain programs and newsletters and to increase buying power for 64/128 owners. For more information, write Dave Quinn c/o M.U.G., Box 2984, Stn. "A," Moncton, N.B., Canada E1C 8T8. ■

Micro EXPRESS INC.

To ORDER CALL **1-800-726-7275** 24 HOURS A DAY, 7 DAYS A WEEK
 WE ACCEPT VISA, MASTERCARD, CHECKS & MONEY ORDERS . . .

SEND CHECK OR MONEY ORDERS TO:
MICRO EXPRESS INC.
 P.O. Box 1678
 St Cloud, MN 56302

- ◆ FOR CUSTOMER SERVICE CALL (612) 252-6099 WEEKDAYS 9 A.M.-5 P.M. CST.
- ◆ CALL ABOUT NEW TITLES ARRIVING DAILY.
- ◆ CARD NOT CHARGED UNTIL WE SHIP.
- ◆ WE SELL ONLY TOP QUALITY PRODUCTS, NO SECONDS OR REJECTS.

Please read the following terms and conditions before placing your order with Micro Express. Orders with cashiers checks or money orders are shipped immediately on in stock items. Allow 3 weeks clearance on personal checks. Sorry No C.O.D.'s. Continental USA orders add \$4.00 S & H fee; FREE shipping on orders over \$100. AK, HI, APO, and FPO orders add \$5.00 S & H fee. Canada and Puerto Rico orders add \$7.50 S & H fee. No other international orders accepted. All monies must be submitted in U.S. funds. Minnesota residents add 6% sales tax on total order including S & H charges. Defective items are replaced with the same item if returned within 60 days of purchase. After 60 days please refer to your warranty included with your product and return directly to the manufacturer. Prices and availability are subject to change. All sales are final unless authorized by the Micro Express management. Please call us for more information and Thank You for your valued business.

ACCESS

- Heavy Metal: 25.00
 Mean Streets: 25.00
 World Class Leader Board: 25.00
 Famous Courses 1, 2 or 3: 13.00 ea

ACCOLADE

- Blue Angels Flight Simulator: 18.75
 Fast Break: 18.75
 Grand Prix Circuit: 18.75
 Heat Wave Boat Racing: 18.75
 Harmony: 18.75
 Jack Nicklaus Course Disk: 9.75
 J.N. Championship Courses of 89: 9.75
 J.N. Greatest 18 Holes: 22.75
 Serve and Volley: 18.75
 Steel Thunder: 18.75
 Strike Aces: Int'l Bombing: 26.00
 Test Drive 1: 9.75
 Test Drive 2: The Duel: 22.00
 Test Drive 2: Europe Scenery: 9.75
 Test Drive 2: Muscle Cars: 9.75
 Test Drive 2: Calif. Scenery: 9.75
 Test Drive 2: Super Cars: 9.75
 The Cycles: 18.75

ACTIVISION

- Battlechess: 24.75
 Beyond Dark Castle: 18.75
 Die Hard: 18.75
 Dragon Wars: 28.75
 F-18 Hornet: 22.75
 F-14 Tomcat: 24.75
 Face Off: 19.00
 Ghost Busters II: 18.75
 Grave Yard: 16.00
 Last Ninja 2: 22.75
 Mondus Fight Palace: 18.75
 Neuromancer: 25.00
 Power Drift: 20.00
 Rampage: 22.75

Artwox

- Bridge 5.0: 18.75
 Linkwood Languages: 15.75
 Strip Poker: 20.75
 S.P. Male #2: 13.00
 S.P. Female #1 or 3: 13.00 ea
 Tank Attack: 18.75

BUDDVILLE'S Computer Products

- Award Maker Plus: 24.75
 Award Maker Sports Libraries: 16.00
 Award Maker Educ. Libraries: 16.00

BERKELEY SOFTWAREWORKS

- Desk Pack Plus: 18.75
 Font Pack Plus: 18.75
 Geos 128 (2.0): 43.75
 Geos 64 (2.0): 38.75
 Geo-Chart: 18.75
 Geo-Calc 64: 32.75
 Geo-Calc 128: 43.75
 Geo-Programmer: 43.75
 Geo-Publish: 32.75

Broderbund

- Bank St. Writer: 32.75
 Carmen San Diego Europe: 24.75
 Carmen San Diego U.S.A.: 24.75
 Carmen San Diego World: 22.75
 Carmen San Diego Time: 25.00
 Centauri Alliance: 18.75
 Curse of Babylon: 16.00
 License to Kill: 13.75
 Omni-Play Basketball: 22.75
 Omni-Play Horse Racing: 32.00
 Pictionary: 18.75
 Print Shop: 25.75
 P.S. Companion: 22.75
 Sim City: 18.75
 Star Wars: 18.75
 Wings of Fury: 19.75

CAPCOM

- Pocket Rockets: 9.75
 Street Fighter: 9.75
 Tiger Road: 18.00

CAPSTONE

- Miami Vice: 19.00
 Search for the Titanic: 22.00
 Superman: 19.00
 Trump Castle Casino Gambling: 22.00

CINEMAWARE

- Darkside: 21.00
 Deathbringer: 19.75
 Rocket Ranger: 22.75
 The Three Stooges: 22.75
 Total Eclipse: 20.00
 T.V. Sports Baseball: 18.75
 T.V. Sports Football: 19.00

COSMI

- Top 20 Game Combo Pack: 10.00
 Champ: 16.00

DATA EAST

- ABC Monday Nite Football: 24.75
 Bad Dudes: 18.75
 Batman: 18.75
 Guerilla War: 18.75
 Ikari Warrior: 9.75
 Platoon: 9.75
 RoboCop: 22.75
 Untouchables: 18.75
 Vigilante: 15.75

Davidson.

- Algebra: 18.75
 Math Blaster: 18.75
 Spell it!: 18.75
 Speed Reader II: 18.75
 Work Attack: 18.75

DesignWare

- Designasaurus: 18.75
 Eye of Horus: 18.75
 Spellcopter: 18.75

DISNEY

- Duck Tales: 18.75

MICRO EXPRESS RETAIL SOFTWARE & PERIPHERAL GUIDE

Complete listings for Commodore, IBM, Apple, Mac & Amiga. Includes individual product description, applications & requirements. The perfect tool to take the guess work out of software shopping.
M.E.'s SUPER price \$4.95 plus \$1.00 S & H

DIGITAL SOLUTIONS

- Pocket Filer II: 18.75
 Pocket Writer I: 18.75
 Pocket Writer II: 31.25
 Pocket Writer III: 37.50

Electronic Arts

- B.A.T.: 26.00
 Bard's Tale 3: 26.00
 Beyond the Black Hole: 20.75
 Blackout: 18.75
 Chessmaster 2100: 26.00
 Chuck Yeagers - AFT: 9.75
 Crack Down: 22.00
 Days of Thunder: 25.00
 Dragon's Lair: 18.75
 Ferrari formula One: 21.00
 F-16 Combat Pilot: 22.75
 Golden Ax: 22.00
 Indiana Jones Last Crusade: 20.75
 Iron Lord: 26.00
 Jordan vs Bird: 20.75
 Kings Beach Volleyball: 20.75
 Kings Bounty: 25.00
 Loopz: 18.75
 Madden Football: 26.00
 Might & Magic 2: 26.00
 Night Breed: 18.75
 Panzer Battles: 27.50
 Paperclip Publisher: 34.50
 Pipe Dream: 20.75
 Pro Tennis Tour: 21.00
 Puffy's Saga: 19.75

ELECTRONIC ARTS Cont.

- Quest Master: 22.00
 Sentinal Worlds: 23.00
 Skate Wars: 18.75
 Ski or Die: 18.75
 Starlight: 26.00
 Street Rod: 18.75
 Trivia Pursuit: 25.00
 Vegas Gambler: 18.75

ELECTRONIC ZOO

- Black Gold: 18.75
 Spherical: 18.75

GAMETEK

- Big Boggle: 9.75
 Jeopardy: 9.75
 Wheel of Fortune 1, 2, or 3: 6.75 ea

HI TECH EXPRESSIONS

- Print Power: 9.75

MICROLEAGUE

- M.L. Baseball 2: 24.75

MASTERTRONICS

- Barbarian: 18.75
 Clue: 18.75
 Double Dragon: 14.00
 Double Dragon II: 24.00
 John Elway's Quarterback: 9.75
 Monopoly: 18.75
 Oral Hersher's Strike Zone: 18.75
 Risk: 18.75
 Scrabble: 18.75
 Shark Attack: 18.75
 Spot: 18.75
 War in Middle Earth: 24.75

MICRO PROSE

- 3D Pool: 19.00
 Airborne Ranger: 24.75
 Destroyer Escort: 25.00
 Dr. Doom's Revenge: 22.00
 F-19 Stealth Fighter: 28.75
 Gunship: 24.75
 Keys to Maramon: 18.75
 Land Sea Air Trilogy: call
 Pirates: 28.75
 Redstorm Rising: 28.75
 Rick Dangerous: 19.00
 Savage: 19.00
 Stunt Track Racer: 19.00
 Xenophobe: 19.00

MINDSCAPE

- Action Fighter: 18.75
 Aussie Games: 18.75
 Gauntlet 2: 19.00
 Hostage: 18.75
 International Team Sports: 18.75
 Out Run: 22.75
 Sgt. Slaughter's Mat War: 18.75
 Shinobi: 18.75
 Space Harrier: 21.00

ORIGIN

- Auto Duel: 25.00
 Knights of Legend: 32.75
 Omega: 32.75
 Space Rogue: 32.75
 Tangled Tales: 18.75
 Times of Lore: 24.75
 Ultima 4 or Ultima 5: 38.75 ea
 Ultima VI: 43.75
 Ultima Trilogy: 38.75
 Windwalker: 24.75

PRECISION

- Super Base 64: 25.00
 Super Base 128: 31.25
 Super Script 64: 21.75
 Super Script 128: 21.75

SEGA

- After Burner: 22.75
 Altered Beast: 22.75
 Turbo OutRun: 25.00

NIEMAN-SCHLESER COMPUTER SOFTWARE

- Study Guide for SAT: 18.75
 Star Trek: Rebel Universe: 22.75
 Typing Tutor 4: 24.50

SIR TECH

- Wizardry Trilogy: 32.75
 Wizardry 5: Heart of Maelstrom: 25.75

SOFTWARE SUPPORT

- Maverick V5.0: 22.75
 Super Snapshot V4.0: 24.50
 Super Snapshot V5.0: 52.00

SPECTRUM HOLOBYTE

- Tetris: 9.75

SPYNAKER

- Alphabet Zoo: 13.50
 Better Working Word Publisher: 20.00
 Kids on Keys: 10.00
 Kidwriter: 15.00
 Reading 1- Peter Rabbit: 15.75
 SAT Complete: 24.75

STARLINE

- AD&D Champions of Krynn: 25.00
 AD&D Curse of Azure Bonds: 25.75
 AD&D Dragons of Flame: 19.00
 AD&D Hillstar: 25.75
 AD&D Heroes of the Lance: 20.75
 AD&D Pool of Radiance: 25.75
 AD&D Secret of Silver Blade: 25.00
 AD&D War of the Lance: 25.00
 Buck Rogers Countdown to Dooms Day: 25.00
 DNG Master Asst. 1 or 2: 20.75 ea
 Dragon Strike: 25.00
 Overrun: 31.75
 Storm Across Europe: 38.75
 Star Command: 26.00
 Typhoon of Steel: 31.75

subLOGIC

- Flight Simulator 2: 31.75
 F.S. Scenery #7: 19.00
 Hawaiian Odyssey: 18.75
 Jet: 17.00
 Stealth Mission: 31.50

TAITO

- Arkanoid 2: Revenge of Doh: 9.75
 Operation Wolf: 9.75
 Qix: 9.75
 Rambo 3: 9.75
 Rastan: 9.75
 Renegade: 9.75
 Sky Shark: 9.75

TIMETWORKS

- Data Manager 2: 13.75
 Evelyn Wood Reader: 13.75
 Swiftco/Sideways: 13.75
 Word Writer 5: 25.00
 Word Writer 128: 31.25

TITUS

- Crazy Cars: 15.75
 F-40 Pursuit Simulator: 18.75
 Wild Street: call

ULTRA

- Blades of Steel: 18.75
 CastleVania: 18.75
 Double Dribble: 18.75
 Metal Gear: 21.75
 Teenage Muntant Ninja Turtles: 18.75

WEEKLY READER

- Stickybear Series:
 ABC's (Pre - Kinders): 13.75
 Math 1 (Grades 1-4): 13.75
 Math 2 (Grades 4 & up): 13.75
 Numbers (Pre-Kinders): 13.75
 Opposites (Pre-3): 13.75
 Reading Comp. (Grades 3-5): 15.75
 Reading (Kinders-3): 13.75
 Shapes (Pre-3): 13.75
 Spellgrabber (1-3): 15.75
 Town Builder (1-3): 15.75
 Typing (All levels): 15.75

MISC.

- C64 Power Supply: 35.00
 C128 Power Supply: 69.95
 EPYX 500 X.J Joystick: 13.00
 Icontroller: 13.75
 Final Cartridge III: 45.00
 Volk Model 6480 1200 Bd Modem: 79.95

ORDER TOLL FREE 1-800-726-7275

The BEST software, the BEST price, That's the bottom line!

MAIL IN 'BUCK-BACK' COUPON
 Mail in check or money order with this coupon & save \$1.00
 *Include S&H fee.
 Expires 1-1-91

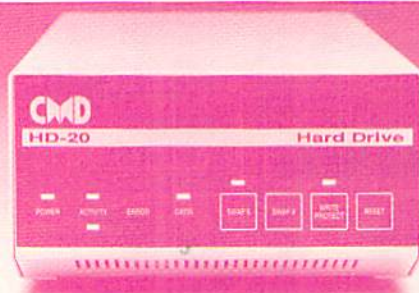
CMD

Your Memory Location

CMD

HD Series Hard Drives

THE NEW STANDARD IN 64/128 HARD DRIVES



The CMD HD series of hard drives for the Commodore 64 and 128 have been designed to provide the highest level of compatibility and performance. These drives incorporate the latest in SCSI technology with advanced circuit design to bring you the most features at an affordable price. CMD drives allow you to achieve the higher level of productivity you require to get the most from your existing software - today!

- Compatible with GEOS™, CP/M™, BBS programs and most commercial software.
- 3 1/2" SCSI technology for quiet reliable operation in a compact case about the size of a 1581.
- Built-in Commodore compatible DOS responds to all 1541, 1571 and 1581 commands.
- Up to 254 partitions in sizes ranging from 256 blocks to 65,280 blocks each.
- Built-in real time clock automatically time and date stamps all files.
- Compatible with Amiga, IBM and Macintosh systems for convenient upgrading.
- Connects easily to the serial bus, leaving ports open for use with cartridges, REU's and RAMLink.
- Supports all serial and JiffyDOS protocols, plus parallel interface for connection to RAMLink.
- Easy-to-use utilities allow backing up and copying files to and from 1541, 1571, or 1581 drives.
- Supports an unlimited number of true subdirectories which share all blocks within a partition.
- Built-in Q-Link software allows easy access to America's most popular 64/128 online service.
- External power supply avoids overheating and wear on computer power supply.
- Includes standard SCSI port and all utilities needed to expand the system (up to 4 Gigabytes).

HD-20 \$599.95 • HD-40 \$799.95 • HD-100 \$1149.95 • HD-200 \$1499.95

SD Series SCSI Hard Drives - Add-on drives for the CMD HD or any other SCSI interfaced computer such as the Amiga™, Macintosh™ or IBM™. SD series drives come mounted in our sturdy steel case and include an external power supply and connecting cable. SD drives also come equipped with a second SCSI port to allow chaining of additional SCSI devices.

SD-20 - \$449.95 SD-40 - \$549.95 SD-100 \$899.95 SD-200 \$1299.95

Lt. Konnector - Increase the performance and compatibility of your LTK and CMD HD. The Lt. Konnector allows you to connect the two drives for greater capacity. \$19.95 (\$14.95 with purchase of any HD or SD drive)

JiffyMON - A high performance Machine Language Monitor designed to work in conjunction with JiffyDOS. JiffyMON is loaded with useful features and can be used without exiting from BASIC. It also has a built-in drive monitor for easy access to drive memory. JiffyMON comes complete with a well documented user's manual and offers features just not found in other machine language monitors. \$19.95 + \$1 S/H

Serial Cables - 30' high quality serial cables. \$3.95 + \$1 S/H

1541-II/1581 Replacement Power Supplies

These switching power supplies are the same heavy duty, cool running units found on the HD series hard drive and are much more reliable than the supplies issued by Commodore as standard equipment. They are also repairable and reasonably priced. \$49.95 + \$6.00 S/H

- Supports CMD HD Series Hard Drives and RAMLink.
- 1581 support. Simplified partition selection.
- Quick printer output toggle. No more complicated command sequences.
- Adjustable sector interleave. Increase performance on hard-to-speedup software.

JiffyDOS Version 6.0

The Ultimate Disk Drive Speed Enhancement System

JiffyDOS 64 System - \$59.95 JiffyDOS 128 System - \$69.95

Each system includes computer Kernel ROM(s) and one drive ROM.

Please specify computer and drive model numbers and serial numbers when ordering.

Additional Drive ROMS - \$29.95 each.

- Ultra-fast multi-line serial technology. Enables JiffyDOS to outperform Cartridges, Burst ROMs, Turbo ROMs, and Parallel Systems - without any of the disadvantages.
- Speeds up all disk operations. Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL, USR & direct-access files up to 15 times faster!
- 100% Compatibility Guarantee - Guaranteed to work with all Software and Hardware
- Uses no ports or extra cabling. ROMs install internally for speed and compatibility.
- Easy Installation. No experience or special tools required for most systems.
- Supports C64, 64C, SX64, C128, C128D, 1541, 1541C, 1541-II, 1571, 1581
- Can be completely switched out. Returns you to a 100% stock configuration
- Built-in DOS Wedge. Plus 17 additional commands and convenience features.
- Built-in two drive file copier. Supports all file types and drive types.
- REU support. Fully supports Commodore REUs (RAM Expansion Units) under RAMDOS.
- Enhanced text screen dump. Auto-recognition of uppercase/graphics & lowercase.
- Redefinable 64-mode function keys. Easily redefine the keys to suit your specific needs.

• SUPER SAVINGS COUPON •

CMD HD-40 - \$750

CMD HD-100 - \$1100

CMD HD-200 - \$1400

To receive these low prices (US & Canada), send in this coupon with your order. For ordering, shipping and credit card details see the adjoining box. Offer expires 12/31/88. Excludes other offers.

Ordering Information and Shipping Charges

HD and SD Hard Drives: Continental US: \$25.00 per drive (UPS ground), \$35.00 (2nd-Day), \$45.00 (Next-Day), Canada: \$50.00 (Airmail), COD to U.S. only \$4.00 add'l charge. Foreign prices: 20Mb, \$699.95, 40Mb, \$899.95, 100Mb, \$1249.95, 200Mb, \$1599.95 Postage: \$35.00

JiffyDOS & Lt. Konnector: Add \$4.50 per order (UPS ground), \$8.50 (2nd-Day Air), plus \$4.00 for APO, FPO, AK, HI, and Canada, or \$14.50 for overseas orders. No additional shipping if ordered with any hard drive. COD's to US only - add \$4.00

Tax: MA residents add 5% sales tax.

Terms: We accept VISA, MasterCard, Money Orders, C.O.D., and personal checks (allow 3 weeks for personal checks to clear). Credit card orders provide the following: Card holders name, billing address, home/work phone, card number, expiration date and issuing bank.

• WE VERIFY ALL CREDIT CARD INFORMATION AND PROSECUTE INDIVIDUALS ATTEMPTING TO PERPETRATE FRAUD •

Note: Prices and specifications subject to change without notice. Geos is a trademark of Berkeley Software, CP/M is a trademark of Digital Research, Commodore 64, Commodore 128, Commodore 1541, Commodore 1541-II, Commodore 1571, Commodore 1581 and Commodore RAMDOS are registered trademarks of Commodore International, Amiga is a trademark of Commodore-Amiga, Macintosh is a trademark of Apple Computer, IBM is a trademark of International Business Machines, Lt. Konnector is a trademark of Xetec Inc. and Fiscal Information Inc.

Now accepting
advance orders
Call for details

RAMLink™

Power-backed REU interface and
expandable RAM Disk



What is RAMLink?

RAMLink is a multi-purpose hardware interface designed to overcome the limitations of existing RAM expansion units (REUs). RAMLink delivers the performance and compatibility lacking in past REU's by incorporating CMD's proprietary RL-DOS and advanced features into a compact unit which allows most software to utilize Commodore 1700 series REU's, GEORAM, PPI's RAMDrive, and CMD's RAMCard as if it were a disk drive. Optional RAMCard installs internally and can be used alone or in combination with the storage of an external REU for a maximum capacity of 16 Megabytes.

- Supports Commodore 1700, 1764, 1750, Berkeley Softworks GEORAM and PPI's RAMDrive.
- Optional RAMCard allows RAMLink to be used as a RAM Disk with or without a separate REU. User Expandable from 1 Mb to 16 Mb using standard SIMMs.
- Pass-thru connector allows use of cartridge port peripherals such as utility cartridges.
- Reset, Disable, Direct Access mode and SWAP functions are all standard features.
- RAM port provides power back-up to REU's.
- Parallel port provides ultra-fast data transfer when connected to CMD HD series hard drives.
- Optional battery backup unit protects against power outages.

RAMLink (w/out internal RAM)	\$149.95	RAMCard w/ (1 Mb)	\$149.95
RAMLink w/ RAMCard (1 Mb)	\$259.95	RAMCard w/(2 Mb)	\$239.95
RAMLink w/ RAMCard (2 Mb)	\$349.95	RAMCard w/ (3 Mb)	\$329.95
RAMLink w/ RAMCard (3 Mb)	\$439.95	RAMCard w/ (4 Mb)	\$419.95
RAMLink w/ RAMCard (4 Mb)	\$529.95	1 Mb SIMM (User Installed)	\$100.00
RAMLink Battery back-up unit	\$24.95	Parallel Cable for CMD HD	\$14.95

Shipping: US: \$10.00 (UPS), \$18.00 (2nd day), COD add \$4.00 Canada \$20.00

POWERFUL FEATURES MAKE RAMLINK AND RAMDRIVE USEFUL AND AFFORDABLE

- Allows vast amounts of commercial software, including GEOS, to access your REU as a high-performance RAM Disk.
- RL DOS performs up to 20 times faster than Commodore RAMDOS and provides full DOS command compatibility.
- Up to 32 1541/1571/1581 emulation or Native mode partitions.
- Separate power supply eliminates RAM data loss when turning off the computer; battery backup protects against power outages.
- Includes built-in JiffyDOS Kernel routines for high-speed disk access with JiffyDOS equipped disk drives.
- Software for copying files and complete disks included.

What is RAMDrive?

RAMDrive is a fresh new approach to RAM expansion for the Commodore 64 and 128. RAMDrive is a self contained battery backed cartridge with capacities of 512K, 1 Mb and 2 Mb. RAMDrive incorporates RL-DOS, an ultra-fast, easy-to-use operating system similar to the HD-DOS found in CMD HD series hard drives. This proprietary DOS allows various types of partitioning along with compatibility and speed unsurpassed by previous RAM Expansion systems.

- Compatible with vast amounts of commercial software as an ultra-fast RAM disk.
- RL-DOS operates up to 20 times faster than Commodore's RAMDOS.
- Power back-up eliminates the loss of files upon powering down the computer while the battery protects data during transportation or power outages.
- Available in 512K, 1 Mb and 2 Mb models at incredibly low prices.
- DOS includes JiffyDOS Kernel routines for high speed disk access with JiffyDOS equipped disk drives.
- Software for copying and GEOS compatibility included.
- Reset switch allows computer reset without losing data in RAMDrive.
- Disable switch allows RAMDrive to be disabled at any time.

RAMDrive w/512K \$149.95 RAMDrive w/1 Mb \$199.95 RAMDrive w/2 Mb \$289.95

Shipping: US: \$7.50 (UPS), \$14.00 (2nd day), COD add \$4.00, Canada \$15.00. See Ordering and Shipping information elsewhere in this ad for credit card information.

RAMDrive™

HIGH PERFORMANCE BATTERY
BACKED RAM DISK CARTRIDGE

Designed and manufactured by
PERFORMANCE
PERIPHERALS Inc.



CMD

Creative Micro Designs, Inc.

50 Industrial Dr., P.O. Box 646, East Longmeadow, MA 01028

Order line: 800-638-3263

BBS: 413-525-0148

Support: 413-525-0023

FAX: 413-525-0147

www.Commodore.ca

May Not Reprint Without Permission

MAIL RUN

Readers question the cost of publishing, welcome RUN's new productivity column, and search for Commodore's support of education.

LETTER TO THE PUBLISHER

I've subscribed to *RUN* since the first issue, but I now find myself continuing to use my C-128 without the support of, nor the need for, a magazine that is charging the same subscription price of \$22.97 for 12 issues instead of prorating its new ten-issue subscription to about \$19.

Other C-64/128-specific magazines are doing quite well at maintaining their advertisers. Why is *RUN* any different? The amount of money it costs to publish a magazine of this magnitude isn't that great. The true cost is about 47 cents per copy.

—DANNY P. ASH
BAKER, LA

RUN Publisher Stephen Robbins replies, "Allow me to express my appreciation for your loyal and dedicated support of *RUN* magazine through the years.

"I would like to take this opportunity to address the points you made in your letter.

"You will still receive 12 issues for the price of \$22.97. I apologize for the lack of clarity surrounding this point. (See "Letter From the Publisher," *RUN*, June/July 1990.)

"Other Commodore magazines are not doing well at maintaining their advertisers. *RUN* is the only publication remaining that serves the informational needs of the 8-bit user base. *Compute!*'s *Gazette* has ceased publication, and *INFO* magazine has refocused its coverage solely to target the Amiga market.

"It is true that it costs about 47 cents to manufacture a single copy of *RUN*. However, manufacturing costs are exclusive of staffing, postage, renewal notices, artwork, film development and stripping charges, equipment, telephone and fax charges, circulation management, fulfillment house costs, corporate administrative, legal and accounting services, and so forth.

"Our printer, Brown Printing Company, who also prints *Sports Illustrated* and *Time*, represents one of the largest national printers and always keeps abreast of the latest technology in printing/binding, enabling *RUN* to maintain the lowest subscription rate possible.

"The corporate philosophy of *RUN*'s par-

ent company, International Data Group, is first and foremost to serve the informational needs of its readership. *RUN* has attempted in every way to deliver a good value for the product. Granted, the magazine has decreased in size, yet the number of editorial pages has not been affected as greatly as one might expect.

"In order to continue publishing, *RUN* must rely on its readership for financial support. It's up to the reader to decide if he is getting a fair and equitable value for the money spent in subscription fees. The magazine will not survive beyond the next few years unless its readership feels the need for the information and is willing to pay for it."

PRO TIP ACCOLADES

Someone is reading my mind. What a great idea for a new column! After you've compiled enough material, the ProTips column should be published in book form.

I have had the same problem with geoCalc 64 that ProTip submitter Geoffrey Sullivan described—and solved—in your August/September issue of *RUN*. Keep the column coming; I need the helpful hints it provides.

—TERRY W. BASS
HELENA, MT

Thanks for the accolades, Terry. Many wrote in appreciation for the new column. Readers who have any undocumented, clever or creative tips they use with their own commercial productivity programs—especially *RUN*'s own programs—may submit them to ProTips, *RUN* Magazine, 80 Elm St., Peterborough, NH 03458. Be sure to state which version (if any) of a program your tip is for. If a tip is published, you'll receive a check for \$5.

—EDITORS

PRO TIP QUERY

Your ProTips column in the August/September *RUN* included a tip for the Flex File 128 database program. I've searched all the ads in magazines and catalogues and have called several mail order houses, but no one seems to have

heard of it. Do you know where I can get this program?

—F. C. HORN
JEKYLL ISLAND, GA

We received a number of letters and phone calls about this program. To order the Flex File 128 database, call 1-800-762-5645, or write Cardinal Software, 13646 Jefferson Davis Highway, Woodbridge, VA 22191.

—EDITORS

EDUCATION AND COMMODORE

It seems to me that Commodore, and perhaps *RUN*, have forgotten the enormous educational use of the C-64. I would like to see *RUN* provide more coverage of the educational market, with some success stories. This market, which is rejuvenated every year with new recruits, is an ongoing source of interest that you should explore.

—GRAHAM HODGKIN
DAGLISH, WESTERN AUSTRALIA

See the *RUNning Ruminations* column in the October 1990 issue for an editorial on Commodore and education and, in the same issue, the article, "Kidware Hit Parade," which describes *RUN*'s reviewers' favorite educational packages.

—EDITORS

WORLD OF AMIGA SHOW

I went to the World of Commodore show with high expectations. Boy, was I disappointed! All I saw at each table were Amigas running software. I was amazed at what the Amiga could do, but not to the extent that I'd ditch my C-64 system, considering that all my software and hardware would then become useless.

—DAVID M. FRIEDMAN
LARCHMONT, NY ■

A CALL TO READERS

Send your letters to Mail *RUN*, 80 Elm St., Peterborough, NH 03458. *RUN* reserves the right to edit letters for style, clarity and space.

BRIWALL

P.O. Box 129/58 Noble Street
Kutztown, PA 19530

24 Hour FAX Line 1-215-683-8567
Customer Service 1-215-683-5433
Technical Support 1-215-683-5699

1-800-638-5757

Outside the USA (1-215-683-5661)



PLEASE COME VISIT US!
Monday - Friday 9AM-6PM EST
Saturday 9AM-12 Noon EST

ACCESSORIES

Apro Extender 64 User Ribbon	\$19
Aprospan 4 Slot Cartridge Holder Covers	25
Final Cartridge V3	49
Iconroller	16
Joystick	call
Leroy's Cheatsheet 64 each	3
Leroy's Cheatsheet 128 each	7
Lightpen-Model 170c	69
Lightpen-Model 184c	39
Minimodem C (1200 Baud)	59
Minimodem C 2400 Baud	79
Mouse M3 (1351 substitute)	39
Paper	call
Passport MIDI w/Tape & Drum sync	150
Power Supply - C128 - Repairable	55
Printer Interface G-Wiz	29
Printer Interface Super Graphic Junior	42
Printer Interface Super Graphic GOLD	89
Quick Brown Box 128K	145
Quick Brown Box 256K	189
RAM Expander 1700 (128K)	90
RAM Expander 1750 clone	179
RAM Expander 1764 (refurb)	105
RS232 Deluxe Interface	39
Ribbons	call
Ribbon Renew - Re-Ink w/no Equip 5	
Video RAM 64K Cartridge (FULL)	50

BOOKS

1541 Repair & Maint. Handbook	\$16
1541 Troubleshooting & Repair Guide	17
1571 Internals+	17
500 C128 Questions & Answers	15
C128 Internals+	17
C128 Tips & Tricks	17
C128 Troubleshooting & Repair	17
C64 Troubleshooting & Repair Guide	17
CSM Prog Protection Manual 1	24
CSM Prog Protection Manual 2	29
GEOS Inside & Out+	17
K Jax Book Revealed 3	23
Lou Sanders Tricks & Tips	16
Superbase The Book 64/128	15
Twin Cities 128 Compendium #1	15
+means that a disk is available	call

GENERAL BUSINESS

CMS Accounting/128	129
CMS Inventory Module 128	53
Data Manager 64	17

Fleet System 4	52
Fontmaster 128 w/Speller	30
Fontmaster II/64	29
KFS Accountant 128	109
Leroy's Label Maker	24
Microlawyer	39
Paperclip 3	39
Paperclip Publisher	39
Partner 128	33
Pocket Dictionary 64/128	10
Pocket Filer 2	29
Pocket Planner 2	29
Pocket Superpak 2 (Digital)	67
Pocket Writer 3	46
Sideways 64/128	17
Superbase 128 - Version 3	39
Superbase/Superscript/book 128 pak	69
Superbase/Superscript/Book 64 pak	59
Swiftcalc 128 w/sideways	33
Swiftcalc 64 w/sideways	17
Technical Analysis System 64	29
Word Writer 3/128	33
Word Writer 5/64	30
RAM Expander 1700 (128K)	90
Write Stuff 128 w/spellchecker	27
Write Stuff 64 w/spellchecker	22
Write Stuff Busnss/Legl Templates	10

EDUCATION

Big Bird's Special Delivery	\$9
Calculus by Numeric Methods	27
Counting Parade	6
Designasaurus	20
Easy Sign	17
Evelyn Wood Dynamic Reader	17
Grover's Animal Adventure	9
Jungle Book (Reading 2)	19
Linkword:German	19
Linkword:French 2	19
Linkword:Spanish	19
Math (First Men on Moon)	19
Mavis Beacon Teaches Typing /C64	30
Mental Blocks	10
Morse Code Trainer	5
Numbers Show (The)	10
Peter Rabbit (Reading 1)	19
SAT Complete (Hayden SAT Prep)	26
Sky Travel	33
Stickbear ABC'S	27
Stickbear Math 1	27
Stickbear Numbers	27
Stickbear Reading 1	27
Stickbear Typing	37
Where in Europe Carmen Sandiego	27

Where in Time Carmen Sandiego	27
Where in USA is Carmen Sandiego	27
Where in World Carmen Sandiego	25
World Geography	20

ENTERTAINMENT

AD&D - Champions of Krynn	\$27
AD&D - Heroes of Flame	21
AD&D - Secret of Silver Blade	22
AD&D - War of the Lance	27
Battle Chess	29
Blue Angels	29
Blockout*	20
C128 80 Col Fun & Games Pak	45
C64 Games Spectacular Package	21
Chessmaster 2100	41
Centauri Alliance	25
Double Dragon II	25
Clue: Master Detective	22
Double Dragon II	23
Double Dribble	20
Dragon Wars	30
Duck Tales: Quest for Gold	27
F14 Tom Cat	20
F16 Combat Pilot	24
Flight Simulator II	33
Forgotten Worlds	20
Ghost Busters 2	20
Grave Yardage	17
Heat Wave: Offshore Racing	20
Hole In One - Miniature Golf	17
Iron Lord	20
Jack Nicklaus Golf	23
John Madden Football	27
Knights of Legend	33
Mean Streets	26
MicroLeague Baseball II	27
Monday Night Football	26
Mondo's Fight Palace	30
Omega	20
OmniPlay Horse Racing	23
Panzer Battles	27
Power Drift	20
Prime Time Hits Vol1	20
Prime Time Hits Vol2	21
Pro Tennis Tour	21
Puffy's Saga*	21
Questmaster	24
Red Storm Rising	30
Scrabble	21
Sentinel Worlds	24
Sex Vixens From Space	20
Shoot 'Em Up Kit	10

Sim City	20
Skate Wars	21
Ski or Die	21
Sports Collection	23
Starflight	27
Street rod	27
Strike Aces	27
TV Sports Football	21
Teenage Mutant Ninja Turtles*	20
Test Drive 2: European Challenge	10
Test Drive 2: Muscle Cars	10
Test Drive 2: The Duel	19
The Cycles: Grand Prix Racing	23
The Game of Harmony	20
Top 20 Solid Gold	10
Thud Ridge	24
Ultima Trilogy (1,2,3)	39
Ultima V	39
Wheel of Fortune 2	12
Wheel of Fortune 3	8
Windwalker	27
Wings of Fury	20
Wizardry - Heart of Maelstrom	27
Wizardry Trilogy	26

GEOS RELATED

Becker BASIC - GEOS	\$35
Desk Pak Plus - Geos	22
FontPak Plus -GEOS	22
GEOS 64 v 2.0	39
Geocalc	35
Geochart	22
Geopublish 64	39
Geos 128 V2.0	45

Bible Search NIV-New T.	25
Bridge 5.0	20
Dream Machine Analyze/64	19
Family Tree C64/C128 and LDS	39
Great War	15
Tarot 128	15

UTILITIES/LANGUAGES

1581 Toolkit V2/ Dos Ref	\$29
Basic 8-How to Get the Most Out of	17
Basic Compiler/128	39
Basic Compiler/64	29
Big Blue Reader V3.1 (64/128)	32
Bobsterm Pro 128	10
CP/M Kit	42
CSM Newsletter Compendium	29
Cobol 128	29
Digitaltalker 128	20
FasTrac/128	23
Gnome Kit 64/128	29

WE NOW CARRY JIFFYDOS!

JiffyDOS v6.0 64	\$50
JiffyDOS v6.0 128	\$60

Please specify computer and drive when ordering

Call for CMD Hard Drives

Starting as low as \$589 for 20MB!

Gnome Speed Compiler 128	29
Kracker Jax Super Cat	22
Kracker Jax Vol 1-7 + Shotgun2	27
Maverick V5.0 Copier	29
Merlin 128	45

WHY CHOOSE BRIWALL?

WE'RE
MAIL ORDER
SPECIALISTS!

SATISFACTION
GUARANTEED!

- In-House Technical Support
- A No-surprises Shipping Policy
- Our FIFTH Year in Business
- No Surcharge for Charge Orders
- No Holding of Personal Checks
- A Fair Return/Exchange Policy



1541/1571 DRIVE ALIGNMENT

This excellent alignment program is a must-have for every Commodore owner. Easy to use, it helps you to align your drive so that it runs just as if it were new! The simple instructional manual and on-screen help prompt you through the alignment procedure and help you adjust the speed and head stop of your drives. It even includes instructions on how to load the alignment program when nothing else will load!

Don't be caught short! We get more Red Label orders for this program than any other program we sell. Save yourself the expense! Order now, keep it in your library, and use it often!

Works on the 64, 128 and SX64 for the 1541, 1571, 1541-II and compatible third party drives.
STILL ONLY \$25

LOOKING FOR PROGRAMS MADE JUST FOR YOUR 128?

NEWS MAKER 128

Desktop publishing for the 128D (or the 128 with 64K video RAM upgrade). **ONLY \$17**

SKETCHPAD 128

Complete drawing system for the Commodore 128 and 1351 mouse. **JUST \$17**

SPECTRUM 128

80-column paint package for the 128D (or 128 with 64K video RAM upgrade). **ONLY \$21**

HOME DESIGNER 128

Professional object-oriented CAD package for the Commodore 128. **OUR PRICE ONLY \$39**

BASIC 8 Package

Here's a special deal on a complete Basic 8 library. You get both Basic 8 and the Basic 8 Toolkit at one low price. **OUR PACKAGE PRICE \$35!**

CREATIVITY/GRAPHICS

Animation Station	\$65
Award Maker Plus	29
Billboard Maker	25
Business Card Maker	29
Cadpak 128	39
Cadpak 64	29
Certificate Maker	14
Colorize 128	12
Computer Eyes	105
Doodle	29
Flexidraw 5.5	25
Home Designer Circuit Symbol Lib	10
I Paint	29
Icon Factory	25
Label Wizard	21
Newsroom	14
Photo Finish	19
Poster Maker 128	24
Printmaster Plus	25
Printshop	30
Screen F/X	25

PERSONAL

Bible Search KJV-New T.	\$20
Bible Search KJV Old&New T	60
Bible Search NIV Old&New T	65

Merlin 64	35
Protoline BBS 128	29
Prototerm 128	12
Super 81 Utilities 128 or 64 each	12
Super Aide 64	25
Super C 128 or 64	45
Super Disk Librarian 128 or 64 each	19
Super Disk Utilities 128	25
Super Pascal 128 or 64 each	45
Super Snapshot V5.0	59
Super Snapshot V5.0 w/128 disble	65
SysRES Enhanced	16

We maintain an enormous inventory of Commodore 64 and 128 software. If you don't see what you want, **CALL!**

Titles marked with * were not yet available when the ad was prepared. Please call for availability. Titles in **BOLD** are new items

SHIPPING POLICY: ALL ORDERS received before 3PM EST will normally be shipped within 2 business days. All UPS shipments are sent Signature Required/No Driver Release. Add the following shipping charges to your Total software order.
UPS: Ground \$4.50 (cont. USA ONLY); Air/Rush \$8.00 (includes Puerto Rico/Hawaii); Overnight \$12.00 + \$2.50 PER ITEM (must be received by 12 Noon.)
Priority Mail: USA \$4.50 (Includes APO/FPO); Canada/Mexico \$7.00; Other Foreign \$4.00 Handling + Actual Shipping + Insurance.
HARDWARE: Shipping charges for all hardware are \$4.50 handling + actual shipping charges + insurance.

ORDERING INSTRUCTIONS: For your convenience, you can place a phone order 24 Hours/7 days a week on our TOLL-FREE LINE 1-800-638-5757. Outside the USA, please use (215) 683-5433. Price, availability, and compatibility checks are also welcome on our order line, Monday thru Friday, 9:30AM - 4:30PM EST. AFTER HOURS Orders Only Please! When placing an order, please specify your computer model, home & daytime telephone number, shipping address, charge card number, expiration date and name of bank.

ACCEPTED PAYMENT METHODS: We gladly accept Personal Checks (no holding), Money Orders, VISA, MASTERCARD, School Purchase Orders, or COD (\$4.00 additional - for established Briwall Customers ONLY). All checks must be in US Dollars and drawn on a US bank. There is no surcharge for credit cards and your card is not charged until we ship!

RETURN POLICY (for Non-Entertainment software and Accessories ONLY): We have a liberal return policy to better service your needs. If within 15 days from the time you receive an item, you are not satisfied with it for any reason, you may return it to us for either a refund, exchange, or open credit. REFUNDS ARE SUBJECT TO A 20% RESTOCKING FEE PER ITEM RETURNED (\$10.00 MINIMUM PER ITEM). EXCHANGES/OPEN CREDITS will gladly be issued for the full purchase price of the item. **DEFECTIVE** items, Entertainment software, Hardware items and Special Order items will be repaired or replaced with the same item only.

TECHNICAL SUPPORT CALL (215) 683-5699, Monday - Friday, 9am - 5pm EST.
We do our very best to help you with your product selections before you order, and after you receive your product. General questions, such as price, compatibility, etc., will be handled by our order staff at the time you place your order. BUT, if you have specific, detailed questions about a product you will get the most help from our Technical Support Line.

SOLID PRODUCTS...SOLID SUPPORT

www.Commodore.ca
May Not Reprint Without Permission

SOFTWARE GALLERY

Sequels—a role-playing game and a “spirited” adventure—and sports—boat racing and football—top this month’s lineup.

By BETH S. JALA

CHAMPIONS OF KRYNN A-

Lots of Combat Action

Will Test Your Survival Skills

In this Fantasy Sequel

When the great War of the Lance ended, Takhisis was barred from the world of Krynn and her dragon legions were shattered. Never again would the Dark Queen’s magic transform dragon eggs into man-like dragon fighters—or so it was believed! Your party of six volunteers had barely begun a patrol of Northeast Ansalon when they encountered rumors about an arch-mage draconian named Myrtani, who planned to create a new mutant horde.

Champions of Krynn reflects considerable refinement in the computerization of dungeon and dragon games. Unlike SSI’s earlier game, Pool of Radiance, Krynn offers a single strong scenario, a clear-cut ending and even a victory celebration. To support the larger, more involved story line, you’ll find on-screen text that supplements the numerous Journal and Tavern Tale readings.

Most of the action is set in the outposts, streets, dungeons, temples and towers of six cities. There you get a 3-D, forward view with coordinates and optional top-down display to aid in mapping. Aside from the fun of discovery, explorations yield assorted shops, taverns, treasures, valuable information and the inevitable hostile encounters.

If mystery, puzzles and a worthy quest are the “spice” of adventuring on Krynn, then the “meat and potatoes” is monster bashing. This translates into an on-going concern for building character attributes, and the chance to try out your party in some of the very best tactical combat available.

One of the challenges in Krynn is maneuvering individual characters against a variety of computer-directed adversaries. Beginning heroes tend to encounter goblins, bugs and other weakies, so even new players can easily



Command a party of six to victory in Champions of Krynn.

learn the ropes. The real fun begins with parties of high-level warriors backed by dragons and evil spell casters!

Although supplied with extensive, illustrated manuals, Krynn’s documentation is guilty of some important omissions. Keyboard input works best during combat, yet nowhere is the key

pattern shown. (It’s 1–8 clockwise, top number keys only.) There’s also no reference to the game’s initial “Disable Fastloader? (Y/N)” prompt. (Respond No to use the program’s fastloader software; Yes to use a cartridge. In several timings versus a low cost cartridge, the software proved notably faster. With no cartridge, you’ve got a game so slow, it’s almost unplayable.) Finally, remember to disconnect or turn off drive 2; otherwise, the game will eventually crash.

With colorful, partially animated graphics and good sound, Krynn follows through with absorbing, well-planned combats and a long-playing, multi-branching scenario spanning six disk sides. Expect a solid challenge to your wits as well as your sword arm when you lead the Champions of Krynn! (Strategic Simulations, Inc.; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/\$39.95.)

—JEFF HURLBURT
HOUSTON, TX

REPORT CARD

A Superb!

An exceptional program that outshines all others.

B Good.

One of the better programs available in its category. A worthy addition to your software library.

C Average.

Lives up to its billing. No major hassles or disappointments here.

D Poor.

This program has some problems. There are better on the market.

E Failure.

Many problems; should be deep-sixed!

GHOSTBUSTERS II A-

If Spirits Invade Your

Computer Screen, “Who Ya

Gonna Call. . . Ghostbusters!”

After only five years of relative peace, New York City again finds itself in deep supernatural trouble. And once more, Peter, Egon, Ray and Winston must answer the call, this time in Ghostbusters II.

Inspired by the hit movie, the software has three major segments. In the first, you use the keyboard and a joystick to control a ghostbuster who dangles from a rope. His mission is to descend to the bottom of a shaft and take a sample of mood slime that flows in a subterranean river.

Making your quest hazardous are spectral hands that suddenly materialize and try to saw through the rope; meanwhile, other evil spirits strive to steal all your ghostbuster’s strength and ▶

Software Discounters



International



The Hilarious best selling quick draw game is now on computer. Built in drawing program. 1 to 4 players.

PICTIONARY

- List \$29.95
- ABACUS BOOKS
 - GEOS Inside & Out\$13
 - GEOS Tricks & Tips\$13
 - ABACUS SOFTWARE
 - Cad Pak\$25
 - Super G64 or 128\$39 Ea.
 - Super Pascal 64 or 128 \$39 Ea.
 - ACCOLADE
 - Blue Angels Flight Sim\$19
 - Harmony\$19
 - Heat Wave Boat Racing\$19
 - Jack Nicklaus Golf\$23
 - JN Golf 1990 Courses\$9.88
 - JN Golf Champ Courses \$9.88
 - JN Golf Int'l Courses\$9.88
 - Steel Thunder\$14
 - Strike Aces\$19
 - Test Drive 2: The Duel\$23
 - TD 2: Europe Scenery\$9.88
 - TD 2: Muscle Cars\$9.88
 - TD 2: Calif. Scenery\$9.88
 - TD 2: Super Cars\$9.88
 - ACTIVISION/GAMESTAR
 - Battlechess\$25
 - Crossbow\$19.88
 - Die Hard\$19
 - Dragon Wars\$29
 - F14 Tomcat\$25
 - Face Off Hockey\$19
 - Ghostbusters 2\$19
 - Monda's Fight Palace\$19
 - Power Drift\$19
 - AMERICAN EDUCATIONAL
 - US History\$12
 - World History\$12
 - ARTWORX
 - Bridge 5.0\$21
 - Strip Poker\$19
 - S.P. Data Male #2\$14
 - S.P. Data Female #1 or 3\$14
 - BERKELEY SOFTWAREKS
 - Geos 128 2.0\$44
 - Geo-Calc 128\$44
 - Geo-File 128\$44
 - Geos 64 (2.0)\$39
 - Desk Pack Plus 64\$19
 - Font Pak Plus 64\$19
 - Geo-Chart 64/128\$19
 - Geo-File 64\$33
 - Geo-Programmer 64/128\$44
 - Geo-Publish 64/128\$33
 - BRODERBUND
 - Carmen S.D. - Europe\$25
 - Carmen S.D. - Time\$25
 - Carmen S.D. - USA\$25
 - Carmen S.D. - World\$23
 - Centauri Alliance\$19
 - OmniPlay Basketball\$23
 - OmniPlay Horse Racing\$23
 - Pictionary\$19
 - Print Shop\$26
 - P.S. Companion\$23
 - P.S. Graphics Holiday\$16

SDI Price \$19

- Sim City\$19
- Wings of Fury\$19
- CINEMAWARE/SPOTLIGHT
- T.V. Sports Football\$21
- Dark Side\$21
- Death Bringer\$21
- Speedball\$21
- Total Eclipse\$21
- CMS
- General Acct. 64 or 128\$119 Ea.
- Inventory 128\$49
- COSMI
- Chomp!\$16
- Tro 20 Solid Gold\$10.88
- DATA EAST
- ABC Mon Nite Football\$25
- Bad Dudes\$19
- Batman The Movie\$19
- RoboCop\$23
- Tag Team Wrestling\$14
- DAVIDSON
- Algebra\$19
- Math Blaster\$19
- Spell It\$19
- Word Attack\$19
- DESIGNWARE
- Body Transparent\$19
- Designasaurus\$19
- DIGITAL SOLUTIONS
- Pocket Filer\$19
- Pocket Planner\$19
- Pocket Writer 3 64 or 128\$44 Ea.
- Superpak 2\$59
- DIGITEK
- Hole in One Min. Golf\$19
- ELECTRONIC ARTS
- Altered Beast\$23
- Bards Tale 2\$16
- Beyond the Black Hole\$26
- Blockout\$21
- Chessmaster 2100\$26
- Crackdown\$23
- Dragon's Lair\$19
- Empire\$26
- F-16 Combat Pilot\$23
- Golden Ax\$23
- Hunt for Red October\$21
- Iron Lord\$26
- Jordon Vs. Bird\$19
- King's Bounty\$26
- LoopzCall
- Madden Football\$26
- Maniac Mansion\$14
- Mavis Beacon Typing\$26
- Risk\$17
- Might & Magic 1\$26
- Napoleon in Russia\$23
- Night BreedCall
- Night ShiftCall
- Panzer Battles\$23

WE ARE THE #1 SOFTWARE SOURCE FOR THOUSANDS OF COMPUTER OWNERS

If you've never shopped with us before, now is the time to find out why so many valued customers have!

- Speedy Delivery
- Deep Discounts
- Astronomical Selections
- Free shipping on orders over \$100
- No surcharge on MC/VISA
- Overnight & 2 day shipping available



A radical value just in time for Christmas. 4 games for the price of 1! Winter games, Summer games 2, Calif. games, World games.

EPYX GAME SERIES

- List \$34.95
- Pipe Dream\$14
 - Pro Tennis Tour\$21
 - Project Firestart\$21
 - Puffy's Saga\$21
 - Sentinel Worlds\$23
 - Skate Wars\$21
 - Ski or Die\$21
 - Starflight\$26
 - Street Rod\$26
 - Turbo Out Run\$23
 - UntouchablesCall
 - Vegas Gambler\$21
 - Zak McKracken\$14
 - EPYX - ON SALE!
 - Devon Aire\$13.88
 - Game Series 4 Pack!\$23
 - Includes: Calif., Winter, World & Summer Games 2
 - Mind-Roll\$13.88
 - Snow Strike\$13.88
 - Sports-A-Fiori\$15.88
 - GAMETEK
 - Prime Time Hits Vol. 1\$19
 - Includes: Hollywood Sq., Super Password and Wheel of Fortune

SDI Price \$23

- Dr. Doom's Revenge\$23
- Magic Candle\$25
- Stunt Track Racer\$19
- Wierd Dreams\$19
- MELBOURNE HOUSE
- Shark AttackCall
- World Trophy Soccer\$19
- MICROILLUSIONS
- Blackjack Academy\$25
- Sky Travel\$32
- MICROLEAGUE
- M. L. Baseball 2\$25
- MICROPROSE
- Airborne Ranger\$25
- F-15 Strike Eagle\$14
- F-19 Stealth Fighter\$29
- Gunship\$25
- Pirates\$29
- Red Storm Rising\$29
- Silent Service\$14
- MINDSCAPE
- Action Fighter\$21
- Afterburner\$23
- Alien Syndrome\$23
- Days of ThunderCall
- Guantlet 2\$21



Design and print your own personalized cards, banners, posters and more featuring the Jetsons and Flintstones.

JETSONS/FLINTSTONES PRINT KIT

List \$19.95

- SIMON & SCHUSTER
- Star Trek: Rebel\$23
- Typing Tutor 4\$25
- SIR TECH
- Heart of Maelstrom\$25
- Wizardry Trilogy\$29
- SSI
- "Hintbooks Available"Call
- Battles of Napoleon\$32
- Buck Rogers: Countdown\$26
- Champions of Krynn\$26
- Curse of Azure Bonds\$26
- D.M. Mast. Ast. 1 or 2\$21 Ea.
- Dragons of Flame\$14
- Dragon Strike\$26
- Hillstar\$26
- Heroes of the Lance\$21
- Overrun\$32
- Pool of Radiance\$26
- Secret of Silver Blades\$26
- War of the Lance\$26
- SPINNAKER
- Complete SAT\$25
- SUBLOGIC
- Flight Simulator 2\$32
- F.S. Scenery DisksCall
- Hawaii Scenery\$19
- TIMEWORKS
- Data Manager 2\$14

SDI Price \$14

- Swiftcalc/Sideways\$14
- Word Writer 5\$25
- UNISON WORLD
- Print Master Plus\$23
- P.M. Art. Fantasy\$16
- WEEKLY READER
- Stickybear Series:
- ABC's\$14
- Math 1 or 2\$14 Ea.
- Numbers\$14
- Opposites\$14
- Reading\$14
- Read' Comprehension\$16
- Shapes\$14
- Spellgrabber\$16
- Town Builder\$16
- Typing\$16
- ACCESSORIES
- Animation Station\$49
- CompuServe Starter Kit\$19
- Sony 5 1/4 DSDD \$6.99 Bx. Disk Case (Holds 75)\$6.88
- Disk Drive Cleaner\$4.88
- Iccontroller\$14
- Winner M3 Mouse\$33
- Wico Bat Handle Joystick\$17
- Wico Boss Joystick\$12
- Wico Ergostick Joystick\$16
- XETEC Super Graphix Jr.\$39



CALL OR WRITE FOR OUR FREE FALL 1990 COMMODORE CATALOG

\$10 BARGAIN BASEMENT

- HI-TECH EXPRESSIONS
- Beetle Juice Print Kit\$14
- Elec. Co. Learning Lib. 1\$16
- Jetsons/Flintstones Print Kit \$14
- Win. Lose or Draw Deluxe \$16
- INFOCOM
- Battletech\$25
- INKWELL SYSTEMS
- #170C Deluxe LP\$69
- #184C Light Pen\$44
- Flexidraw 5.5\$23
- Graphics Integrator 2\$19
- KONAMI/ULTRA
- Blades of Steel\$19
- Castlevania\$19
- Teen Mutant Ninja Turtles \$19
- MASTERTRONIC/VIRGIN
- Clue\$19
- Double Dragon 2\$23
- Mega 10 Game Pack\$23
- Monopoly\$19
- Risk\$19
- Scrabble\$19
- SpotCall
- Super Off-Road\$19
- MEDALIST/MICROPLAY
- 3-D Pool\$19
- Shinobi\$21
- Thunder Blade\$23
- MISC UTILITIES
- Final Cartridge 3\$47
- Maverick Utilities V.5\$25
- Superbase 64\$25
- Superbase 128\$33
- Super Snapshot (V.5)\$58
- ORIGIN
- Autoduel\$25
- Knights of Legend\$33
- Omega\$33
- Quest for Clues Book 2\$19
- Space Rogue\$33
- Tangled Tales\$19
- Times of Lore\$25
- Ultima 4 or 5\$39 Ea.
- Ultima 6
- coming Nov. they say\$44
- Ultima Trilogy\$39
- Windwalker\$25
- PROFESSIONAL
- Fleet System 2 Plus\$39
- Fleet System 4 128\$49
- PSYGNOSIS - ON SALE!
- Balisticx\$16.88
- Captain Fizz\$18.88
- *Aif\$9.88
- *Arkanoid 2: Revenge\$9.88
- *Beyond Dark Castle\$9.88
- *Bubble Bobble\$9.88
- *Candyland\$9.88
- *Caveman Ugh-Lympics\$9.88
- *Chutes & Ladders\$9.88
- *Double Dare\$9.88
- *Double Dragon 1\$9.88
- *EZ Working Filer\$6.88
- *EZ Working Writer\$6.88
- *Ferrari Formula 1\$9.88
- *4th & Inches Football\$9.88
- *Grave Yardage\$9.88
- *Hitchhiker's Guide\$9.88
- *Hollywood Squares\$9.88
- *Kings Beach Volleyball\$9.88
- *Last Ninja\$9.88
- *Learn the Alphabet\$4.88
- *Learn to Add\$4.88
- *Learn to Spell\$4.88
- *Leather Goddesses\$9.88
- *Looney Tunes Print Kit\$9.88
- *Magic Johnson's B-Ball\$9.88
- *Marble Madness\$9.88
- *Muppet Print Kit\$9.88
- *Murder on the Atlantic\$9.88
- *Music Const. Set\$9.88
- *Nurancrom\$9.88
- *Newroom\$9.88
- *Newroom Art
- *#1, 2 or 3\$9.88 Ea.
- *Operation Wolf\$9.88
- *Press Your Luck\$9.88
- *Print Power\$9.88
- *Qix\$9.88
- *Rambo 3\$9.88
- *Rampage\$9.88
- *Remote Control\$8.88
- *Renegade\$9.88
- *Revenge of Defender\$9.88
- Sesame Street Series:
- *Astro Grover\$6.88
- *Big Bird's Special Del.\$6.88
- *Ernie's Big Splash\$6.88
- *Ernie's Magic Shapes\$6.88
- *Muppet Print Kit\$9.88
- *Sesame St. Print Kit\$9.88
- Shoot'em Up Construction
- *Set\$9.88
- *Sky Shark\$9.88
- *Super Password\$9.88
- *Tetris\$9.88
- *Wasteland\$9.88
- *Win Lose Draw 2 or Jr.\$8.88
- *Now at New Low SDA Price

POLICIES & PROCEDURES

- SHIPPING: Continental U.S.A. - orders under \$100 add \$4; Free shipping on orders over \$100; Call for details on overnight & 2 day shipping. AK, HI, FPO, APO - shipping is \$5 on all orders. Canada and Puerto Rico - shipping is \$7.50 on all orders. PA residents add 6% sales tax on the total amount of orders including shipping charges.
- UPS 2 day and overnight shipping available - Call.
- Orders with cashiers checks or money orders shipped immediately on in stock items. Personal and company checks, allow 14 business days clearance. No C.O.D.'s!
- Defective merchandise replaced within 60 days of purchase. Other returns subject to 20% restocking charge. You must call customer service for return authorization - 412-361-5291, 9-5:30 EST.
- Prices and availability are subject to change.

HOW TO ORDER

Call us & use your Mastercard or Visa
USA/CANADA **1-800-225-7638**

Order Line Hours: Mon-Thurs 9:00 A.M.-9:00 P.M.,
Fri-9:00 A.M.-7:00 P.M., Sat-10:00 A.M.-4:00 P.M. EST.

• Send Money Orders or Checks to:

Software Discounters Int'l.
5607 Baum Blvd. Dept. RN
Pittsburgh, PA 15206

- Fax MC/VISA orders with our fax #1-412-361-4545
- Order Via Modem on CompuServe, Genie & QLink.
- School purchase orders accepted.

courage by shooting or grabbing him. You can use a proton beam, bombs and shields against these eerie enemies, as you search the shaft's walls for bottles of power-restoring elixir.

Successfully collecting the slime brings you to the program's second part, which takes place on Broadway. Here the Statue of Liberty protects the ghostbusters by firing her torch at all sorts of attacking horrors. She weakens when a spirit hits her, and the game's heroes must help by scooping up invigorating ooze from the remains of blasted spooks.

The software's final segment is set at the Museum of Art. Your first task is to drop the ghostbusters safely down into a gallery via a rope. Once they're there, you constantly switch from one man to another as you move them to different positions, and you also have them continually exchange weapons.

The ghostbusters' goal is the defeat of Janosz, the museum's noxious curator, and the rescue of the kidnapped Baby Oscar. The game's grand finale comes with the destruction of Vigo, the bloodthirsty fiend who's behind all of New York's paranormal problems.

The program's graphics are excellent—they include digitized pictures from the film. The animation and sound are also outstanding.

Even more impressive than the sensory effects is the game's intriguing complexity. Its superb arcade sequences are skillfully blended with some fascinating tactical challenges, making the software extremely appealing.

Be warned, however, that this is not an easy game. Also, the program will give your disk drive quite a workout.

Nevertheless, despite its potential shortcomings, players who want to kick a little ectoplasm will love *Ghostbusters II*. It's one program that truly delivers some "spirited" fun. (*Activision; distributed by Mediagenic, 3885 Bohannon Drive, Menlo Park, CA 94025. C-64/\$29.95.*)

—WALT LATOCHA
OAK PARK, IL

TV SPORTS FOOTBALL B—

Finally Here for

Your 64—Just in Time

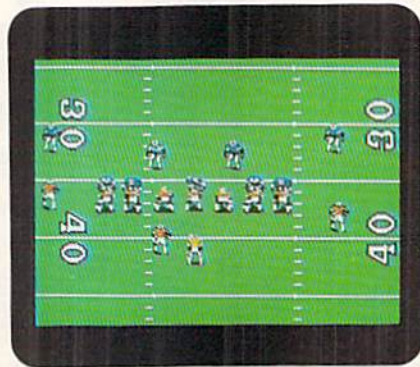
For the NFL TV Season

TV Sports Football (TVSF) is as close as an armchair quarterback can come to participating in a televised football game. The software contains much of

the same hype and hoopla: the opening broadcast theme, the sports anchorman, sponsors and even halftime reports.

The Cinemaware Football League (CWFL) consists of 28 teams organized to resemble NFL teams. CWFL competition revolves around a 16-game season, complete with playoffs and the CWFL Championship (read: Super Bowl).

Once you've made a league data disk, you can roll up your sleeves and delve into the task of editing teams to suit your taste. Then, when you've had a



The players line up for the snap of the ball in TV Sports Football.

chance to practice with your new team, it's off to the field.

After the opening coin toss, you're presented with the play-calling screen for both offense and defense. This screen also contains the scoreboard, timeouts, quarter, down and yards-to-go information. Play selection is accomplished via joystick. Onscreen diagrams of the different formations and "canned" plays make it easy for beginners to quickly choose and execute plays. If the program doesn't detect joystick movement after a few seconds, the computer automatically takes control of the game for that play.

The scene then switches to an overhead view of about 30 yards of the field. Here you can either execute the play as designed or take control of any one of several key players prior to the ball snap.

I was surprised by how faithful the graphics and sound of TVSF are to the original Amiga version—if not in quality, then at least in content. The colorful screens are very well drawn, and the players are large and detailed enough so that they don't get lost in the crowd during play execution. While controlling the players on the field is easy enough in theory, it can be a bit tricky in practice. The joystick seems overly sensitive, so it will take time before you'll become as proficient at tackling, passing

and running the ball as the computer.

My only real complaint about this game revolves around the fact that Cinemaware couldn't fit team and individual statistics into the C-64 version as they had for the Amiga. Without the stats, which, in my mind, are almost as important as playing the game itself, TVSF may be seen as just another pretty face with little substance. But, then again, what a face! (*Cinemaware; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/\$29.95.*)

—JOHN RYAN
BILOXI, MS

HEATWAVE B—

Landlubbers, Stay Ashore

When the Power Boats

Rev Up!

Heatwave is a superboat racing simulation that puts you at the helm of any of four powerful superboats: the Cougar Cat, the Warlock Cat, the Top Gun Cigarette, and for you Miami Vice fans, the Don Johnson Special. You choose one of six race courses—four are off the Miami coast, one is on the Mississippi River, and the other course is in San Francisco Bay.

You get only one pit stop per race—before you start. At the pits, you can add or remove gas, or pick up a spare propeller or shaft. Naturally, each item you add makes your boat heavier and, therefore, slower.

Piloting your superboat may prove tricky at first, but there is a practice mode to help you get your sea legs. Try to get your boat moving as quickly as possible without overheating the engine or causing damage to the shaft. Visual and audible warnings let you know when you should ease back on the throttle. Also, as you gain speed, and the boat's hull begins to lift out of the water, you must carefully adjust the trim to keep your boat from bobbing wildly over the waves—not an easy task when you're going 100 miles per hour!

Before you race, you must qualify by completing a solo run within a limited amount of time. You may also attend a drivers' meeting where you can bone up on some of the finer points of superboat racing.

Heatwave is a slick simulation but, frankly, not one of Accolade's best. The game features fairly decent graphics and makes good use of sound, but the

SOFTWARE GALLERY

action, while fast and furious compared to an afternoon in a sailboat, doesn't offer the same level of excitement as, say, Grand Prix Circuit. This is because,



Check out this boat to race against Don Johnson in Heatwave.

although there are four other super-boats on the same course, they seem more like computer-generated props than competing racers. (*Accolade*, 550

S. Winchester Blvd., Suite 200, San Jose, CA 95128. C-64/\$29.95.)

—BOB GUERRA
CHARLESTOWN, MA

AT A GLANCE

X-MEN: MADNESS IN MURDERWORLDA

Professor Charles Xavier, founder of the X-Men (a band of mutant people born with extraordinary powers) has been snatched by his old foe Magneto, Blob and the Juggernaut, and spirited off to Murderworld, the killing ground and private world of the sociopathic Arcade. To the professor's rescue come six of his students: Cyclops, Storm, Wolverine, Nightcrawler, Colossus and Dazzler.

What is unique about this program is that the gamer, rather than having to

play all the way through as one of the X-Men, can switch between each of them during gameplay. This way, each character's various talents and attributes contribute to the final outcome.

Advanced gamers can attempt prowling through the 27 different levels on their own. Others might want to purchase the clue book, which contains a map of the entire maze.

Check out the users' manual if you're unfamiliar with the characters. It features several pages from Marvel's heroes and villains handbook. A 16-page Marvel comic is also included. By reading each, players will gain insight into how the X-Men work, both as individuals and as a solid fighting unit.

Perks of the program include Pause and Save features, essential in a game of this nature. X-Men is thoroughly enjoyable and totally engrossing. (*Paragon Software*; distributed by Medalist International, 180 Lakefront Drive, Hunt Valley, MD 21030. C-64/\$34.95.)

—BOB SODARO ■

GEORAM
Compatible

Make your Commodore a Speed Demon



TURBO MASTER CPU™ 4.09 MHz Accelerator Cartridge for C64

- Four times faster processing speed combined with five times faster disk Load and Save.
- Software actually runs four times as fast. Basic, word-processor scrolling and search, spreadsheets, assemblers, graphics, GEOS etc. Compatible with most software.
- Jiffy DOS compatibility option available (by Creative Micro Designs). HD Compatible.
- Why upgrade when you can enjoy dazzling performance from your C64 now?
- Only \$199. Shipping included, 10-day satisfaction guarantee.

Data acquisition and control interfaces C64 & C128



80-line Simplified Digital I/O Board
with ROM cartridge socket
Model SS100 Plus \$139. Additional \$129.



Original Ultimate Interface
Universally applicable dual 6522 versatile interface adapter board.
Model 64IF22 \$169. Additional \$149.

16-Channel, 8-bit analog-to-digital conversion module.
Requires model 64IF22. Model 64IF/ADC0816 \$69.

Interface boards include extensive documentation and program disk. Manuals available separately for examination. Call or write for detailed brochure.

Resources for Serious Programmers.

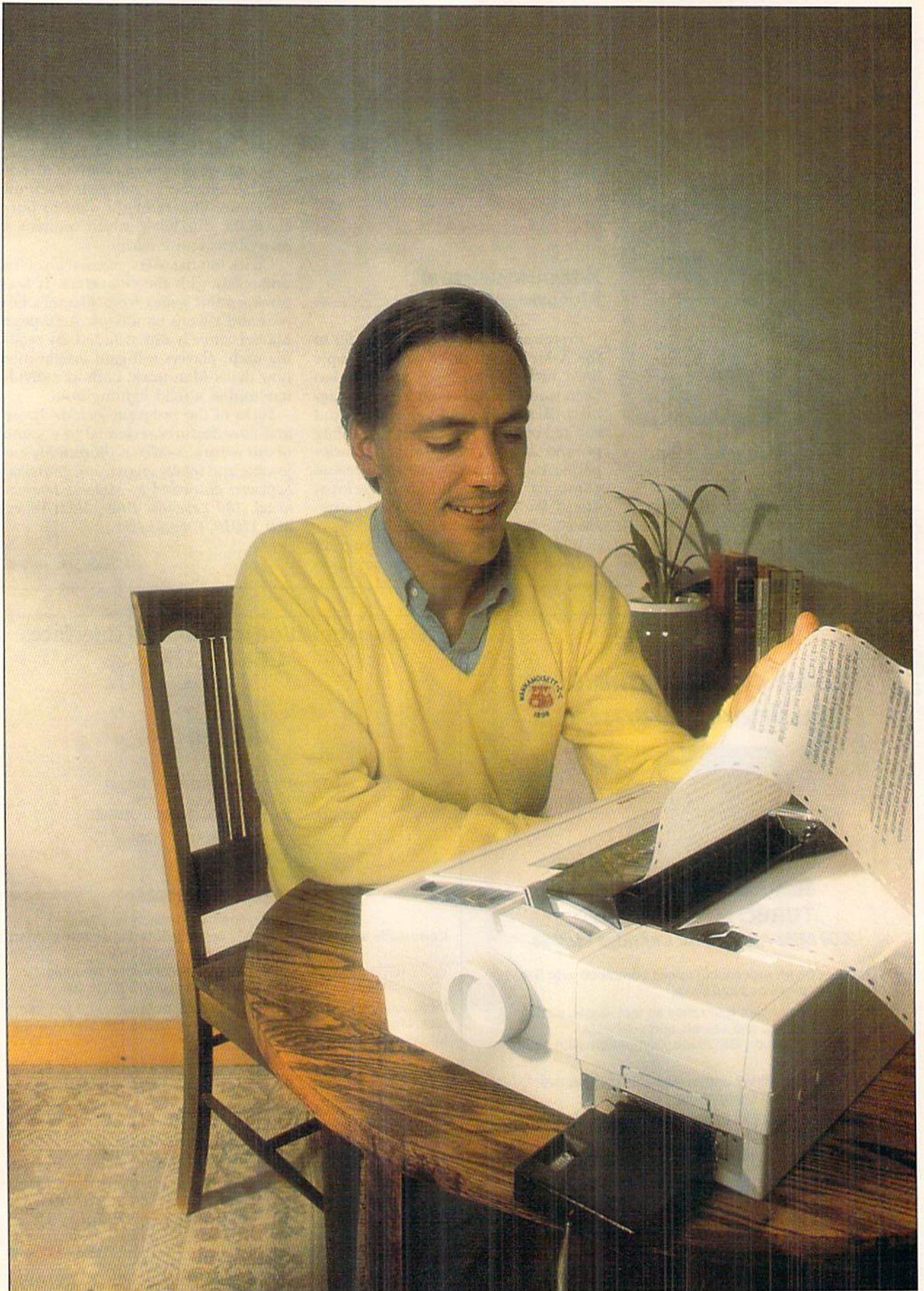
- Symbol Master Multi-Pass Symbolic Disassembler. C64 & C128. \$49.95
- PTD6510 super-powerful Symbolic Debugger. C64. \$49.95
- MAE64 6502/65C02 Macro Editor/Assembler. \$29.95
- C64 Source Code Book. Kernal and Basic ROMs. \$29.95

"We engineer miracles."

SCHNEDLER SYSTEMS

Dept. R 67, 25 Eastwood Road, P.O. Box 5964
Asheville, North Carolina 28813 Telephone: (704) 274-4646

VISA and MasterCard accepted.
All prices include shipping
prepaid to US addresses.



Q & A PRINTER PRESCRIPTION

Here are the remedies to ten of your most common concerns about printers.

IN YEARS PAST, I've written printer articles covering what was new and which printers were the best investment for your hard-earned dollar. This year, I'll answer ten printer questions commonly asked by *RUN* readers. My aim is to help you find the printer that's right for your needs, and then get it to work properly with your C-64 or C-128. I'll wrap up with a look at two new low-end Commodore-compatible printers (see "Two Worth Noting" sidebar accompanying this article); but first, some general remarks.

The 9-pin printer of the 90s rivals many computer systems in technological sophistication. Four or five years ago, printer manufacturers began improving the quality of their products and increasing the number of features offered. The new printers can print faster, more quietly and in multiple fonts. They can also handle business envelopes, mailing labels and single sheets of business stationery with the greatest of ease. Older printers nearly choked on anything that deviated from continuous sheets, and many were reluctant to print on even that!

Nearly every printer available today requires a Commodore-compatible interface cable in order to be used with your computer. Commodore-dedicated printers, with their 9-pin serial cables, are rare nowadays, and any remaining should be disregarded. While they don't require a printer interface, they offer fewer features than other printers, and with only rare exceptions, are not upwardly compatible should you move on to a more advanced computer.

THE BUYING PROCESS

To select the printer that best meets your needs, you should start by asking yourself some questions. Do you write a lot of letters? Would you like to create your own personalized stationery using graphic clip art? Do you plan to use a printer for a home business? For

each of these needs, a good quality, low-priced, 9-pin dot matrix printer should be sufficient. If important documents constitute a majority of your printing, you should consider a higher quality 9-pin, or maybe even a 24-pin, printer. For good quality graphics and the rigors of daily continuous printing, as in a small office, you should price 24-pin printers.

Because they aren't Commodore-specific, printers can be bought at any computer store and needn't be purchased via mail order. An advantage to buying at a computer store is the opportunity to see sample printouts. Surprisingly, the quality can vary greatly among similarly priced printers from different manufacturers. Paper-handling capabilities can vary as well.

Once you've decided on the printer that best suits your needs, it's time to turn to the mail order firms to find an interface that will enable your Commodore to talk to your printer. Be sure to check several sources to get the best price.

Now on to. . .

QUESTIONS & ANSWERS

Q. What features are most important when looking for a printer: speed, print options, compatibility or print quality?

A. Personally, I've found that no feature is as important as the quality of output. I'm willing to forego quite a few options in order to get good quality printed text and graphics.

Options are my second priority. A printer that you buy should, at the very least, print in pica (10 characters per inch), elite (12 cpi) and condensed (17 or 18 cpi). Additional features, like multiple software-selectable fonts and various printing densities make the printer more useful, but aren't crucial to most home computerists. Esoteric options, such as a quiet mode, are usually more gimmicky than practical. ►

By TIM WALSH

PRINTER PRESCRIPTION

Don't overlook compatibility, especially when using software packages such as GEOS (which relies on printer drivers). An effort has been made in recent years to build Epson-code compatibility into new printers, because most software programs offer Epson support. However, it's still possible to buy a printer, especially a color model, that won't print properly with your Commodore, at least not without a lot of software and DIP-switch tweaking.

Speed is most important if you work under tight deadlines or do a lot of printing. Unfortunately, high speed and great looking print are mutually exclusive, except in the rarefied atmosphere of laser printers, which are often beyond the financial means of Commodore computerists.

Q. My friend's PC-compatible computer uses a generic Centronics parallel cable to connect to the printer. Why does my C-64 require a hard-to-find printer interface?

A. Commodore 8-bit computers lack the Centronics parallel printer port enjoyed by PC-compatibles and many other computers. Over the years, the best solution to this dilemma has been the Commodore-compatible printer interface, which connects to the 9-pin serial port of your disk drive or computer. Most printer interfaces are not equipped with a power supply, so they usually rely on the cassette port as a power source.

Q. How does a 24-pin dot matrix printer differ from a 9-pin dot matrix printer?

2 W O R T H

THE STAR MICRONICS NX-2410 MULTI-FONT

The Star NX-2410 Multi-Font is a good 24-pin printer that will fit even the smallest of budgets. A near-clone of the Star NX-2400 24-pin printer that *RUN* reviewed one year ago ("Making an Impression with Printers," November 1989), the NX-2410 offers plenty of printing options for the money.

The NX-2410 has an elaborate control panel with four control buttons that activate many different print options. For example, you can select from four letter quality fonts (including a nicely detailed Script font), italics, three print pitches and Quiet mode, to name but a few.

Paper handling options are also plentiful: Remove the paper guide to place single sheets into the printer and pull the bail lever to let the printer automatically load the paper. Best of all, a paper-parking feature is included. Select the Park option (hold down the Quiet button and press the Paper Feed button) from the control panel, and the continuous forms are retracted and parked in place, allowing single sheets to be loaded.

Power up the NX-2410 and, unlike most other printers that start off in Draft mode, you'll find the printer defaults to Letter Quality mode. While this is convenient if you rarely print anything except final copies, most users prefer to make multiple draft copies of their work for close scrutiny. It's a little cumbersome to select Draft mode manually (a minimum of four button presses on the control panel), but it will conserve the life of both the printhead and the ribbon.

The NX-2410 boasts one significant improvement: darker print quality than its



Star's NX-2410 and sample printout.

predecessor. Combine that feature with the many fonts it offers, good paper handling and a budget price, and you've got a great 24-pin printer to match up with your Commodore.

COMMENTS AND OBSERVATIONS

The NX-2410 prints graphics and text fairly well, although slowly in comparison to other 9- and 24-pin printers. The leisurely

printing pace is tolerable; more annoying is the fact that the printer powers up in Letter Quality mode. If you rarely print in this mode, you'll get plenty of practice switching modes on the control panel before printing.

Printing on stationery and labels is easy with the NX-2410, while its paper handling is not as sophisticated as the Citizen 200GX (reviewed opposite). In comparison with other 24-pin printers, the NX-2410 definitely qualifies under middle-of-the-pack. But, its low price makes it a reasonable and attractive purchase for a newcomer to the world of 24-pin printers.

Regardless of its few shortcomings, the NX-2410 remains a good printer, with many print options. In fact, it possesses more print options than even the most talented Commodore users will put to use. Add that to 24-pin printing and a low price, and the NX-2410 is a good bet for Commodore users.

NX-2410 SPECS

Maximum printing speed: 150 cps, in Draft Pica mode

Emulation modes: Epson LQ-800 and IBM Proprinter X24

Fonts: Courier, Prestige, Orator, Script LQ matrix: 24 x 35 (pica)

Horizontal Bit Image modes: 60, 80, 90, 120, 180, 240 and 360 dots per inch

Programmable line spacing: 1/8, 1/4 or programmable in 1/80", 1/72", 1/100", 1/216" or 1/300" inch increments

Size: 4.7 H x 16.1 W x 12.9 D

Weight: 14.1 lbs.

Price: \$399

PRINTER PRESCRIPTION

A. The printhead in a 24-pin model creates images with 24 pins, arranged in a matrix of rows and columns; the printhead in a 9-pin model uses 9 pins. While the output of 9-pin printers once lacked quality as compared to 24-pin printers, that's no longer the case. Thanks to advances in technology, there's now very little discernible difference between the types. Many 9-pins presently also incorporate the automatic paper handling that was once the exclusive domain of 24-pin printers.

In spite of these advancements, 24-pin printers still hold an advantage when it comes to durability. Because they're designed with sturdier components, they're ideal for busy offices where they get continuous use.

Q. Is it practical for a C-64 or C-128 user to invest in a laser printer that costs several times more than the rest of his or her computer system?

A. The answer to that question depends on your needs. Laser printers create wonderfully detailed graphics, print several times faster than the fastest dot matrix printers, and can be expanded by adding font and buffer memory cartridges. If you need these features without requiring a 16-bit computer, a laser printer to go with your Commodore will be worthwhile. And Hewlett-Packard-compatible laser printers work fine with the C-64 and C-128. However, most Commodore computerists who need these features have also outgrown their 8-bit machine. ▶

NOTING

THE CITIZEN 200GX



The Citizen 200GX represents a new generation of 9-pin printers. Fast (240 cps) and packed with options, the 200GX is one of the more interesting printers on the market.

For starters, it offers Epson FX-850 and IBM Proprinter III emulation. While this might not appeal to every Commodore owner, you'll appreciate the emulation options if you ever upgrade to another computer. In addition to multiple printer emulation, fast printing and great paper handling options, what really sets the 200GX apart from the rest of the pack is its Command-Vue II control panel.

Unlike conventional printer control panels, the Command-Vue II consists of LED-type lights and a sliding switch that lets you choose menu options easily and quickly. You can select one of four main menu features (Online, Pitch, Font and Install) from this unique control panel. Each of these main options consists of four sub-options, making a combination of 16 print options available. A quiet mode, normally found on pricey 24-pin printers, is also provided.

Three fonts (Roman, Sans Serif and Courier) are available from either the previously mentioned control panel or through software commands. A total of seven print pitches are offered: 10, 12 and 15 cpi or proportional from the control panel and three pitches (13.3, 17 and 20 cpi) via software commands.

Of all the options, my favorite is being able to quickly convert from a monochrome (black and white) printer into a color printer. Citizen offers a GSX 140/Swift 24 Color Kit for



Citizen's 200GX and sample printout.

the 200GX, consisting of a color ribbon and a small electric motor. With the ribbon and motor (which can be installed in about one minute) and the flip of a DIP switch, the 200GX becomes a color printer. Even with the kit in place and activated, the 200GX retains all the options it had before the color was installed.

COMMENTS AND OBSERVATIONS

When used on a daily basis, the 200GX

will quickly spoil even the casual C-64/128 user. It's enjoyable to work with and less clumsy than the NX-2410 in most respects, especially paper handling. When you turn the printer on, it automatically busies itself positioning and aligning the paper, something unheard of in low-end printers up until about two years ago.

Printing on stationery is remarkably easy. Just pop the paper guide on top, select the Paper Parking option from the Command-Vue II menu, and you're on your way. The many printing features you can select with the Command-Vue II Menu option places the 200GX in a class by itself.

You wouldn't expect so many options and such ease of use to be packed into a 9-pin printer. The 200GX is a wonderful printer and ranks as one of the best I've used. Fast, quiet and loaded with features, the 200GX is a true marvel!

CITIZEN 200GX SPECS

Maximum printing speed: 240 cps, in Super High-Speed mode at 15 cpi

Emulation modes: Epson FX-850 and IBM Proprinter III

Fonts: Roman, Sans Serif, Courier

NLQ matrix: 18 x 18 dots

Horizontal Bit Image modes: 60, 72, 80, 90, 120, 144 and 240 dots per inch

Programmable line spacing: 1/8, 1/8, 7/32 or programmable in 1/32", 1/144" or 1/210"-inch increments

Size: 5.1 H x 15.8 W x 12.6 D

Weight: 11 lbs.

Price: \$299 [R]

PRINTER PRESCRIPTION

I see only two disadvantages to owning a laser printer: the cash outlay for the printer, and the fact that they're large and occupy a lot of desk space.

Q. What type of printer is best for GEOS? Also, what is a GEOS printer driver, and how is it used?

A. GEOS employs techniques and terminology different from most other software programs. When you print a document with most C-64/128 word processors and other application programs, you're using the Text or Character mode of the printer. With GEOS, you're printing a bit-mapped screen using the Graphics mode of the printer, and Graphics mode requires special codes from the computer. First, the computer must set the printer to Graphics mode in order to print the bit map. Then it has to send a small series of commands so the printer receives the data and creates the image properly. Because these commands differ from printer to printer, a special driver is needed for each printer.

As I mentioned earlier, most newer printers use Epson codes, so you can create satisfactory printouts using virtually any of GEOS's Epson printer drivers. If you have an older, Commodore-compatible printer, you can print with any of GEOS's Commodore-compatible printer drivers.

Q. What's the difference between the fonts provided by my software and the fonts provided by the newer printers and font cartridges?

A. In nearly all cases, software creates fonts by duplicating, pixel by pixel, the bit-mapped screen on the printer. Not only is this the method employed by GEOS, it is also a common practice with graphics programs, banner makers and many other software packages. With a late-model, high quality 9- or 24-pin printer, the output is usually acceptable for all but the most important of documents. When using older, less versatile dot matrix printers, however, software fonts often make some parts of the document look darker than others. Consequently, software-generated fonts are more amateurish in appearance than those created internally by the printer.

A newer printer's built-in fonts are not only of uniform quality but also proportionally spaced—that is, the space occupied by two letter i's is less than the space occupied by two letter m's. Such printing gives documents a better appearance than printing with older model printers that lack proportional printing capability.

Q. Are color printers a good investment, and do they work well with the C-64 and C-128?

A. A color printer is a good investment, if you need one for your work or for creating calendars, greeting cards or other works of art. Most of the color printers that are Epson code-compatible will print in color with software packages like GEOS. The secret is to use the Epson JX-80 printer driver; the JX-80 printer codes are still employed by Epson-compatible color printers.

Q. How do I program my printer to print the way I want? Codes in the manual, such as ESC "4", make no sense to me.

A. This is one of the questions I hear most frequently. There's one surefire solution to this problem: Learn how to convert the ASCII codes presented in the manual to their decimal equivalents, and then learn the proper syntax for sending them to your printer.

Before you ask the computer to send a command to the printer, the computer has to understand the command. Nearly all the printer manuals written today assume that you're using an IBM or IBM-compatible computer that re-

quires no translation of these commands into another syntax that the computer will understand. The ESC "4" command in the sample above makes perfect sense to a PC-compatible, but no sense to your Commodore. Another consideration is that your printer interface must be in Transparent or ASCII mode in order for the commands to travel from the computer to the printer without any conversions occurring. Finally, if you're sending commands from outside a software package, you must open a channel to the printer.

For demonstration purposes, a Star NX-1000 II printer requires the following command sequence to print in Near Letter Quality (NLQ) mode using Sans Serif characters:

```
ESC "k" 1
```

First you must be certain that the printer interface is in Transparent mode. Check your interface manual to see how this is done. It usually involves just flipping a DIP switch or two on the interface.

Next you must convert all the ASCII values in the command to decimal values. Check the printer manual, which provides reference numbers and decimal equivalents, to find the decimal numbers needed.

Finally, open a channel to the printer, precede the decimal numbers with the CHR\$(character string) command, enclose the values within parentheses, and then close the channel to the printer. The line appears as follows in Direct mode:

```
OPEN 4,4: PRINT#4, CHR$(27);CHR$(107);CHR$(1):CLOSE 4
```

To use the same command within a word processor, you'd have to make some slight adjustments. As an example, let's use RUN's word processor, RUN Script.

First you'd use the .pr dot command to send printer commands from within RUN Script to the printer. Again, ensure that your printer interface is in Transparent or ASCII mode, and then enter the following dot command sequence:

```
.pr7,27,107,1
```

Note the inclusion of a 7 at the beginning of the command. This is the secondary address for the printer.

Q. I'm interested in doing desktop publishing on my Commodore. Which printer should I consider for this work?

A. Ultimately, a laser printer is the logical choice, but you can produce acceptable documents with a good dot matrix printer and a desktop publishing package like geoPublish. You can also use the dot matrix printer to produce proofs of your document, then take your disk to a users' group or friend with a Commodore and a laser printer to get a top quality final product.

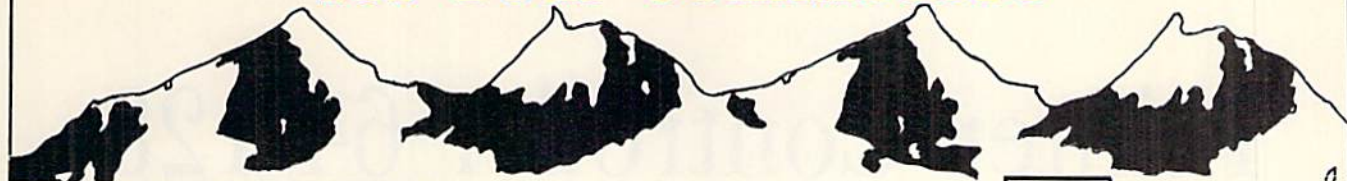
Q. There's been a lot of talk about letter quality and near letter quality printing. What are these two types of output?

A. A few years ago, letter quality referred to the print generated by typewriters and daisy wheel printers. Now, daisy wheel printers, which are essentially daisy wheel typewriters lacking a keyboard, are obsolete, and letter quality printing refers to the excellent output from 24-pin dot matrix printers. Some of the better 9-pin printers from manufacturers such as Okidata, Panasonic and Epson are also capable of first-rate characters and graphics.

I hope my answers will help you select a printer and then use it to best advantage. It may take some time and effort to learn to use all your printer's capabilities, but turning out superb documents will make it all worthwhile. ■

Tim Walsh is RUN's technical manager and resident printer guru.

Get A Goldmine of Tips and Projects for Your Commodore



Build Up Your Game Strategies!

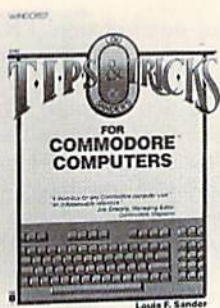
LOU SANDER'S GOLD MINE:

Game Tips for Commodore™ Users by Lou Sander

Sharpen your game-playing skills with over 1200 tips on 500+ popular software games in this one handy volume! Master such favorites as "Breakthru," "Defender of the Crown," "GUNSHIP," "The Last Ninja," "Legacy of the Ancients," and more with these proven pointers. This rich assortment of winning formulas offers the best of Lou Sander's popular "Gold Mine" column, plus hundreds of tips never before published! 352 pp./illustrated.

#3323H, \$28.95 Hardcover

NEW



Stretch Your Commodore's Capabilities!

LOU SANDER'S TIPS AND TRICKS FOR COMMODORE COMPUTERS

by Louis F. Sander

"... good reading and an indispensable reference tool."

—James Gracely, Former Managing Editor, *Commodore Magazine*

Enjoy EVEN MORE tips from Lou Sander, columnist of *Commodore Magazine's* "Tips and Tricks." Includes 500+ user-tested tips and ready-to-use programs—many never before in print! Get valuable programs to create an easy word processor, memory saver, search mechanism, mode guard, and more. Plus, you get answers to your questions on: setting up and operating the computer; improving programming skills; and maximizing disks, printers, monitors, keyboards, peripherals, and more.

412 pp./illustrated. #3192P, \$21.95 Paperback

NEW



Use Your C-128's Full Sound and Graphics Potential in 3 Modes!

ADVANCED COMMODORE 128™ GRAPHICS AND SOUND PROGRAMMING

by Stan Krute

Create professional-quality sound and graphics—without using any add-on hardware. This time-saving reference takes you through each step with • sample exercises and ready-to-run programs • a Sound and Music Lab that uses a point-and-click interface • complete program listings with C-128 specifics • and routines for locating points on a high-resolution screen . . . drawing lines and simple polygons . . . pattern painting, and more. 414 pp. 72 illus.

#2630H, \$21.95 Hardcover

More Bestselling Books

The Commodore Programmer's Challenge: 50 Challenging Problems to Test Your Programming Skills—with Solutions in BASIC™, Pascal®, and C® by S. Chen. 237 pp. Illustrated. #2817P, \$14.95 Paperback

Commodore 128 BASIC: Programming Techniques by M. Hardee. 190 pp., 120 illus. #2732P, \$12.95 Paperback

Serious Programming for the Commodore 64 by H. Simpson. 208 pp., 124 illus. #1821P, \$12.95 Paperback

1001 Things to Do with Your Commodore 128 by M.R. Sawusch/D. Prochnow. 206 pp., 74 illus. #2756P, \$12.95 Paperback

Commodore 128 Programming Secrets #15030P, \$15.95
Your Commodore 128™ #15028P, \$16.95
Your Commodore 64™ #15029P, \$16.95

Flight Simulator and Flight Simulator II: 82 Challenging New Adventures by D. Prochnow. 224 pp., 66 illus. #2862P, \$12.95 Paperback

GUNSHIP: 82 Challenging Adventures by D. Prochnow. 208 pp., 83 illus. #3032P, \$12.95 Paperback

JET: 82 Challenging Adventures by D. Prochnow. 208 pp., 108 illus. #2872H, \$19.95 Hardcover



TAB BOOKS
Blue Ridge Summit, PA 17294-0840

TO ORDER CALL TOLL FREE

1-800-343-0728

Ask for the TAB BOOKS Operator

Or mail ad to: TAB BOOKS, Blue Ridge Summit, PA 17294-0840.

YES, please send me the following book(s).

Please Print

Book # _____ Title _____ \$ _____

Book # _____ Title _____ \$ _____

Shipping and Handling (\$5 outside the U.S.A.) \$ 3.00

Please add applicable state and local sales tax. \$ _____

TOTAL \$ _____

Check or money order enclosed made payable to TAB BOOKS

Charge my VISA MasterCard American Express

Acct. No. _____ Exp. _____

Signature _____

Name _____

Address _____

City _____

State/Zip _____

Prices subject to change.

RM1190

Printer Controller 64/128

*Here's an easy way to dress up your printouts
with Italics, Bold and many other options.*



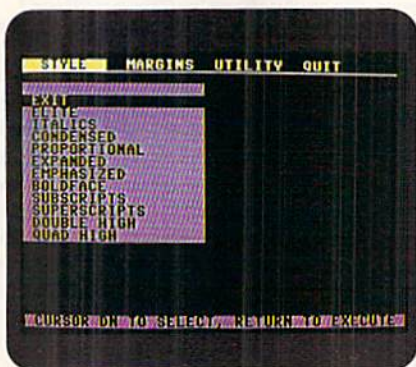
By WILLIAM McLEOD

Today's sophisticated dot matrix printers require a hundred or more commands to fully utilize their capabilities, and many printing options remain unused because of the time required to look up and invoke the commands. Consequently, we settle for pedestrian printouts instead of the more attractive styles that are available. I developed Control Printer 64/128 to make it easier to use printer options by making it simpler to input printer control codes.

Control Printer 64/128 runs on the C-64 or C-128 (40 or 80 columns), automatically configuring itself to either computer. The program was written for the Star Micronics NP-10 and compatible printers, but many of the commands work with most other parallel printers. Control Printer can be easily modified for use with other printers. As written, it *won't* work with Commodore-dedicated printers.

Control Printer is entirely menu-driven. After typing in Listing 1, using RUN's Checksum program to look for typing errors, save it to disk, then run it. The top line of the first screen presents the main menu: Style, Margins, Utility and Quit. As indicated by a command line at the bottom of the screen, you make a selection by using the cursor-right key to highlight your choice and then pressing the return key. Selecting Style displays a pull-down secondary menu of 11 styles of printing. Make your choice, press return, and your printer will be configured to that feature. Of course, the printer must be connected and turned on for the selection to work.

You can enter several commands, such as Elite, Italics, Expanded and Boldface, and the printer will combine them all and retain them until it is shut off or reset.



Style's pull-down secondary menu.

After you've made your selection of styles, press return, and you'll go back to the main menu. Now select Utility and press return; then choose and execute View Printout. The printer will print a list of the styles selected and a short sentence illustrating the style combination, with the paper rolling up an inch, so you can see what was printed. The Sample Printout option prints the same thing without rolling the paper up. If you haven't selected a style, the printer will respond with Pica, as this is the default on most printers.

The Margins menu is for setting margins, of course. However, it also lets you set the printer to skip over perforations and provide paging.

At any time, you can save your work to disk by typing RUN 20 and pressing return. Line 20 establishes the name of the program, 30 scratches the old version, and 40 saves the new version. If you make changes in the program, you should change line 20 to ZZ\$="IPRINTER" or some other name in order to preserve the original.

MAKING CHANGES

You can change the titles in the main menu by changing the Data statements

in line 120, but don't change END in line 130, as it serves as a terminator for the array. The menu is limited to four titles of 18 characters each for the C-128 in 80-Column mode and seven characters in 40-Column or 64 mode. Anything longer will automatically be truncated. If you want more than four items in the main menu, you're on your own, as this requires extensive alterations to Control Printer 64/128.

Data for the Style menu is found in lines 220-230, Margins in 320-330 and Utility in 420-430. Each of their secondary menus can handle up to 11 titles, so there's room for a total of 11 more commands—five in the Margins menu and six in the Utility menu.

To add a command to the Margins menu, add the command's title to line 330 and its subroutine starting on line 1790, erasing the REM and using the same format as in the other command routines. Each new routine must start at the next available REM in that menu, and it must not occupy a line already containing a REM.

New commands that require entering a column number should be placed in the Margins menu, as it is equipped for that type of input. Of course, you can delete any menu item and substitute your own in its place.

PRINTER COMMANDS

If Control Printer 64/128 runs all right, but the printer isn't responding properly, the interface probably isn't in Transparent or Semi-Transparent mode. This is handled throughout the program with an OPEN 5,4,S command, where S is set to 5 in line 90. Most interfaces use 5 as a secondary address for Transparent mode, but that number does vary. Consult your interface manual and change line 90 or flip the necessary DIP switches on your ▶

RUN it right: C-64 or C-128; printer

Memory Expansion!

GEORAM

\$124⁹⁵



Believe it or not, GEORAM's disk transfer rate is actually 35 times faster than the 1541, 1571, or 1581 disk drive! This means that screens redraw in a flash, and that your Commodore doesn't waste time spinning disks looking for data. GEORAM makes the GEOS family of programs faster and more powerful than ever. NOTE: GEORAM is designed for use ONLY in the GEOS environment—it cannot be used with non-GEOS software.

GEORAM (requires GEOS)

88604 \$124.95

1750 Clone

\$199⁹⁵



The 1750 Clone offers 512K, and works with all software that is 1750 compatible (e.g., GEOS, Paperclip III, and Maverick). Furthermore, you can use it to create a RAM disk to store files or programs for lightning-fast access. (Unlike GEORAM, the 1750 Clone works with non-GEOS software. Some computers may require power supply.)

1750 Clone 89517 \$199.95

Super Mouse Bargain!

\$38⁹⁵



Includes GEOS 1.5 Plus Graphic & Utility Software!

M3 MOUSE. Proportional mode, joystick mode and paddle mode—three modes in one mouse. Features Hi-Res graphic design software with predefined graphics, sprite and icon designers, and mouse controller, plus, handy disk utilities such as windows, pull-down menus, file, and notepad. Also includes GEOS 1.5. From Contriver Technology, Inc. One-year warranty. Sug. Retail \$49.95/\$39.95

M3 Mouse 82704 \$38.95
M4 Mouse for AMIGA 88171 \$34.95

\$129⁹⁵



Commodore 64C

The complete computer for home, school and small business. Supported by high-quality peripherals and over 10,000 software programs. Full typewriter-style keyboard, 64K RAM, eight sprites, three voices.

64C Computer 54574 \$129.95

Commodore Hardware

1670 Modem, 1200 Baud	36952	\$69.95
1351 Mouse C64/C128	37885	\$32.95
1084S RGB Composite Monitor	74095	\$319.95
1541 II Disk Drive	54586	\$CALL
1764 RAM Expansion C64	72513	\$114.95

The Best Prices & Service

Now For Amiga, Too!

2400 Baud
C64/C128

\$79⁹⁵



Both the Minimodem-C and C24 are completely Hayes compatible (not just partially compatible like the 1670 and some Avatech models) and 1670 compatible. This means they'll work with ALL communications software for the 64, 64C, and 128. Key features include seven status indicators, Busy Detect, DTR signal support, High Speed Detect Line, and Auto Answer/Auto Dial. Includes Multiterm 64 and 128 software so you can start communicating right away, plus a free trial hour on CompuServe! Full-year warranty.

1200 Baud
C64/C128

\$59⁹⁵

The Amiga versions of the Minimodems are equipped with a female connector to plug directly into the Amiga 500 or 2000. They need no external wall plug for power, and they use the Amiga's audio output for maximum fidelity.

Minimodem-C24 (2400 Baud for C64/C128)
88148 \$79.95
Minimodem-C (1200 Baud for C64/C128)
81576 \$59.95
Minimodem-AM24 (2400 Baud for Amiga)
88150 \$79.95

Back Up Protected Software

\$32⁹⁵

Now For Amiga, Too!



New Features Include:

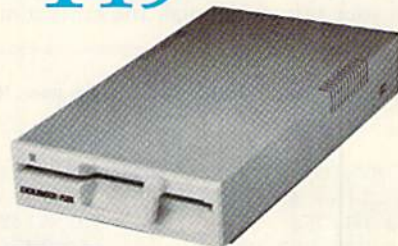
- Fast autobooting with 1541, 1571, and 1581 drives
- Single drive 1571 Double-sided copier
- Directory recovery: Recover blown 1541, 1571, and 1581 disks

MAVERICK VERSION 5.0. The best weapon ever created to let you defend yourself in the copy protection wars. It comes with over 400 parameters and updates are available to registered owners three times a year. For archival backup only. Formerly called Renegade. Sug. Retail \$39.95

C64/C128, Disk 78919 \$32.95
AMIGA, Disk 89601 \$32.95

Disk Drive Includes FREE Software!

\$149⁹⁵



FSD-2 Excelsator+

- Completely Commodore Compatible
- Faster, quieter, and more reliable
- Separate power supply eliminates overheating
- Full one-year warranty
- FREE software

FSD-2 Excelsator+ 66166 \$149.95
Sug. Retail \$179.95

Includes FREE Software

Only TENEX offers you this great choice of software included with our FSD-2 Excelsator+ disk drive. You have your choice of:

BETTERWORKING WORD PUBLISHER—a GEOS-compatible word processor/publishing package that includes a 100,000 word spell checker, geoPaint/geoFont compatibility, WYSIWYG preview mode, and much more. REQUIRES GEOS. From Spinnaker. Orig. Retail Value \$39.95

—OR—
ASSAULT ON EGRETTE CASTLE and CRYSTAL OF DOOM—Two great interactive comic books from the Zorkquest series. From Infocom. Orig. Retail Value \$24.00

Quantities are limited, so order early! Just order Item No. 89198 (Word Publisher) or Item Nos. 80742 and 80758 (Two Zorkquest Comics) and we'll include the software at no extra charge.



Call for Lowest Printer Prices!

FREE 60-Page Catalog



Thousands of products for your COMMODORE 64, 128 and AMIGA computers.

CALL TODAY to receive your FREE copy!

We gladly accept mail orders!

TENEX
Computer Express

TENEX Computer Express
P.O. Box 6578
South Bend, IN 46660

(219) 259-7051 — FAX (219) 255-1778

No Extra Fee For Charges!



We Verify Charge Card Addresses

*Shipping, Handling, Insurance

Order Amount	Charge
less than \$19.99	53.75
\$20.00-\$39.99	4.75
\$40.00-\$74.99	5.75
\$75.00-\$149.99	6.75
\$150.00-\$299.99	7.75
\$300.00 & up	\$CALL

ORDER TODAY CALL 1-800-PROMPT-1

PRINTER CONTROLLER

printer interface for either Transparent or Semi-Transparent mode.

Now we get down to the actual printer commands. First, run through all the menus to become familiar with the procedure. You'll find that it's very easy. Next, reset the printer and exit to the main menu. Now try each of the styles in turn, printing a sample and resetting the printer each time.

If any command fails to print correctly, look at lines 1000-1320, and note that each group of lines is labeled with its title and that the second line in each group is the command line. For emphasized print, the command is PRINT#5, C\$"E", where C\$" is previously defined as CHR\$(27). Most of the codes use C\$. The code C\$"E" can also be written CHR\$(27);CHR\$(69), where CHR\$(69) is the code for the letter E. Look up the code for emphasized print in your printer manual, and enter it in

place of C\$"E". Any other printer commands that fail to work can be handled in a similar manner, assuming that your printer supports that style. All commands for the Margins menu start at line 1520, and those for the Utility menu start at 1820.

All of this is reasonably straightforward, except for the addition of line 1670 to disable the interface control for the right-hand margin. If your interface doesn't have a disable command, you may be able to set it at a high number such as 150 or 200.

USING THE PROGRAM

For use with a word processor, set up the printer as desired before loading the word processor. The printer will retain the combination you set, but it's always possible that the word processor will have ideas of its own. In that case, look in the word processor's manual for

a way to prevent that software from doing its own printer initialization.

By using Elite, Condensed and Subscripts commands and reducing line-spacing to one-twelfth inch, you can produce a disk directory that can be pasted on the front of the disk sleeve. The type is quite readable, because it's a dense black. Just type LOAD"\$",8 and return, then OPEN 4,4:CMD4:LIST.

Double-height letters are ideal for name tags, and quad height works fine for posters. Form feed is great for printing out listings of long programs without printing over the perforations. You'll find many other uses for Control Printer 64/128, as you gain experience with it. Besides that, it's fun just printing out all the combinations of styles. ☐

William McLeod, a young 80-year-old, lists electronics and computer programming among his hobbies.

Listing 1. Control Printer 64/128 program. (Available on ReRUN disk. See order card facing page 48.)

```

5 REM CONTROL YOUR PRINTER - WILLIAM MCLEOD :REM*73
10 GOTO50 :REM*140
20 ZZ$="PRINTER" :REM*236
30 OPEN15,8,15,"S0:"+ZZ$ :REM*9
40 CLOSE15:SAVE ZZ$,8:END :REM*150
50 DIM P$(13),HP$(13),A$(13),M$(11),HM$(11) :REM*76
60 L=9:T=9:LL=39:A=PEEK(215):IF A=128 THEN L=19:T=19:LL=79:FAST :REM*25
70 I=1:H$="{CTRL 9}":N$="{CTRL 0}":RM=80 :REM*196
80 Z$=CHR$(29):R$=CHR$(13):C$=CHR$(27):CU$=CHR$(145):CD$=CHR$(17) :REM*123
90 S=5:REM TRANSPARENT MODE :REM*201
100 POKE53280,0:POKE53281,0 :REM*148
110 READ N$(I):REM MAIN MENU :REM*129
120 DATA STYLE,MARGINS,UTILITY,QUIT :REM*167
130 DATA END :REM*138
140 IF N$(I)="END" THEN K=I-1:GOTO170 :REM*37
150 N$(I)="{2 SPACES}"+N$(I)+"{18 SPACES}":N$(I)=LEFT$(N$(I),L) :REM*123
160 I=I+1:GOTO110 :REM*16
170 FORI=1TOK+1 :REM*180
180 H$(I)=H$+N$(I)+N$ :REM*190
190 NEXT :REM*65
200 K=1:REM STYLE :REM*50
210 READ P$(K) :REM*119
220 DATA EXIT,ELITE,ITALICS,CONDENSED,PROPORTIONAL,EXPANDED,EMPHASIZED :REM*232
230 DATA BOLDFACE,SUBSCRIPTS,SUPERSCRIPTS,DOUBLE HIGH,QUAD HIGH :REM*104
240 DATA END :REM*244
250 IF P$(K)="END" THEN J1=K-1:GOTO280 :REM*46
260 P$(K)="{P$(K)}"+P$(K)+"{14 SPACES}":P$(K)=LEFT$(P$(K),19) :REM*213
270 K=K+1:GOTO210 :REM*110
280 FOR K=1 TO J1 :REM*91
290 HP$(K)=H$+P$(K)+N$:NEXT :REM*188
300 K=1:REM MARGINS :REM*196
310 READ M$(K) :REM*213
320 DATA EXIT, TOP MARGIN, BOTTOM MARGIN, LEFT MARGIN, RIGHT MARGIN :REM*224
330 DATA LINE SPACING N/216, FORM FEED :REM*113
340 DATA END :REM*95
350 IFM$(K)="END" THEN J2=K-1:GOTO380 :REM*173
360 M$(K)="{M$(K)}"+M$(K)+"{14 SPACES}":M$(K)=LEFT$(M$(K),19) :REM*57
370 K=K+1:GOTO310 :REM*250
380 FOR K=1 TO J2 :REM*176
390 HM$(K)=H$+M$(K)+N$:NEXT :REM*120
400 K=1:REM UTILITY :REM*126
410 READ G$(K) :REM*46
420 DATA EXIT,RESET PRINTER,SLASH ZERO,PAPER OUT SIG OFF :REM*120
430 DATA SAMPLE PRINTOUT,PRINT AND VIEW :REM*136
440 DATA END :REM*187
450 IFG$(K)="END" THEN J3=K-1:GOTO480 :REM*47
460 G$(K)="{G$(K)}"+G$(K)+"{14 SPACES}":G$(K)=LEFT$(G$(K),19) :REM*99
470 K=K+1:GOTO410 :REM*69
480 FOR K=1 TO J3 :REM*42
490 HG$(K)=H$+G$(K)+N$:NEXT :REM*18
500 REM MAIN MENU :REM*167
510 G=0:PRINT"{SHFT CLR}{CTRL 8}":REM*2
520 PRINT H$(1);N$(2);N$(3);N$(4) :REM*156
530 FORK=1TOLL:PRINT"{COMD T}":NEXT :REM*209
540 PRINT"{HOME}":FOR I=1TO21:PRINT:NEXT :REM*232
550 IFA=128GOTO570 :REM*156
560 PRINT"{CTRL 9} CURSOR RT TO SELECT, RETURN TO EXECUTE":PRINT"{HOME}":GOTO590 :REM*86
570 PRINT"{CTRL 9}{12 SPACES}<CURSOR RIGHT> TO SELECT{12 SPACES}<RETURN>":REM*136
580 PRINT"{CTRL 9} TO EXECUTE{13 SPACES}"CHR$(19):PRINT:PRINT :REM*240
590 I=1:GOSUB680:IF X$=R$ GOTO730 :REM*78
600 PRINTN$(1);H$(2);N$(3);N$(4) :REM*240
610 I=2:GOSUB680:IF X$=R$ GOTO730 :REM*181
620 PRINTN$(1);N$(2);H$(3);N$(4) :REM*128
630 I=3:GOSUB680:IF X$=R$ GOTO730 :REM*156
640 PRINTN$(1);N$(2);N$(3);H$(4) :REM*144
650 I=4:GOSUB680:IF X$=R$ GOTO730 :REM*144

```


P R I N T E R C O N T R O L L E R

```

30      :REM*139  1080 RETURN                :REM*194  1530 GOSUB1800:PRINTTAB(L):INPU
660 PRINTH$(1);N$(2);N$(3);N$(4  1090 A$(5)="PROPORTIONAL, "  :REM*33
      ) :REM*17
670 GOTO590      :REM*248  1100 PRINT#5,C$;CHR$(112);CHR$(  1540 PRINT#5,C$;CHR$(114);CHR$(
680 GET X$:IF X$="" GOTO680      :REM*113  1) :REM*113
      :REM*40  1110 RETURN                :REM*224  1550 RETURN                :REM*154
690 IF X$=Z$ THEN PRINT CU$;CU$  1120 A$(6)="EXPANDED, " :REM*64  1560 REM BOTTOM MARGIN :REM*116
      ;CU$:RETURN :REM*121  1130 PRINT#5,C$"w1" :REM*154  1570 GOSUB1800:PRINTTAB(L):INPU
700 IFX$=R$ THEN RETURN:REM*140  1140 RETURN                :REM*7  1580 PRINT#5,C$;CHR$(78);CHR$(B
710 PRINT"{SHFT CLR}":PRINTTAB(  1150 A$(7)="EMPHASIZED, "  :REM*167
      10){CTRL 9} PRESS CURSOR R  :REM*234  1590 PRINT#5,C$;CHR$(78);CHR$(B
      IGH T OR RETURN" :REM*4  1160 PRINT#5,C$"E" :REM*134  M) :REM*236
720 FOR Y=1TO3000:NEXT:GOTO510    1170 RETURN                :REM*37  1590 RETURN                :REM*194
      :REM*37  1180 A$(8)="BOLDFACE, " :REM*129  1600 REM LEFT MARGIN :REM*211
730 ON I GOTO740,760,780,800     1190 PRINT#5,C$"G" :REM*178  1610 GOSUB1800:PRINTTAB(L):INPU
      :REM*251  1200 RETURN                :REM*59  1620 PRINT#5,C$;CHR$(108);CHR$(
740 GOSUB830:IF G=1 GOTO510      :REM*36  1630 LM) :REM*164
      :REM*42  1220 PRINT#5,C$"S1" :REM*216  1630 RETURN                :REM*234
750 GOTO740      :REM*68  1230 RETURN                :REM*89  1640 REM RIGHT MARGIN :REM*149
760 GOSUB1340:IF G=1 GOTO510     1240 A$(10)="SUPERSCRIPTS, "  1650 OPEN 1,4:PRINT#1,C$;"R";CH
      :REM*106  1250 PRINT#5,C$"S0" :REM*230  R$(0):CLOSE 1 :REM*188
770 GOTO760      :REM*94  1260 RETURN                :REM*127  1660 REM DISABLE RIGHT MARGIN
780 GOSUB1830:IF G=1 GOTO510     1270 A$(11)="DOUBLE HIGH, "  :REM*193
      :REM*75  1280 PRINT#5,C$;CHR$(104);CHR$(  1670 GOSUB1800:PRINTTAB(L):INPU
790 GOTO780      :REM*112  1) :REM*50  1680 T"COLUMN NUMBER";RM:REM*65
800 TA=INT(LL/2)-5 :REM*61  1290 RETURN                :REM*157  1680 PRINT#5,C$;CHR$(81);CHR$(R
810 CLOSE5:PRINT"{SHFT CLR}":PR  1300 A$(12)="QUAD HIGH, "  :REM*47  1690 M) :REM*198
      INT:PRINT:PRINT:PRINT:PRINT  1310 A$(13)="EXPANDED, "  1700 RETURN                :REM*131
      TAB(TA)***END***:END :REM*97  1320 A$(14)="PROPORTIONAL, "  1710 HES :REM*131
820 REM STYLE MENU :REM*34  1330 PRINT#5,C$;CHR$(104);CHR$(  1710 GOSUB1800:INPUT"LINE SPACI
830 PRINT:TT=0:PRINT"{CTRL 5}":  2) :REM*100  1710 NG N/216 INCHES - ENTER N"
      PRINTCU$:GOSUB2380 :REM*146  1340 RETURN                :REM*179  ;N :REM*67
840 PRINT P$(1) :REM*127  1350 REM MARGINS MENU :REM*234  1720 PRINT#5,C$;CHR$(51);CHR$(N
850 FOR K=2 TO J1:PRINT HP$(K):  1360 TT=T:PRINT"{COMD 7}":GOSUB  :REM*225
      NEXT :REM*75  2380 :REM*64  1730 RETURN                :REM*87
860 REM STYLE SELECTOR :REM*5  1370 PRINTTAB(TT)M$(1) :REM*138  1740 REM FORM FEED :REM*163
870 FOR K=1 TO J1:GOSUB2330      1380 FOR K=2 TO J2:PRINTTAB(TT)  1750 GOSUB1800:PRINTTAB(20):INP
      :REM*65  1390 HM$(K):NEXT :REM*234  UT"TOTAL MARGIN";TM:PRINT#
880 IF X$=CD$ GOTO900 :REM*238  1370 REM MARGINS SELECTOR  :REM*16  5,C$;"N";CHR$(TM) :REM*40
890 GOTO960 :REM*210  1380 FOR K=1 TO J2:GOSUB2330  1760 PRINT#5,CHR$(12) :REM*6
900 PRINTCHR$(19):PRINT:PRINT:P  :REM*126  1770 RETURN                :REM*127
      RINT:IFK=1 GOTO920 :REM*89  1390 IF X$=CD$ GOTO 1410:REM*62  1780 REM ADD NEW COMMAND ROUTIN
910 FORI=1TOK-1:PRINTCD$;NEXT  1400 GOTO1480 :REM*199  ES STARTING AT 1790
      :REM*126  1410 PRINTCHR$(19):PRINT:PRINT:  :REM*181
920 IF K=J1 GOTO940 :REM*16  1420 PRINT:IFK=1 GOTO1430  :REM*138
930 PRINTHP$(K):PRINTP$(K+1):GO  :REM*163  1800 PRINT"{HOME}":FOR J=1 TO J
      TO950 :REM*66  1430 FORI=1TOK-1:PRINTCD$;NEXT  2-1:PRINT CD$:NEXT :REM*34
940 PRINT HP$(K):PRINTCHR$(19):  :REM*126  1810 RETURN                :REM*167
      PRINT:PRINT:PRINT:PRINTP$(1  :REM*126  1820 REM UTILITY MENU :REM*103
      ):GOTO870 :REM*19  1440 IF K=J2 GOTO1460 :REM*246  1830 TT=2*T:PRINT"{CTRL 6}":GOS
950 NEXT :REM*60  1440 PRINTTAB(TT)HM$(K):PRINTTA  UB2380 :REM*224
960 OPEN5,4,S:REM TRANSPARENT M  B(TT)M$(K+1):GOTO1470  :REM*114
      ODE :REM*164  :REM*226  1840 PRINTTAB(TT)G$(1) :REM*114
970 ON K GOSUB 990,1000,1030,10  1450 PRINTTAB(TT)HM$(K):REM*179  1850 FOR K=2 TO J3:PRINTTAB(TT)
      60,1090,1120,1150,1180,1210  1460 PRINTCHR$(19):PRINT CD$;CD  HG$(K):NEXT :REM*117
      ,1240,1270,1300 :REM*196  0 ;CD$;TAB(TT)M$(1):GOTO138  1860 REM UTILITY SELECTOR
980 CLOSE5:PRINT"{SHFT CLR}":RE  0 :REM*99  :REM*240
      TURN :REM*219  1470 NEXT :REM*70  1870 FOR K=1 TO J3:GOSUB2330
990 G=1:GOTO980 :REM*1  :REM*249  :REM*115
1000 A$(2)="ELITE, " :REM*229  1480 OPEN5,4,S :REM*249  1880 IF X$=CD$ GOTO 1900:REM*41
1010 PRINT#5,C$"M" :REM*36  1490 ON K GOSUB 1510,1530,1570,  1890 GOTO1970 :REM*206
1020 RETURN :REM*142  1610,1650,1710,1750,1790  1900 PRINTCHR$(19):PRINT:PRINT:
1030 A$(3)="ITALICS, " :REM*223  :REM*91  PRINT:IFK=1 GOTO1920
1040 PRINT#5,C$;"4" :REM*116  1500 CLOSE5:PRINT"{SHFT CLR}":P  :REM*111
1050 PRINT#5,C$;"4" :REM*116  RINT:PRINT:RETURN :REM*208  1910 FORI=1TOK-1:PRINTCD$;NEXT
1060 RETURN :REM*172  1510 G=1:GOTO1500:REM BLANK  :REM*2
1060 A$(4)="CONDENSED, " :REM*94  :REM*130  1920 IF K=J3 GOTO1940 :REM*241
1070 PRINT#5,CHR$(15) :REM*116  1520 REM TOP MARGIN :REM*120  1930 PRINTTAB(TT)HG$(K):PRINTTA

```


P R I N T E R C O N T R O L L E R

<pre> B(TT)G\$(K+1):GOTO196Ø :REM*167 194Ø PRINTTAB(TT)HG\$(K):REM*113 195Ø PRINTCHR\$(19):PRINT:PRINT: PRINT:PRINTTAB(TT)G\$(1):GO TO187Ø :REM*152 196Ø NEXT :REM*34 197Ø OPEN5,4,S :REM*2Ø9 198Ø ON K GOSUB 2ØØØ,2Ø2Ø,2Ø6Ø, 2Ø9Ø,211Ø,218Ø,226Ø :REM*125 199Ø CLOSE5:PRINT"{SHFT CLR}":P RINT:PRINT:RETURN :REM*2ØØ 2ØØØ G=1:GOTO199Ø :REM*195 2Ø1Ø REM RESET PRINTER :REM*251 2Ø2Ø PRINT#5,C\$;CHR\$(64); :REM*169 2Ø3Ø FOR K=1 TO 12:A\$(K)="" :NEXT T:REM CLEAR :REM*1Ø2 2Ø4Ø RETURN :REM*142 2Ø5Ø REM SLASH ZERO :REM*29 2Ø6Ø PRINT#5,C\$;CHR\$(126);CHR\$(1) :REM*99 2Ø7Ø RETURN :REM*172 2Ø8Ø REM DISABLE PAPER OUT SIGN AL :REM*84 2Ø9Ø PRINT#5,C\$;CHR\$(56):REM*38 21ØØ RETURN :REM*2Ø2 </pre>	<pre> 211Ø OPEN4,4:CMD4:REM SAMPLE PR INTOUT :REM*137 212Ø IF A\$(2)=""THEN A\$(2)="PIC A, " :REM*33 213Ø PRINT"THIS IS "; :REM*45 214Ø FOR K=2 TO 12:PRINT A\$(K); :NEXT:PRINT :REM*39 215Ø PRINT"THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG. :REM*36 216Ø PRINT#4:CLOSE4 :REM*175 217Ø RETURN :REM*1 218Ø GOSUB211Ø:REM VIEW PRINTOU T :REM*163 219Ø PRINT#5,C\$;CHR\$(74);CHR\$(2 16):REM PAPER UP :REM*245 22ØØ IF A=128 GOTO222Ø :REM*199 221Ø FOR K=1 TO 93ØØ:NEXT:GOTO22 3Ø :REM*112 222Ø FORK=1 TO 655Ø:NEXT:REM 128 DELAY :REM*12Ø 223Ø PRINT#5,C\$;CHR\$(1Ø6);CHR\$(216):REM PAPER DOWN 1 INCH :REM*55 224Ø RETURN :REM*71 225Ø REM ADD NEW COMMANDS BELOW :REM*255 226Ø REM :REM*1Ø6 </pre>	<pre> 232Ø REM SELECTOR :REM*195 233Ø GETX\$:IF X\$=""GOTO233Ø :REM*46 234Ø IF X\$=R\$ THEN J=K:RETURN :REM*21 235Ø IF X\$<>C\$ AND X\$<>R\$ THEN 233Ø :REM*24Ø 236Ø RETURN :REM*2Ø7 237Ø REM MENUS :REM*29 238Ø PRINTCHR\$(19):FOR I=1 TO21: PRINT:NEXT :REM*154 239Ø IF A=128 GOTO241Ø :REM*19Ø 24ØØ PRINT "{CTRL 9} CURSOR DN TO SELECT, RETURN TO EXECU TE ":GOTO243Ø :REM*243 241Ø PRINT"{CTRL 9}{12 SPACES}< CURSOR DOWN> TO SELECT{11 SPACES}"; :REM*2Ø5 242Ø PRINT"{CTRL 9} <RETURN> TO EXECUTE{14 SPACES}" :REM*81 243Ø PRINTCHR\$(19):PRINT:PRINT :REM*75 244Ø FORK=1 TO 19:PRINTTAB(TT)" {CTRL 9} ";:NEXT:PRINT :REM*2Ø 245Ø RETURN :REM*42 </pre>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Attention Commodore 64 and 128 Owners — Tremendous Savings from Software Hut

Through a special purchase from Commodore Business Machines, we have a number of products at great pricing. Below is a list of products:

<pre> Commodore 128D Computer (new)\$319.95 Commodore 128D Computer (refurbished)289.95 Commodore 64C Computer (new)139.95 Commodore 1541 II Drive (new)159.95 Commodore 1700 RAM Expansion 128K (new)..... 64.95 Commodore 1750 RAM Expansion 512K (new).....109.95 Commodore 1764 RAM Expansion 256K (refurbished) 94.95 Commodore 1581 Disk Drive 3.5" (new)129.95 Commodore 1581 Disk Drive 3.5" (refurbished).....109.95 Commodore 1660 Modem 300 Baud (new) 19.95 </pre>	<pre> Commodore 1670 Modem 1200 Baud (new) 49.95 Supra 2400 Baud Modem.....119.95 Commodore 1702 Monitor (refurbished) 89.95 Commodore 1902 Monitor (refurbished)129.95 64 & 64C Replacement Power Supply 29.95 64 & 64C Heavy Duty Replacement Power Supply..... 42.95 Xetec Jr. Graphics Printer Interface..... 36.95 Peak Modem Interface for Supra 2400 Modem..... 29.95 Winner M3 2-Button Mouse..... 35.95 </pre>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

All new products include Commodore's full 90 day warranty. Refurbished products are in like-new shape and in their original packaging. They have a 30 day warranty. Please call quickly as supplies are limited and on a first come first serve basis. We are an authorized Commodore Service Center repairing Commodore and Amiga products both in and out of warranty. Please contact us at the service number below for additional information and pricing.



Software Hut, Inc.
2534 S. Broad Street
Philadelphia, PA 19145



Order Toll Free 1-800-848-0079
For Information 1-215-462-2268
For Repairs 1-215-462-0210

Dealer Inquiries Invited.

We ship via UPS. We accept for payment: Visa, MasterCard and Discover credit cards. We also ship COD, accepting Cash, Certified Check or Money Order. Shipping charges are \$5.00 for the first item, and \$2.00 for additional items. For monitors and computers, please add an additional \$3.00. COD orders add an additional \$4.00.

Free Software

Public domain and shareware programs are often overlooked as software that's high quality and inexpensive.



By STEPHEN DIRSCHAUER

Since the C-64's introduction, a voluminous library of commercial software has been available to run on it. Perhaps that's why most C-64 users have neglected another substantial source of programs: the public domain. Virtually thousands of C-64 and C-128 public domain programs are available, from disk utilities to arcade games, and they're all free. Who could ask for a better deal? Many inexpensive shareware programs also exist. In this article, I'll describe several popular public domain and shareware programs, as well as a few ways to obtain them.

Before I begin, a short explanation of terms is in order. A *public domain program* is just that: a program that has been donated to the public by its author. It can be copied or distributed in any manner, but it may not be sold legally, for one simple reason: No one owns it.

Another form of software, similar but not identical to public domain software, has no universally accepted name, but I like *free access software*. It's like public domain software with one exception: The author has decided to retain the copyright on the work. The program can still be distributed freely.

Shareware is similar to both public domain and free access software in one respect: It can be distributed in any way. Like free access software, the author retains the copyright on the work. However, a shareware author also expects some money from users. After a reasonable period of time to try out the program, the user must decide whether to stop using it or to send the author a shareware donation, usually in the range of \$5 to \$25. In return, the author will often send a manual or an expanded version of the program, available only to those who have sent in the donation. You might also come across variations on the shareware concept such as *charityware*. Be sure to read a program's documentation



to find out exactly what it is.

Now I'll take you on a brief tour of a few of the better public domain and shareware programs available—the ones I feel best illustrate the variety and quality of the software. Rest assured, there's more where these came from!

STEREOPLAYER

Stereoplayer, Mark Dickenson's free access SID-player, is one of the best freely available programs for the C-64. It plays all normal and enhanced SID music files, but its many extras are what makes Stereoplayer special. For instance, a built-in turbo loader is included, as well as support for multiple drives. When you run the program, you'll be treated to an entertaining introduction, which I won't describe so as not to spoil the surprise. As its name suggests, Stereoplayer can play SIDs in stereo if

you have an extra SID chip or a special cartridge, such as The SID Symphony Stereo Cartridge from Dr. Evil Laboratories (PO Box 3432, Redmond, WA 98073-3432).

BBI BASIC EDITOR

BBI Basic Editor, by Alex Howell, is a handy little utility for Basic programmers. It weighs in at a meager 11 blocks, but don't let the small size deceive you—the program has several well-done features, my favorite being bidirectional scrolling. With it, you can scroll the screen up or down to view your Basic program without having to list it. You can also enter Basic lines up to three screen lines long without resorting to clumsy command abbreviations.

JUGGLER

The animation program, Juggler, is ►

just as impressive as its Amiga namesake, and it proves that the C-64 is still no graphics lightweight. It depicts a robotic juggler balancing three crystal spheres, all in high resolution. There are actually two C-64 versions of Juggler available. The author of the original, whose online persona is RATT, drew all the animation frames by hand. Jeff Litz later produced a faster version using the original's graphics. If you're interested in C-64 graphics, I'd strongly suggest you take a look at Juggler.

CS-DOS

There are also many public domain and shareware programs available for the C-128, and the great majority of them are of high quality. Chris Smeets' DOS shell, CS-DOS, is a case in point. It's best described as an alternative environment with an interface similar to that of CP/M or MS-DOS. Indeed, it offers many features of those operating systems that the standard Commodore DOS lacks. For example, CS-DOS can execute powerful batch files from disk, all the while preserving whatever is in memory. Included among the many CS-DOS files are a terminal program and a C-128 version of the popular ARC file compressor. (Smeets is also the author of the C-64 version of ARC.)

CS-DOS is shareware: You have one

month to evaluate the program, and then you must send in a very reasonable shareware donation of \$20 to honorably continue using it.

GEOWAR

In addition to software for the 64 and 128 Native modes, there's a long list of GEOS public domain and shareware programs, from geoWrite utilities to animation programs. One excellent geoProgram is Lysle E. Shields' geoWar, a strategy game in the spirit of Risk. In fact, anyone who's ever played Risk will feel right at home here, with one to six players fighting to conquer the world. All selections are made via the standard GEOS point-and-click interface; you hardly need to touch the keyboard, except to save and load games. GeoWar is another shareware program, with a suggested donation of \$10.

SOURCES

Now that I've described a few examples and, I hope, whetted your appetite for public domain and shareware programs, let's see how you can get them. There are, as I've said, several ways. The two most popular sources of public domain software are disk collections and telecommunications networks.

Most public domain and shareware programs are available on large net-

works, such as Q-Link and CompuServe (see Table 1), or on smaller, local bulletin board systems. In fact, all the programs mentioned above came from BBSs in my area. Besides the low cost (many BBSs are free, and commercial networks charge only a few dollars an hour), this method is by far the fastest. Many programs, even large ones, can be downloaded to your computer in just a few minutes—and all you need is a telephone line, terminal program and modem. (If you don't own a modem, this is the perfect excuse to get one!)

If you don't have a modem or live in a small town where there are no local BBSs, you may want to investigate the public domain and shareware disk collections offered by users' groups and private companies (see Table 1). They typically charge from six to ten dollars per disk, to cover the cost of the blank and the copying. The compilers of these disks have usually selected popular, high-quality programs, saving you the trouble of trying out a dozen mediocre programs before finding the one you want. And, of course, since public domain and shareware programs can be freely distributed, you can exchange copies with other C-64/128 owners.

TIPS & TRICKS

With the enormous number of public

Q-Link Sextet

By SAUL COHEN

Club Caribe is a marvelous multi-person interactive fantasy game that's played online. Upon accessing the club, you choose an identity, then pick up the magic crystal and enter the doorway to begin your adventure. While you can be just an observer, it's much more fun to take part in touring the island. There are even guides to help you on your way. Dialogue is presented as cartoon captions.

Once you know the island, you can join search parties and competitions or simply sit back and have some fun! Believe me, you'll really feel like you're on an island adventure. To join Club Caribe, you need software that can be either ordered on disk from the Q-Link offices or downloaded from the network. After linking the software to your Q-Link disk, you're ready to log on.

Location: Just for Fun / Gaming Connection / Club Caribe / Club Caribe Travel Guide / Club Caribe Software / Download Club Caribe Software / Download the Club Caribe Linker or Download Club Caribe Data File / filenames: CC and CCDATA; from: Q-Link; date: 9/11/89; 20 and 593 blocks.

Labeler is a quick, three-line label



Enter, edit, save and print labels with Labeler.

program to enter, edit and save labels. It also prints single or multiple labels or the entire label file using your printer's normal font.

Location: CSS / GEOS ARENA / Software Library / User Applications / Part 3 / filename: LABELER; from: JohnW53; by: John White; date: 12/29/89; 13 blocks.

You'll need lightning reflexes to fend off an **Alien Attack**. This game for your C-128 in 40-Column mode features great graphics and smooth scrolling.

Location: CSS / Software Libraries / Browse C-128 Software / Game World / Games / Shoot-'em Up / filename: ALIEN.ARC; from: TerryR10; date: 1/16/90; 43 blocks.

Reconcile is a geoCalc template file that can help you reconcile your checkbook to your bank statement. The tem-

FREE SOFTWARE

domain and shareware programs available, some good and some bad, you may wonder if there are ways to zero in on the very best. Unfortunately, there's no surefire method, but here are a few tips you can follow to ensure that your library contains more treasures than turkeys:

- Find out what the most popular programs are. Many other C-64 and C-128 users have searched before you, and you may hear them mentioning a certain program often. Or a program might be on the "top downloads" list maintained by many networks and even by some BBSs.

- Try to get as much information on a prospective program as possible. For example, many BBSs have online information detailing program features.

- Ask! If you're looking for a good database program, for instance, post a message on a local BBS or ask around at your users' group. Someone might already have just the program you need.

Above all, don't be afraid to explore the many public domain and shareware programs out there. The cost of doing so is low, and you might find some jewels that are just what you need. ■

Stephen Dirschauer enjoys telecommunicating, especially when downloading public domain and shareware programs.

Table 1. Sources of public domain software.

ONLINE SERVICES:

CompuServe
PO Box 20212
5000 Arlington Center Blvd.
Columbus, OH 43220
800-848-8199

Delphi
Three Blackstone St.
Cambridge, MA 02139
800-544-4005

GENie
401 N. Washington St.
Rockville, MD 20850
800-638-9636

PeopleLink
3215 N. Frontage Rd., Suite 1505
Arlington Heights, IL 60004
800-524-0100

QuantumLink
8620 Westwood Center Drive
Vienna, VA 22180
800-392-8200

USERS' GROUPS/COMPANIES:

Fog International Computer Users' Group
PO Box 3474
Daly City, CA 94015
415-755-2000

JLH Company
PO Box 67021, Dept. 4
Topeka, KS 66667
913-234-3388

Poseidon Electronics
103 Waverly Place
New York, NY 10011
212-777-9515

TPUG (Toronto PET Users' Group), Inc.
5334 Yonge St., Box 116
Willowdale, Ontario
Canada M2N 6M2
416-253-9637

*Here's a sampling of what's available from QuantumLink,
one of many sources of public domain software.*

plate consists of a series of predefined cells—all you have to do is enter your values and return to the first screen to see if your checkbook and the bank statement agree. Reconcile is by far the quickest and simplest template I have ever used!

Location: CSS / GEOS ARENA / Software Libraries / User Applications / Part 3 / filename: RECONCILE; from: RAB46; date: 12/30/89; 42 blocks.

GeoPrint is Roger Lu's fine card-and banner-making program. After dissolving and converting the working demo, enter your message and small graphics in a geoPaint form file that's been customized for your printer. Then use the master program to print your banner or the paint pages driver so you can further customize your creations. Ordering instructions are included in the information file that is

presented before you download.

Location: CSS / GEOS ARENA / Soft-

Dear
Deb,



You deserve the
day off. I'll take
the kids today!
Happy "M-Day"
Love Saul

Make special days memorable by creating
cards with geoPrint.

ware Libraries / User Applications / Part 3 / filename: GEOPRINTDEMO.SDA; from and by: Roger Lu; date: 12/16/89; 124 blocks.

Online persona, Leven1, has scored again with a computer adaptation of one of my all-time favorite kid's games: **Tiddlywinks!** All you have to do is judge the distance and snap the chip into the shot glass! Think it's easy? Give it a try! You'll find that both you and your kids will be amused for hours!

Location: QCC / Software Library / Browse C-64 Software / Game World / Arcade / Other / filename: TIDDLYWINKS; from and by: Leven1; date: 1/29/90; 26 blocks. ☐

Saul Cohen, a GEOS and geoPublish teacher on Q-Link, also teaches a college-level desktop publishing course.

Plaque Man

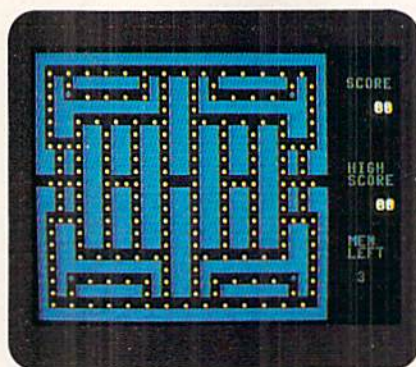
Forget Pac Man—sink your teeth into this fast-action, arcade game!



By DAVID MARTIN

Plaque Man is a fun-filled, fast-paced C-64 derivation of the popular arcade game Pac Man. The object of the game is to maneuver the white tooth through the on-screen maze, collecting enamel molecules—the small white dots—and earning points as you go. Sounds simple, doesn't it? Well, it isn't, thanks to the ever-present plaque. The globs of plaque are after the tooth and, if they make contact, it dies.

The plaque's intelligence level makes it almost impossible to avoid. Your best bet is to eat one of the red fluoride pills located near the four corners of the maze. Absorbing a fluoride pill enables your tooth to destroy the plaque, and you earn extra points.



Those white dots of enamel will earn you points, but beware the ever-present plaque!

You begin the game with three teeth. After completing a level without losing

all three, the action speeds up, and you earn an extra tooth.

Type in Listing 1, using RUN's Checksum program to look for typing errors, and save it to a freshly formatted disk. Then type in Listing 2, also using the Checksum program, and run it to create the Plaque Man machine language program called DM. To play, plug a joystick into port 2; then load and run Listing 1 to load and boot the machine language program.

That's all there is to it. Just remember the Golden Rule: Brush often and take your fluoride pills! ☐

David Martin enjoys using his Commodore computers to write utilities, to program and to telecommunicate.

Running Instructions: Type in Listing 1 and save it to disk. Type in Listing 2, save it to disk and run it to create DM. Load and run Listing 1 to boot DM.

Listing 1. Plaque Man boot program. (Available on ReRUN disk. See order card facing page 48.)

```

1 REM BOOT DATAMAN      :REM*136      9                :REM*57      6 FORI=828TO859:READX:POKEI,X:N
2 DATA 169,8,162,8,160,8,32,186  4 DATA 255,169,0,32,213,255,134  EXT                :REM*91
  ,255                :REM*104      ,45,132            :REM*131      7 SYS828                :REM*137
3 DATA 169,2,162,90,160,3,32,18  5 DATA 46,76,16,8,68,77:REM*250
  
```

Listing 2. MAKE.PLAQUE ML program. (Available on ReRUN disk. See order card facing page 48.)

```

0 REM THIS LIST 1 CREATES (AND 30 C$=MID$(B$(I*2)-1,2):H$=LEF 65 B$=LEFT$(A$,20)+MID$(A$,22,2
  SHOULD NOT BE CALLED) DM      T$(C$,1):L$=RIGHT$(C$,1)  0)+RIGHT$(A$,LEN(A$)-42)
  :REM*72                        :REM*209                :REM*140
5 OPEN 8,8,8,"DM,P,W"          :REM*244 35 H=VAL(H$):IF H$>"9" THEN H=A 70 FOR I=1 TO LEN(B$)/2:REM*221
6 CT=0:PRINT" (SHFT CLR)":REM*56 SC(H$)-55                :REM*85 75 C$=MID$(B$(I*2)-1,2):H$=LEF
10 READ A$:IF A$="-1" THEN CLOS 40 L=VAL(L$):IF L$>"9" THEN L=A  T$(C$,1):L$=RIGHT$(C$,1)
  E8:PRINT:PRINT"ALL DONE!":EN  SC(L$)-55                :REM*136                :REM*140
  D                                :REM*129 45 BY=H*16+L:PRINT#8,CHR$(BY); 80 H=VAL(H$):IF H$>"9" THEN H=A
12 PRINT"(HOME)READING LINE "+S  :REM*67                :REM*56 85 L=VAL(L$):IF L$>"9" THEN L=A
  TR$(CT):CT=CT+1                :REM*115                :REM*84 90 BY=H*16+L:PRINT#8,CHR$(BY);
15 IF LEN(A$)<62 THEN 55        :REM*254                :REM*148 95 NEXT:GOTO 10                :REM*160
  :REM*242 20 B$=MID$(A$,1,20)+MID$(A$,22, 60 IF LEN(A$)<42 THEN B$=LEFT$( 100 REM HEX DATA FOR PLAQUEMAN
  20)+MID$(A$,43,20)            A$,20)+RIGHT$(A$, (LEN(A$)-21  )):GOTO 70                :REM*176
25 FOR I=1 TO 30                :REM*181
  
```

RUN it right: C-64; joystick

UTILITIES UNLIMITED, Inc.

P.O. BOX 532 If you wish to place your order by phone CALL (503) 647-5611 24 Hrs A DAY
North Plains, OR 97133 FAX (503) 648-8992

GRAPHIC PACK.....\$24.95

Our best selling graphic programs plus more, all on one disk. Graphic label maker, Photo-Copy, Super Label, Converter (converts Print Shop to Print Master), and Sprite Editor. Plus we'll add 60 graphics.

THE 128 SUPERCHIP - A, B or C (another first)

A — There is an empty socket inside your 128 just waiting for our Super Chip to give you 32K worth of great Built-in Utilities, all at just the Touch of a Finger. You get built-in features: Files Copier, Nibbler, Track & Sector Editor, Screen Dump, and even a 300/1200 baud Terminal Program that's 1650, 1670 and Hayes compatible. Best of all, it doesn't use up any memory. To use, simply touch a function key, and it responds to your command.

B — HAS SUPER 81 UTILITIES, a complete utility package for the 1581. Copy whole disks from 1541 or 1571 format to 1581. Many options include 1581 disk editor, drive monitor, Ram writer and will also perform may CPM & MS-DOS utility functions.

C — "C" IS FOR COMBO and that's what you get. A super combination of both chips A and B in one chip, switchable at a great savings to you. All Chips Include 100 Parameters FREE!

Chips A or B: \$29.95 each Chip C: \$44.95 each.

UTILITIES UNLIMITED SOFTWARE COMBO -PAK

CHECK THIS OUT!!!

A \$169.95 VALUE FOR ONLY \$49.95

THIS COMBO INCLUDES....

1. PARAMETER CONSTRUCTION SET	REG \$24.95
2. N/D CODER	\$14.95
3. D COMPILER	\$14.95
4. MASTER LOCK	\$ 9.95
5. 800 PARAMETERS	\$39.95
6. 1000 GRAPHICS	\$29.95
7. GRAPHICS UTILITIE PAK	\$24.95

IF YOU HAVE WONDERED WHAT THESE PROGRAMS ARE AND WERE JUST AFRAID TO TRY NOW IS THE TIME, TAKE ADVANTAGE OF THIS REALLY LOW PRICE.

64 Doctor

A professional diagnostic cartridge for your Commodore 64

- Simply insert cartridge & port connectors
- Tests serial, user and control ports
- Allows for a full keyboard test
- Many chips tested including NMI & IRQ
- Sound channels and graphics tested
- BASIC Kernal & ROM tested
- Screen table clearly displays the results
- All defective chips are highlighted
- Location and CBM part numbers displayed
- Buy the parts and repair it yourself
- Or tell your dealer what's wrong & where ONLY.....\$69.95

NEW! SUPER CARTRIDGE By The Soft Group EXPLODE! V.5

The MOST POWERFUL, DISK DRIVE and PRINTER CARTRIDGE ever produced for the COMMODORE USER, Super USER FRIENDLY with all the features most asked for. New FEATURES: (a) Faster non-blanking FASTLOAD. (b) MIRROR imaging of all Hi-RES screens. (c) 4 Way color selection with insert, for all Hi-RES screens. (d) Infinite FILE COPY for all SEQ. & PRG. files, copy your file only once, then write that file to as many disks as you like... great for single file copying by small user groups. (e) FULL COLOR PRINTING of ALL COLOR Hi-RES & MULTI-COLOR SCREENS to ALL COLOR DOT MATRIX PRINTERS (not for INK JET printers). (f) Direct ONE KEY access back to VIDEO BYTE software thru EXPLODE! V5.0's MENU. (g) Supports all popular printer interfaces. (h) FREE upgraded utility disk.

ONLY \$44.95

SUPER-CARD + A BACK-UP TOOL FOR THE 1990'S

As you may know, other companies have thrown in the towel. A "LAST" version of software will never happen with Utilities Unlimited! Technology changes, machines change, new peripherals become available, and we REFUSE to leave our valued customers out in the cold! In the last 4 years Super-Card has evolved into the best backup system you can get...PERIOD! We have NO plans to discontinue such a fine product! It is true that we now have an AMIGA product line, including an Amiga Super-Card. We have, by no means, abandoned the 64/128 product line that is so valuable to our company.

Introducing Version 5 of the Super-Card+ disk copying system. The last release? No! The best release? Yes! Just look at these features, and compare them to the "LAST" version of the competitor's product:

- *NEW* Fast Copier and ALL utilities now support the 1581!
- *NEW* 64K video RAM and REU support for ALL copiers!
- *NEW* Block Allocation Map display (BAM)!
- *NEW* ML Drive Monitor!
- *NEW* Disk Compare!
- *NEW* Fast file copier. The BEST there ever will be! Supports 1541, 1571, 1581 disk drives. Support 3 transfer modes: SLOW serial, FAST serial, and PARALLEL! You can mix and match drives and transfer modes!
- *NEW* GCR Editor V2 - For the experienced programmer. Allows the reading/writing of WHOLE tracks data, enabling you to "see" what the protection is! New version actually gives you the settings you need to copy the disk with. These settings can be imported into a COPIER FILE!
- *NEW* Copier Construction Set (sm) - Create custom files yourself! When used in conjunction with our ADJUSTMENT sheet or GCR Editor, you can make COPIER FILES to easily duplicate any disk. You can also "sector edit" a disk at the same time!
- *NEW* Turbo GCR Nibbler - The replacement for ALL our previous nibblers. Protection schemes like V-MAX!, Wondermat, Xmeg, etc. giving you headaches? This the answer!

MAKE YOUR BACK-UP THE DAY YOU BUY SOFTWARE AT THE STORE. ONE BOARD FITS ALL DRIVES. SOME SOLDERING MY BE REQUIRED ON SOME DRIVES

SUPER CARD+.....	\$59.95
DUAL VERSION.....	\$109.90
VERSION 5 SOFTWARE.....	\$5.00

• SUPER TRACKER •

At last an easy way to find out where the protection really is. Super Tracker will display the location of your drive head while you are loading a piece of software. This information will be very useful to find where the protection is. Super Tracker has other useful options such as track and half track display, 8 and 9 switch, density display, write protect on/off. This incredible little tool is encased in a handsome box that sits on top of your drive. Works with all C-64/128 and most C/64 compatible drives. Some minor soldering will be required.

Super Tracker.....\$69.95

• SUPER CARTRIDGE •

The Ultimate Utility Cartridge packed full of useful utilities. Super fast file copier, nibbler, sector editor, graphic label maker, just to mention a few. 128K of software at your finger tips. Super Cartridge can be shut off and uses no memory.

Super Cartridge.....\$49.95

VIDEO BYTE II - the only FULL COLOR! video digitizer for the C-64, C-128

Introducing the world's first FULL COLOR! video digitizer for the Commodore C-64, 64-C, C-128 & 128-D computer. VIDEO BYTE can give you digitized video from your VCR, B/W or COLOR CAMERA or OFF THE AIR or CABLE VIDEO (thanks to a fast! 2.2 sec. scan time). New version 3.0 software features full RE-DISPLAY with MULTI CAPTURE MODE, MENU SELECT PRINTING, EXPANDED COLORIZING FEATURES, SAVE TO DISK FEATURE AND MUCH MORE!

FULL COLORIZING! is possible, due to a unique SELECT and INSERT color process, where you can select one of 15 COLORS and insert that color into one of 4 GRAY SCALES. This process will give you over 32,000 different color combinations to use in your video pictures. SAVES as KOALAS! Video Byte II allows you to save all your pictures to disk as FULL COLOR KOALAS! After which (using Koala or suitable program) you can go in and redraw or recolor your V.B. pic's. LOAD and RE-DISPLAY! Video Byte II allows you to load and re-display all Video Byte pictures from inside Video Byte's menu. MENU DRIVEN! Video Byte II comes with an easy to use menu driven UTILITY DISK and digitizer program (64 MODE ONLY). COMPACT! Video Byte II's hardware is compact! In fact no bigger than your average cartridge! Video Byte comes with it's own cable. INTEGRATED! Video Byte II is designed to be used with or without EXPLODE! V5.0 color cartridge. Explode! V5.0's menu will return you to VIDEO BYTE II's menu. Explode! V5.0 is the PERFECT COMPANION! Video Byte II users are automatically sent FREE SOFTWARE updates along with new documentation, when it becomes available. PRINT! Video Byte II will printout pictures in BLACK and WHITE GREY SCALE to most printers. However, when used with Explode! V5.0, your printouts can be done IN FULL COLOR 8x11's on the RAINBOW NX-1000, RAINBOW NX-1000C, JX-80, Seikosha3000 AI. (OKIDATA 10/20's (print larger 6"by9") USER SLIDE SHOW program w/auto or manual display is standard with VIDEO BYTE program. And can be backed up!)

Why DRAW a car, airplane, person or for that matter... anything when you can BYTE it ... Video Byte it instead.

ONLY \$7995

ADD \$4.00 Shipping & Handling
ADD \$3.50 for C.O.D.
in USA Only
VISA and MasterCard
Accepted
Allow 3-4 Weeks for Delivery

WORLD'S BIGGEST
PROVIDER OF
C64/128
UTILITIES

Software Submissions Invited

We are looking for HACKER STUFF: print utilities, parameters, telecommunications, and the unusual.
We now have over 1,000 parameters in stock!

PLAQUE

PLAQUE MAN

64	:REM*189	9608D2A06AD2B	:REM*159	A20D411A9988D	:REM*169
101	DATA 1008203708203E08AD00*D 01865FB38E90138C920*8D00DA D01D01865FC38	124	DATA 06C930D005A9608D2B06*A 900852AA9408DA4048D*BB048DF C068D1307A51F	147	DATA F80785FFA9018D27D0A9*2 08D04D4AD1ED0A90885*0A60A90 185E5A90085E4
102	DATA E90138C9308D01D04C91*0 820C81220651160A91F*8D15D0A 99C8DF807A988	125	DATA 1869308D1A074C910D86*E 0A51238E9108512A513*38E9308 513A5124A4A4A	148	DATA 60A9208D02D08D06D0A9*F 88D04D08D08D0A9D88D*09D08D0 7D0A9408D03D0
103	DATA 8D00D0A9888D01D0A901*8 D27D020710860AD00DC*2904D00 320BC0860AD00	126	DATA 8512A5134A4A4A8513A9*0 48515A613CAA9001869*289002E 615CAD0F61865	149	DATA 8D05D0A90285E285E5A9*0 185E385E485E685E9A9*0085E78 5E820290D60A0
104	DATA DC2902D00320E40860A9*0 78544A90A8545A90785*FDA9008 5FEA90085FF60	127	DATA 129002E6158514A000B1*1 48516A027B1148517A0*28B1148 518A029B11485	150	DATA 20A20898186AA82D15D0*F 018BD00D02907F00A60*0A90185E 7A90285E660BD
105	DATA AD00DC2901D003201D09*6 0E6FA20980FA5FA25FD*05FDD02 BE6FEA5FE2903	128	DATA 19A00B0114851AA6060*0A D00D08512AD01D08513*20E90AA 518C940D000320	151	DATA 01D02907D0EFCACAD0DB*A 90060A90185E3A90285*E260AD0 2D02907D007AD
106	DATA 85FEA5FF18A9988DF807*4 CFE08AD00DC2908D003*20F1086 0A90085FBA901	129	DATA E80BA518C941D0114C0E*0 CA51BF0DDC61BA9208D*04D44C4 20BA960A02891	152	DATA 03D02907F028604CE70E*A 90185E9A90085E860A2*08BD01D 038E9011875E1
107	DATA 85FCA9C885FF60A644A0*3 F88D0FDCAD0F8AD00D0*2907D0B 7AD01D02907D0	130	DATA 14A516C960F004C94310*0 3208608A517C960F004*0C943100 3205B08A519C9	153	DATA 9D01D0CAD0F14C0000EA5*F A2907F0E660A208BD00*0D85DE8 512BD01D085DF
108	DATA B04C610BA90185FBA902*8 5FCA9CC85FF60A90285*FBA9018 5FCA9C085FF60	131	DATA 60F0004C943100320B108*A 51AC960F004C9431003*206608A 5FBC902D028A5	154	DATA 8513B5E085D8B5E185D9*2 0E700AA5FA4A4A4A8B9*1308290 0F0B1A90085DA
109	DATA C6F8A5F82903D014E6F9*A 5F92907A9028DA4D88D*0BBD88DF CDA8D13DB4C16	132	DATA 19C960F056C9433052A9*0 185FB4C00B0CA5FCC902*0D034A51 AC960F03FC943	155	DATA 85D885DC85DDA5D8C902*F 038A5DAD034A517C960*0F04C94 3102AA90085D8
110	DATA 08A90185FBA90085FCA9*C 485FF60A200BD0004C9*20D005A 941900004BD00	133	DATA 303BA90185FC4C0B0CA5*F BD0E5A517C960F02AC9*4330264 CB90BA90085F1	156	DATA A90185D94CFB0EA5D9C9*0 2F038A5DCD034A516C9*60F004C 943102AA90185
111	DATA 05C920D005A9419D0005*B D0006C920D005A9419D*0006BD0 007C920D005A9	134	DATA A54585F0A9078D27D0A9*0 8850A60A5FCD0DA516*0960F00 7C94330034CD0	157	DATA D8A90085D94CFB0EA5D8*C 900F0D8A5D8D07A519*0C960F00 4C94310CDA902
112	DATA 419D0007CAD0CDA200BD*0 004C941D005A9019D000D8BD000 5C941D005A901	135	DATA 0B4C1608E62AA52AC9DC*D 022E61F20370A204B11*4C210CC 644A54D000A9	158	DATA 85D8A90185D94CFB0EA5*D 9C900F093A5DDDD08FA5*1AC960F 004C9431085A9
113	DATA 9D00D9BD0006C941D005*A 9019D00DABD0007C941*0D005A90 19D00DBCAD0CD	136	DATA 018544C645A545D004A9*0 185454C1608209A11A5*1BD02CE 61CA51C290385	159	DATA 0185D8A90285D94CFB0E*4 C310FB0D0038CD00D0*901AA90 185DBA90085DA
114	DATA 6078A9018D0DDCA93385*0 1A0FFB900D00990020B9*00D1990 021B900D49900	137	DATA 1CAABD92118D00D4A907*8 01D4A9228D05D4A9D1*8D06D4A 9218D04D4A90F	160	DATA 4C120FA5D895E0A5D995*E 1CACAF0DD4C380EA901*85DAA90 085DDBD01D038
115	DATA 24B900D599002588C0FF*D 0E3A9378501A9818D00DC5860A D11D009108D11	138	DATA 8D18D4A902851B4C6F0B*A 9008502AD15D02902F0*26AD02D 0186907738ED00	161	DATA CD01D0B00BA90185DCA9*0 085DD4C2E0FA90185DD*0A90085D C4C680EA5F0F0
116	DATA D0A9188D16D0A9008D21*D 0A9008D20D0A900A535*29F04A4 A4A4A1869308D	139	DATA D0901A38C90FB015AD03*D 0186907738ED01D09009*090FB00 5A502090260AD	162	DATA 016020CB0DC9000F0160*A D15D02902D00DA9208D*02D0A94 08D03D020F70D
117	DATA 2706A53429F04A4A4A4A*1 869308D2806A53329F0*4A4A4A A1869308D2906	140	DATA 15D02904F026AD04D018*6 907738ED0D0901A38C9*0FB015A D0900186907738	163	DATA AD15D02904D00DA9F88D*0 4D0A9408D05D02088D*AD15D02 908D00DA9208D
118	DATA A53229F04A4A4A4A1869*3 08D2A06A53129F04A4A*4A4A186 9308D2B06A530	141	DATA ED01D09009C90FB005A5*0 2090460AD15D02908F0*26AD06D 0186907738ED00	164	DATA 06D0A9D88D07D02E00D*A D15D02910D00DA9F88D*08D0A9D 88D09D020120E
119	DATA 29F04A4A4A4A1869308D*2 C0660A200BD39139D00*04BDA41 59D0005BD3914	142	DATA D0901A38C90FB015AD07*D 0186907738ED01D09009*090FB00 5A502090860AD	165	DATA A91F8D15D0A910851A60*A 5F0F03CC6F1A5F1D002*0C6F08D0 7D4A91F8D08D4
120	DATA 9D0006BDA4169D0007A9*0 69D00D89D0D99D00DA*9D00DBC AD0D7202A0920	143	DATA 15D02910F026AD08D018*6 907738ED0D0901A38C9*0FB015A D0900186907738	166	DATA A9008D0CD4A9808D0DD4*A 9418D0BD4A5F0C90410*09A5F1C 980F0038D27D0
121	DATA 950920C909A9018D27DA*8 D28DA8D29DA8D2ADA8D*2BDA8D2 CDA8D2DDAA930	144	DATA ED01D09009C90FB005A5*0 2091060A90060A99C8D*F9078DF A078DFB078DFC	167	DATA A5F0D00AA9018D27D0A9*0 08D0BD4A20ABDFECFC9*FFD005A 91F9DFECFC91E
122	DATA 8D2D06AD2706C930D03C*A 9608D2706AD2806C930*D030A96 08D2806AD2906	145	DATA 07A9058D28D0A9058D29*D 0A9058D2AD0A9058D2B*0D0A9018 5FB85FCA9888D	168	DATA D005A9FE9DFECFCACAD*E 7206E0CF03BA6F0D04A*0C61FA92 18D04D4A27FA0
123	DATA C930D024A9608D2906AD*2 A06C930D018AD2A06C9*3D011A	146	DATA 00D0A9888D01D0A90085*F 08D0BD4A90085F0A944*8516851	169	DATA 4F8C00D488D0FA8001D4*A 0FF88D0FDCAD0ED20DC*0A204B1

PLAQUE II

PLAQUE MAN

1A51FD011A207	:REM*238	CA50129FB8501	:REM*53	000000000000	:REM*221
170 DATA BD1F0038DD2F00D009CA*D		193 DATA A000B900D0990020B900*D		216 DATA 0000000000000000000000*	
F044C07114C2F0E90F8*A207BD1		1990021B900D2990022*B900D39		0000000000000000000000*	
F009D2F00CAD0	:REM*238	90023B900D499	:REM*228	00000000004341	:REM*255
171 DATA F74C07114D15D08D15D0*F		194 DATA 0024B900D5990025C8D0*D		217 DATA 41604160416041604143*4	
8A50A182A850A186522*8522901		9A50190048501AD0EDC*09018D0		3414360606060606060606*	
9A52318691085	:REM*4	EDCA000A9FF99	:REM*208	3414343414343	:REM*125
172 DATA 239010A5241869108524*9		195 DATA 1822B97021990822B95D*1		218 DATA 41434341434341434341*4	
007A5251869108525D8*20D411A		1990022C8C008D0EAA0*00B9881		3434143434143434143*4341436	
9218D04D4A914	:REM*224	2990026B93915	:REM*38	0606060606060606	:REM*139
173 DATA A060A25FCAD0FD8C01D4*8		196 DATA 990027C8C040D0EF6060*6		219 DATA 6060606043414141414343*4	
8D0F518E901D0EEA920*8D04D44		0606060606060606060606		1434341434341434341*4343414	
C2F0EA207A900	:REM*199	0606060606060606	:REM*227	3434143434141	:REM*125
174 DATA 9D1F00CAD0FAA903851F*2		197 DATA 6060606060606060606*6		220 DATA 4141436060606060606*6	
04B11AD00DC2910DF09*A907854		0606060606060606060606*		0606060606060606060606*	
4A90A85452037	:REM*89	3434343434343	:REM*208	1434341434341	:REM*185
175 DATA 0A4C16082007010D0520*2		198 DATA 43434343434343434343*4		221 DATA 43434143434143434143*4	
020200F1605122020202*010120		343434343434343434343*6060606		1434360606060606060606*	
51313202020206	:REM*27	0606060606060606	:REM*108	3434143414343	:REM*212
176 DATA 091205202020202021514*1		199 DATA 43416041604160416041*6		222 DATA 41434341434341434341*4	
40F0E2020202020202*202008A		04160416041604160416041*6041604		3434143434143434143*4143436	
9008DEE10BDBE	:REM*247	1604160416041	:REM*57	0606060606060606	:REM*155
177 DATA 10991807EEEE10E8C8A9*0		200 DATA 6060606060606060606*4		223 DATA 60606060414141414343*4	
8CDEE10D0EE60A9A08D*F810A90		341434143434343434343*4341434		1414141434341606041*4343414	
68DF910A2002A0	:REM*160	1434341434143	:REM*18	1414143434141	:REM*215
178 DATA 0020EF10A208A02820EF*1		201 DATA 43434343434341434143*6		224 DATA 414160606013030F1205*6	
0A228A05020EF10C429*11A9078		06013030F1205606060*4341434		0606060606060606060606*	
DF910A9188DF8	:REM*56	0604160416041	:REM*20	1434341434341	:REM*43
179 DATA 10A210A00020EF10A218*A		202 DATA 60414341434341434160*4		225 DATA 43434143434143434143*4	
02820EF10A220A05020*EF10C49		1604160416040434143*6060606		1434360416041604143*4143434	
810A905A2FFA0	:REM*135	0606060606060606	:REM*78	1434160416041	:REM*101
180 DATA FF88D0FDCAD0F838E9014*D		203 DATA 43414343434343434343*4		226 DATA 6041604043414360606*3	
0F1600000183C3C1800*00A207A		3434341434341434343*4343434		3606060606060606060606*	
9009D1F009D2F	:REM*30	3434343434143	:REM*185	3434343434143	:REM*45
181 DATA 00CAD0F7A903851F2037*0		204 DATA 6060606060606060606*4		227 DATA 41434341434143434343*4	
AAD00DC2910DF09A90F*8D18D4A		3414343416041604160*4160414		34343414341436060606*6060606	
9218D04D4A900	:REM*102	1436060606060606	:REM*16	0606060606060606	:REM*124
182 DATA 8D06D4A20C60601F601F*8		205 DATA 60606060434341434143*4		228 DATA 41604160416041604160*4	
0158015F8A520186910*85220502		3414343414343414343*4143434		1604160416041604160*4160416	
EA52118691085	:REM*72	1434341434341	:REM*241	0416043606060606	:REM*147
183 DATA 219025A5221869108522*9		206 DATA 4341434360606060603*3		229 DATA 606060606060606060606*	
01CA523186910852300*13A5241		0606060606060606060606*		3434343434343434343*4343434	
869108524900A	:REM*125	3414343414343	:REM*244	3434343434343	:REM*108
184 DATA A5251869108525000200*5		207 DATA 41434341434341434341*4		230 DATA 4343434343434360606*6	
8D8A52529F04A4A4A4*1869308		1414143606060606060606*6060606		0606060606060606060606*	
DE704A52429F0	:REM*35	0434143434143	:REM*48	0606060606060606	:REM*16
185 DATA 4A4A4A4A1869308DE804*A		208 DATA 43414343414343414343*4		231 DATA 6060606060606060606*6	
52329F04A4A4A4A1869*308DE90		1434341434341434341*4343414		0606060606060606060606*	
4A52229F04A4A	:REM*217	3606060606060606	:REM*178	0606060606060606	:REM*164
186 DATA 4A4A1869308DEA04A521*2		209 DATA 606060606060606060606*		232 DATA 6060606060606060606*6	
9F04A4A4A4A1869308DEB04A52		3414343414343414343*4143434		0606060606060606060606*	
029F04A4A4A4A	:REM*75	1434341434341	:REM*249	0606060606060606	:REM*165
187 DATA 1869308DECB04A9018DE7*D		210 DATA 434341436060606060606*6		233 DATA 6060606060606060606*6	
88DE8D8DE9D8DEAD8*8DEBD88		0606060606060606060606*		0606060606060606060606*	
DECD88DEDD8A9	:REM*181	0416041414343	:REM*95	0606060606060606	:REM*166
188 DATA 308DED04ADE704C930D0*3		211 DATA 41416041604160416041*4		234 DATA -1	:REM*88
CA9608DE704ADE804C9*30D030A		3434143606060606060606*6060606			
9608DE804ADE9	:REM*240	0434143434343	:REM*43		
189 DATA 04C930D024A9608DE904*A		212 DATA 43434343434343414343*4			
DEA04C930D018ADEA04*C930D01		1434343434343434343*4343414			
1A9608DEA04AD	:REM*18	3606060606060606	:REM*141		
190 DATA EB04C930D005A9608DEB*0		213 DATA 60606060434143406041*6			
4600000000000000000000*00000380		0000000000000000000000*0007C000			
0007C00000FE00	:REM*3	0FE00009200000	:REM*60		
191 DATA 0092000000FE00006C0000*F		214 DATA FE0000C00000FE000054*0			
E000000000000000000000*00000000		0000000000000000000000*00000000			
0000000000000000	:REM*147	0000000000000000	:REM*125		
192 DATA 00000000000000000000*0		215 DATA 00000000000000000000*0			
0000000000AD0EDC29*FE8D0ED		00000000000000000000*00000000			



ACTION REPLAY v5.0

THE ULTIMATE UTILITY / BACKUP CARTRIDGE FOR THE C64/128

• Action Replay allows you to Freeze the action of any Memory Resident Program and make a complete back-up to disk - and that's not all... Just compare these features



ONLY \$64.99

SUPER CRUNCHER — ONLY \$9.99

A utility to turn your Action Replay 5 into a super powerful program compactor. Reduce programs by up to 50%! Further compact programs already crunched by ARS's compactor.

GRAPHICS SUPPORT DISK — ONLY \$19.99

To take advantage of ARS's unique power, we have prepared a suite of graphic support facilities.

- SCREEN VIEWER: View screens in a "slide show" sequence.
- MESSAGE MAKER: Add scrolling messages to your saved screens with music.
- PROSPRITE: A full sprite editor.
- ZOOM LENS: Explode sections of any saved screen to full size.

WARP 25

The world's fastest disk serial Turbo. A typical backup will reload in under 5 seconds.

- No special formats — with action replay you simply save directly into Warp 25 status.
- Backup all your existing programs to load at unbelievable speed!
- Warp Save/Load Available straight from Basic.

RAMLOADER

You can also load most of your commercial originals 25 times faster! With our special LSI logic processor and 8K of onboard Ram, Action Replay offers the world's fastest Disk Serial Turbo.

UNIQUE CODE CRACKER MONITOR

- Freeze any program and enter a full machine code monitor.
- Full Monitor Features.
- Because of Action Replay's on Board Ram the program can be looked at in its ENTIRETY. That means you see the code in its Frozen state not in a Reset state as with competitors products.

MORE UNIQUE FEATURES

- Simple Operation: Just press the button at any point and make a complete back-up of any* memory-resident program to tape or disk.
- Turbo Reload: All back-ups reload completely independent of the cartridge at Turbo speed.
- Sprite Monitor: View the Sprite set from the frozen program — save the Sprite — transfer the Sprite from one game to another. Wipe out Sprites, view the animation on screen. Create custom programs.
- Sprite Killer: Effective on most programs — make yourself invincible. Disable Sprite/Sprite/Background collisions.
- Unique Picture Save: Freeze and save any Hires Screen to tape or disk. Saved in Koala, Blazing paddles format.
- Compactor: Efficient compacting techniques — 3 programs per disk — 6 if you use both sides.
- Single File: All programs saved as a single file for maximum compatibility.
- Utility Commands: Many additional commands: Autonium, Append, Old, Delete, Linesaver, etc.
- Screen Dump: Print out any screen in 16 Gray Scales, Double size print options.
- Unstoppable Reset: Reset button to Retrieve System and Reset even so called Unstoppable Programs.
- Fully Compatible: Works with 1541/C/II, 1581, 1571 and with C64, 128, or 128D (in 64 Mode).
- Disk Utilities: Fast Format, Directory, List, Run and many other key commands are operated by Function Keys.
- Unique Restart: Remember all of these utilities are available at one time from an integrated operating system. A running program can be Frozen to enter any Utility and the program is restarted at the touch of a key — without corruption.
- LSI Logic Processor: This is where Action Replay V gets its power. A special custom LSI chip designed to process the logic necessary for this unmatched Freeze/Restart power. No other cartridge has this power!

UPGRADE ROM — ONLY \$16.99

• Give your AR IV all the power of the new V5.0.

RIO COMPUTERS

800-782-9110

ORDERS ONLY

MON-SAT
8 AM-6 PM
PACIFIC TIME

YOUR HIGH TECH
SOURCE FOR
COMMODORE
ACCESSORIES

CUST SERVICE
TECH SUPPORT
702-454-7700
TU-SA 10AM-6PM
FAX: 702-454-7700

DEEP SCAN BURST NIBBLER - \$39.99 COMPLETE

THE MOST POWERFULL DISK NIBBLER AVAILABLE ANYWHERE AT ANY PRICE!

- Burst Nibbler is actually a two part system - a software package and a parallel cable to connect a 1541 or 1571 to a C-64 or C-128
- What gives Burst Nibbler its power? Conventional nibblers have to decode the data from the disk before it can transfer it using the serial port bus - when non-standard data are encountered they are beat. Burst Nibbler transfers data as raw GCR code via the parallel cable without the need to decode it, so you get a perfect copy of the original.
- Will nibble up to 41 tracks -Copy a whole disk in under 2 min -Installs in minutes - no soldering required on 1541 (1571 requires soldering)

SOFTWARE ALONE - ONLY \$19.99 — CABLE ALONE - ONLY \$19.99

MIDI 64 -Only \$49.99

- ◆ Full specification MIDI at a realistic price
 - ◆ MIDI In - MIDI Out - MIDI Thru
 - ◆ Compatible with Digital Sound Sampler and Advanced Music System
- MIDI CABLES (5 ft. prof. quality) -Only \$*8.99

DIGITAL SOUND SAMPLER

- ◆ Record any sound digitally into memory and then replay it with astounding effects
- ◆ Playback forwards/backwards with echo/reverb/ring modulation
- ◆ Full sound editing and realtime effects menu with waveforms
- ◆ Powerful sequencer with load & save
- ◆ Line In - Mic In - Line Out and feedback controls

Only - \$89.95

ADV. MUSIC SYSTEM

Powerful modular program for creating, editing, playing and printing out music

- Easy input and storage of music
- Playback through the C-64 internal sound or external MIDI keyboard/synthesizer
- Print music in proper musical notation together with lyrics using PRINTER module
- Enter music a note at a time in written music format using the EDITOR or via on screen piano KEYBOARD emulator or via an externally connected MIDI keyboard
- Use the LINKER to connect music files together to form very large compositions
- Generate almost unlimited sounds with the flexible SYNTHESIZER module

Only - \$29.99

THE ADVANCED OCP ART STUDIO

COMPREHENSIVE, USER FRIENDLY ART AND DESIGN SOFTWARE

- Windows - icons - pull down menus - pointing devices
- Operates in Hi-Res mode. Full control over color attributes
- All info on screen - no need to switch between picture & menu
- Compatible with keyboard, joystick, mouse and Koala Pad
- Supports Epson compatibles plus user defined printer drivers
- 16 pens, 8 random sprays, 16 user definable brushes
- Windows can be inverted, cut & pasted, enlarged, reduced, squashed, stretched, flipped and rotated
- Solid & textured fill option, with 32 user definable patterns
- 3 levels of magnification with pan & zoom, pixel clear and plot
- Text - 9 character sizes, 2 directions, bold and rotate
- Comprehensive font editor
- Lines, points, rectangles, triangles, circles and rays
- Undo facility for last operation

Only - \$29.99

RIO Computers

3430 E. TROPICANA AVE. #65

LAS VEGAS, NV 89121

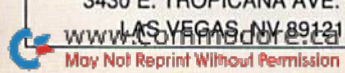
www.computer.com

*Add \$5.00 shipping/handling in the continental U.S.; \$8.00 - PR, AK, HI, FPO, APO; \$11.00-Canada/Mex; C.O.D. orders add \$3.50 to above charges; SPECIFY COMPUTER MODEL WITH ORDER; VISA/MC/Checks/Money Orders/C.O.D. Accepted; Please call for return authorization number - returns subject to a 20% restocking fee; We reserve the right to substitute products of different appearance but equal quality and function for items pictured above; Prices subject to change without notice.

800-782-9110

702-454-7700

IN NEVADA



RIO COMPUTERS

800-782-9110

*ORDERS ONLY
MON-SAT 8AM-6PM
PACIFIC TIME

YOUR HIGH TECH
SOURCE FOR
C-64 PRODUCTS

CUST SERVICE
TECH SUPPORT
702-454-7700
TU-SA 10AM-6PM
FAX: 702-454-7700

SCAN THE FUTURE OF DESKTOP PUBLISHING WITH THE 64

HANDYSCANNER 64

The Worlds First Handscanner for the 64!



- Professional quality super high 400 dots per inch resolution
- Reads the graphics from any printed document
- Converts any material to digitized graphics in seconds
- Elaborate grey-tone scale digitizes color or black & white photos using 3 built in dithering settings
- B/W setting for crisp reproduction of high contrast line art
- Enlargement or reduction from 33% to 300%
- Graphic memory of 640 X 400 standard (640 X 800 with Pagefox module)
- Included software has all the standard functions of a good drawing program

ONLY \$299.95

PAGEFOX

*3 Easy To Use Editors For Perfect
Home Desktop Publishing*

ONLY \$139.95

- Completely menu driven
- 100Kb storage enlargement module keeps entire page in memory
- Uses proportional mouse or joystick for total control over text, graphics or picture placement

GRAPHIC EDITOR

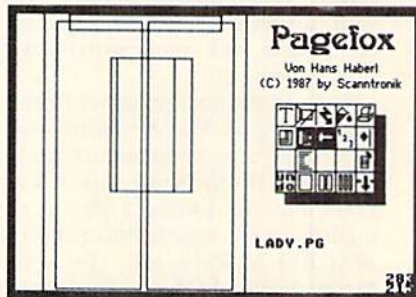
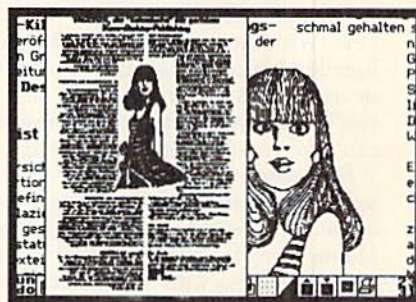
- Store 640 X 800 points (equal to one 8.5 X 11 inch page)
- Draw lines, rectangles, circles, and ellipses with rubberband cursor
- Pattern funtion generator with 20 patterns
- Move, copy, reflect, revolve, & connect with exact pixel positioning
- Zoom, fill, spray, freehand draw, undo and many more functions

TEXT EDITOR

- 12 character sets available at one time (more are reloadable) with 9 variations (outline, shadow, bold, etc.) give thousands of combinations
- Proportional spacing, left/right justify, indentation, underline, sub- and super-script, pixelwise character adjust and much much more
- NLQ print on Epson compatibles (MPS 801, 802 & 803 supported)

LAYOUT EDITOR

- Display full page or any 320 X 200 block
- Text flows around graphics and from frame to frame in any order
- Only 5 seconds to reformat and display an entire page
- Left/right format, center or right justify, automatic formatting, etc.



CHARACTERFOX ~ ONLY \$49.95

Create your own character sets or use the 25 built in sets. Also contains flourishes, frames, extra large initials and utilities.

190 CHARACTER SET DISK ~ ONLY \$24.95

2 double sided disks provide a selection of fonts for any requirement.

GRAPHICS LIBRARY 1 ~ ONLY \$24.95

Over 200 images on 3 disks

GRAPHICS LIBRARY 2 ~ ONLY \$24.95

RIO COMPUTERS

3430 E. TROPICANA AVE. #65

LAS VEGAS, NV 89121

www.commodore.ca

*Add \$5.00 shipping/handling in the continental U.S.; \$8.00 - PR, AK, HI, FPO, APO; \$11.00-Canada/Mex; C.O.D. orders add \$3.50 to above charges; SPECIFY COMPUTER MODEL WITH ORDER; VISA/MC/Checks/Money Orders/C.O.D. Accepted; Please call for return authorization number - returns subject to a 20% restocking fee; We reserve the right to substitute products of different appearance but equal quality and function for items pictured above; Prices subject to change without notice.

800-782-9110

702-454-7700

IN NEVADA

May Not Reprint Without Permission

Macro Mania

Add these macros to your 64, and you'll have Basic commands and functions in a single keystroke.



By STEPHEN DIRSCHAUER

Macro Mania is a short utility that's handy for any C-64 user. Why? Well, even in this age of point-and-click interfaces, typing is still a major part of interacting with a computer, and Macro Mania can save you countless keystrokes. How? By defining 45 macro keys that can be added to your C-64. Each key prints its own macro of up to ten characters.

Macro keys aren't new to the C-64. You can find them in any of the many utilities that let you program your C-64's normally functionless function keys. With the utility in place, hitting a function key automatically prints a Basic command or some other text. If you've used them before, you know they can save you a great deal of time.

However, they aren't perfect. My main gripe is that you're limited to four, or, at most, eight macro keys. Macro Mania provides 45. The other utilities are also useless with a number of programs that use the function keys themselves. Macro Mania doesn't meddle with unshifted function keys, so it's compatible with most programs that utilize them.

Type in the boot program from Listing 1, using *RUN's* Checksum program to look for any typing errors, and save it to disk. Do the same with Listing 2. Load and run Listing 2 *once* to create on disk the machine language file called **MACRO MANIA.ML**. To activate Macro Mania, load and run Listing 1. Entering **SYS 49699** turns Macro Mania on and off.

USING MACRO MANIA

You access any of Macro Mania's macros by holding down the Commodore key and a shift key and hitting the appropriate macro key. This may sound like an acrobatic maneuver, but it's



really quite simple and quick. Each key will print its own macro only if the Commodore and shift keys are held down. Otherwise, it will act as it normally would.

Although you can program your own macros (I'll show how below), Macro Mania comes with a built-in set, listed in Table 1 along with their corresponding keys. Italics in the table indicate nonprintable characters, listed in a format similar to *RUN's* program listings. For instance, *5 CRSR DN*s is five presses of the cursor-down key.

DEFINING MACROS

You can define any of the 45 macro keys like this:

```
SYS 50000,"key","macro"
```

For example, to set the P macro to poke, you'd enter:

```
SYS 50000,"P","POKE"
```

Macro Mania doesn't limit you to literal strings like *Poke*. Any string expression will do, as in these three examples:

```
SYS 50000,A$,"APPLE"  
SYS 50000,"K",JT$(5)  
SYS 50000,P$,RIGHT$(1,5)
```

To add the return key to a macro, just add **CHR\$(13)** to its definition. For example:

```
SYS 50000,"L","LIST"+CHR$(13)
```

The L macro would then automatically list the program in memory. You can also put macro definitions in programs.

If you'd like to view a macro's contents, omit the second parameter:

```
SYS 50000,"A"
```

Clear a macro by setting it to a null string:

```
SYS 50000,"C",""
```

COMPATIBILITY AND MORE

As a general rule, Macro Mania will work with any program that doesn't disturb memory from 49699 to 50919 (**\$C223-\$C6E7**) or change the keyboard vector at 655 (**\$028F**). That in-

RUN it right: **C-64**

RUN W·O·R·K·S

Full 64
and 128 Mode
Support!

Productivity Software
with a Creative Advantage

RUN Works, a new dimension to productivity software, giving you top quality programs at an economical price! Best of all, **RUN Works is fully C-64 and C-128 compatible!**

Money Manager. Have you ever wondered where your money goes each month? Then Money Manager is for you! This personal budget and record-keeping system will allow you to keep track of your income and expenses. . . so you can stay within your budget!



RUN Term. Nearly half of all Commodore users own modems. RUN's user friendly RUN Term reveals the exciting world of BBSs, on-line networks and information exchanges. With advanced features like 300/1200 Baud support, autodialing, ASCII capture of text, XModem and Punter protocols and much more.

Label Base. Most people need to produce address labels in large quantities from time-to-time, and using your Commodore and printer makes the job quick and efficient. Label Base makes this time-consuming chore a snap.



Form Writer. This program lets you design and print letters, invoices, surveys, or any other kind of form for your small business or home application. Great for school projects too!

RUN Paint. This full-featured paint and draw program has more drawing options and tools than most commercial packages, plus it offers compatibility with the popular Doodle! and Koala graphic formats. Professionals and amateurs alike will find this a fantastic tool for computer art.



RUN PAINT



RUN Shell. This powerful disk utility lets 1541, 1571 and 1581 users access, maintain and manipulate files with ease. It's a menu-driven disk manager that makes erasing, renaming or copying files or disks as easy as the press of a key. Plus a whole lot more!

Graphmaker. A graph-lover's delight! Generate beautiful charts and graphs of your custom data sets for analysis and impressive presentation.



Satisfaction Guarantee: Use **RUN Works** for a full 30 days. If it doesn't satisfy your productivity needs, simply return the disk and fully illustrated documentation book for a complete refund!

To order, mail this coupon or call 1-800-343-0728

Yes! Send me **RUN Works** right away!

\$24.97 enclosed.

Charge my: American Express MasterCard Visa Discover

Card # _____ Exp. Date _____

Signature _____

Name _____

Address _____

City, State, Zip _____

RUN Works
IDG Communications/Peterborough
80 Elm St.
Peterborough, NH 03458
or call 1-800-343-0728

MACRO MANIA

cludes most Basic, and even many machine language, programs. I've used Macro Mania with games, utilities and two machine language word processors. However, the only way to find out if it'll work with a specific program is to experiment.

When you turn Macro Mania on and off with SYS 49699, the current macro set won't be harmed.

Finally, Macro Mania disables the Commodore/shift combination's usual function: toggling between the C-64's two character sets. With Macro Mania

in place, you can hold down Commodore and shift and hit the delete key to get the same effect. ☐

Stephen Dirschauer, an enthusiastic telecommunicator and programmer, enjoys using his C-128 in 64 and 128 modes.

Table 1. Default macro set.

Key	Macro	Key	Macro	Key	Macro
A	AND	P	PRINT	2	LOAD "\$",
B	OR	Q	SYS 49749	3	OPEN 4,4 return
C	CHR\$(R	RETURN	4	CMD 4 return
D	DATA	S	STOP	5	CLOSE 4 return
E	CLOSE	T	TO	6	LOAD "*",8:
F	FOR	U	THEN	7	LOAD "\$",8:
G	GOTO	V	VERIFY	8	CRSR RT, DEL
H	GOSUB	W	WAIT	9	5 DELs
I	INPUT	X	RUN	0	LIST: return
J	INPUT#	Y	RESTORE	F1	5 CRSR UPs
K	READ	Z	GET#	F3	5 CRSR LFs
L	LOAD	↑	SYS 50000,"	F5	5 CRSR RTs
M	MID\$(@	undefined	F7	5 CRSR DNs
N	NEXT	*	undefined	cursor-down	undefined
O	OPEN	1	LOAD "*",	cursor-right	undefined

Listing 1. Boot program. (Available on ReRUN disk. See order card facing page 48.)

```
10 REM MACRO MANIA 64 BOOT PROG      20 IF A=0 THEN A=1:LOAD"MACRO M      30 SYS 49699
RAM                                  ANIA.ML",8,1                          :REM*31
                                  :REM*239                          :REM*3
```

Listing 2. Macro Mania program. (Available on ReRUN disk. See order card facing page 48.)

```
0 REM LISTING 1 CREATES (AND SH      60 IF LEN(A$)<42 THEN B$=LEFT$(      104 DATA 0D4249474D4143203634*2
OULD NOT BE CALLED) MACRO MAN      A$,20)+RIGHT$(A$, (LEN(A$)-21      044495341424C45442E*00000A
IA.ML                                ):GOTO 70                                :REM*220
:REM*177
5 OPEN 8,8,8,"MACRO MANIA.ML,P,      65 B$=LEFT$(A$,20)+MID$(A$,22,2      105 DATA 02C903F008A9408D22C3*4
W"                                     0)+RIGHT$(A$,LEN(A$)-42)          4C8EBA5CBC93FD004A9*0D85CBC
:REM*170
6 CT=0:PRINT" {SHFT CLR}":REM*56      ):REM*140
10 READ A$:IF A$="-1" THEN CLOS      70 FOR I=1 TO LEN(B$)/2:REM*221      106 DATA C900F00AAD18D049028D*1
E8:PRINT:PRINT"ALL DONE!":EN      75 C$=MID$(B$, (I*2)-1,2):H$=LEF      8D0A900A20DD23C3F0*0BE8E02
D                                     T$(C$,1):L$=RIGHT$(C$,1)          :REM*88
:REM*129
12 PRINT" {HOME}READING LINE "+S      ):REM*140
TR$(CT):CT=CT+1                       :REM*17
:REM*141
15 IF LEN(A$)<62 THEN 55              80 H=ASC(H$)-48+7*(H$>"9")
:REM*254
:REM*232
20 B$=MID$(A$,1,20)+MID$(A$,22,      85 L=ASC(L$)-48+7*(L$>"9")
20)+MID$(A$,43,20)                    :REM*232
:REM*242
25 FOR I=1 TO 30                        90 BY=H*16+L:PRINT#8,CHR$(BY);
:REM*181
30 C$=MID$(B$, (I*2)-1,2):H$=LEF      95 NEXT:GOTO 10
T$(C$,1):L$=RIGHT$(C$,1)            :REM*160
:REM*209
35 H=ASC(H$)-48+7*(H$>"9")            100 REM MACHINE LANGUAGE FOR BI
:REM*98
40 L=ASC(L$)-48+7*(L$>"9")            GMAC 64
:REM*197
45 BY=H*16+L:PRINT#8,CHR$(BY);
:REM*67
50 NEXT:GOTO 10
:REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT      101 DATA 23C2AD64C2D023AE8F02*A
O 70                                     C9002BE90C28C91C2A2*92A0C28
:REM*184                                E8F028C9002A9
:REM*103
102 DATA 808D64C2A965A0C2201E*A
B60AE90C2AC91C28E8F*028C900
2A97BA0C2201E
:REM*104
103 DATA ABA9008D64C26000D42*4
9474D41432036342041*4354495
6415445442E00
:REM*202
104 DATA 0D4249474D4143203634*2
044495341424C45442E*00000A
9808D9102AD8D
:REM*220
105 DATA 02C903F008A9408D22C3*4
C48EBA5CBC93FD004A9*0D85CBC
900D011AD22C3
:REM*161
106 DATA C900F00AAD18D049028D*1
8D0A900A20DD23C3F0*0BE8E02
DD0F68D22C34C
:REM*88
107 DATA 48EBCD22C3D0034C48EB*A
924A0C58D05C38C06C3*E000F01
518AD05C3690A
:REM*251
108 DATA 8D05C3AD06C369008D06*C
3CA4CE9C2A200BDDFFF*F00B9D7
702E8E00AF003
:REM*161
109 DATA 4C04C386C6A5C8D22C3*A
94085CB4CE0EA000A1C*14120E1
51A1D2122252A
:REM*201
110 DATA 242726293E110D161E1F*0
917190C23383B080B10*13181B2
02E3136040506
:REM*161
111 DATA 03070220FDAE209EAD20*A
3B6D001608E63C38C64*C3ADFFF
F8DE6C6C92AD0
:REM*160
112 DATA 05A9254CE3C3C95ED005*A
9264CE3C3C940D005A9*244CE3C
3C911D005A92B
:REM*1
113 DATA 4CE3C3C91DD005A92C4C*E
```


MACRO MANIA

3C3C985900DC9899003*4CAEC33 8E95E4CE3C3C9 :REM*1	0D2FF60A90D20 :REM*165	132 DATA 00535953203439373439*0 052455455524E000000*0053544 F5000000000000 :REM*112
114 DATA 409028C95B901EA9BFA0*C 3201EAB20730029EAD*20A3B66 00D4E4F542041 :REM*95	123 DATA D2FFADE6C6C911F034C9*1 DF03AC985B00620D2FF*4CDEC4A 94620D2FF38AD :REM*92	133 DATA 00544F000000000000*00 05448454E0000000000*0056455 24946590000000 :REM*13
115 DATA 204D4143524F0038E941*4 CE3C3C930B0034CAEC3*C93A900 34CAEC338E916 :REM*97	124 DATA E6C6E985AABDEEC420D2*F FA92020D2FFA93D20D2*FFA9202 0D2FF60313335 :REM*82	134 DATA 0057414954000000000*0 052554E000000000000*0052455 3544F524500000 :REM*59
116 DATA A200AAA924A0C58D69C4*8 C6AC4E000F01518AD69*C4690A8 D69C4AD6AC469 :REM*57	125 DATA 37A906A0C5201EAB4CDE*C 4A910A0C5201EAB4CDE*C443525 35220444F574E :REM*164	135 DATA 0047455423000000000*0 04C4953543A0D000000*004C4F4 144222A222C000 :REM*162
117 DATA 008D6AC4CA4CF0C32079*0 0C900D023AE69C48E1D*C4AC6AC 48C1EC4ADFFFF :REM*207	126 DATA 00435253522052494748*5 4000028454D50545929*00414E4 40000000000000 :REM*39	136 DATA 004C4F41442224222C00*0 04F50454E20342C340D*00434D4 42034D00000000 :REM*143
118 DATA D0034C4FC4AE1DC4AC1E*C 48E66C48C67C44C84C4*20FDAE2 09EAD20A3B6D0 :REM*205	127 DATA 004F52000000000000*0 0434852242800000000*0044415 44100000000000 :REM*133	137 DATA 00434C4F534520340D00*0 04C4F4144222A222C38*3A4C4F4 1442224222C38 :REM*192
119 DATA 1CAE69C4AC6AC48E4DC4*8 C4EC4A9008DFFFF20B2*C4A91CA 0C5201EAB008E :REM*170	128 DATA 00434C4F534500000000*0 0464F5200000000000*00474F5 44F00000000000 :REM*225	138 DATA 3A1D140000000000000*0 0141414141400000000*0000000 00000000000000 :REM*126
120 DATA 66C48C67C48D1BC5A200*B DFFFF9DFFFF006B8EC*1BC5D0F 2AD69C48D82C4 :REM*172	129 DATA 00474F53554200000000*0 0494E50555400000000*00494E5 05554230000000 :REM*215	139 DATA 0000000000000000000*0 053595335303030302291919 19191000000000 :REM*164
121 DATA AD6AC48D83C4A9009DFF*F F20B2C4A92220D2FFA2*00AD66C 48D9BC4AD67C4 :REM*168	130 DATA 0052454144000000000*0 04C4F41442000000000*004D494 42428000000000 :REM*96	140 DATA 009D9D9D9D9D000000*0 01D1D1D1D1D00000000*0011111 11111000000000 :REM*11
122 DATA 8D9CC4BDDFF00D20D2*F FE8E00AF005EC1BC5D0*EA9222	131 DATA 004E455854000000000*0 04F50454E0000000000*0050524 94E54000000000 :REM*112	141 DATA -1 :REM*252 ■

BIG BLUE READER

Reads & Writes IBM MS-DOS Disks

Big Blue Reader transfers word processing, text, ASCII, and binary files between Commodore and IBM MS-DOS diskettes. 1571 or 1581 Disk Drive is required. Does not work with 1541.
Fast, easy to use, menu driven program for novices and experts. Transfers MS-DOS files on 360K 5.25" & 720K 3.5" disks.
Big Blue Reader 128 V3.1 supports: C128 CP/M files, 17xx REU, 40/80 column, reading MS-DOS sub-directories, and much more.
Big Blue Reader 64 V2 available separately only \$29.95
BBR 128 V3.1 upgrade available. Send original BBR disk and \$18
BIG BLUE READER 128/64 only \$44.95

BIBLE SEARCH V3.1

Fastest Complete Bible on 7 Disks!

A fast, easy-to-use tool for general Bible study and in-depth Bible research. Finds any word or verse in seconds! Complete Old and New Testament text and Concordance on seven 1541/71 disks. Includes C64 & C128 programs; printer and disk output; versatile search options; and more. Satisfaction, Money Back Guaranteed!
Please specify 1541, 1571 or 1581 disks.

Holiday Special \$59.00 (KJV or NIV Whole Bible)

NEW, Bible Search Gospel Demo for C64/128 or Amiga only \$3
"an enormously quick and responsive program", Gazette Aug '89
"try it with any drive—you'll be amazed", Twin Cities #25

SOGWAP Software – Ph:(219)724-3900

115 Belmont Road; Decatur IN 46733

Order by check, money order, or COD. US Funds only.
Free shipping in US and Canada. No credit card orders.
Foreign orders add \$5 (\$12 for whole Bible).

• IMPORTANT NOTICE •

Our repairable power supply (for the C-64) may be the last power source you will ever purchase for your Commodore.

Ⓒ™ — Finally — Ⓒ™

A repairable C-64 power supply with outstanding features and benefits:

- 1 Year Warranty
- External fuse
- Schematic included
- Highest amperage output (1.8 amps)
- Does not operate "Hot"
- UL approved (VGE approved)
- Low cost — no one comes even close
- Sold worldwide in various over-seas voltages
- European craftsmanship throughout
- Spare parts kit available
- Utilizes large transformer
- Special prices for schools/dealers

Over 52% of C-64 failures were due to power supply malfunctions—save money in repairs and replace your power supply today.

Introductory price of **\$24.95** plus UPS

• Catalog Announcement •

Call for your new free 27 page catalog of specialty items for Amiga, Commodore and IBM. The catalog contains: Low-cost replacement chips, parts, upgrades, 34 diagnostic products, tutorial VHS tapes, interfaces, complete power supply line and other worldwide products you won't find anywhere else. Dealers, use your letterhead.



THE GRAPEVINE GROUP, INC.
3 Chestnut St., Suffern, NY 10901
914-357-2424 • Fax 914-357-6243
Toll Free 1-800-292-7445



We Ship Worldwide

Prices Subject to Change

Machine Language Magic

Now you don't have to hassle with machine code to make use of its speed in your programs.



By BRANDON CORFMAN

It happens to almost every programmer: You get a great idea for a new game or utility on your C-64, but when it comes to writing the code, Basic is just too slow to handle all the routines. You need the speed of machine language, but it takes too much time to learn. If only there were a utility that would supply the machine language for you!

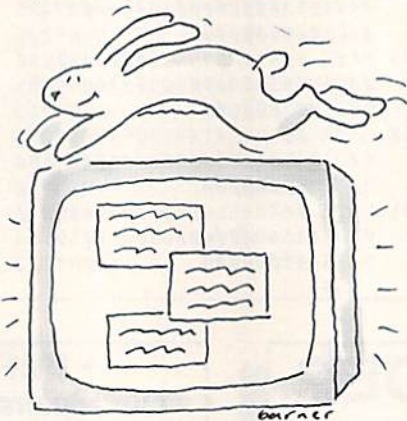
Look no further. Text FX provides all the machine language copying, moving, scrolling and window routines, with resulting special effects, that you need in your Basic programs, leaving you free to develop that ultimate program without worrying about speed.

Text FX is designed to be invisible to Basic. Windows are stored under Basic and Kernal ROM, and the program itself takes no space from Basic RAM. Also, because Text FX uses SYS commands instead of keywords, the routines are as fast as possible.

Listing 1 contains a Basic program that writes the Text FX machine language to disk. Type it in, using RUN's Checksum program to detect errors, save it under the name Text FX Data and run it.

Next, type in the program in Listing 2 and save it under the name Text FX Demo. This program gives you a short demonstration of the capabilities of Text FX, and, I hope, some ideas for using it in your own programs.

The starting memory address of Text FX is 49152 (\$C000), and a jump table is located at the beginning of the program for convenience in accessing the routines. Text FX uses addresses \$02, \$00F8-\$00FF, \$0334-\$033A, \$A000-\$BFFF and \$E000-\$FFFF for storage. The TextFill, MultiScroll, WindowSave, WindowRestore and InvertChar commands automatically calculate the current address of screen RAM and adjust



their execution accordingly.

Note: At the beginning of a program with window commands, *always* reset the number of windows to zero with POKE 826,0.

WINDOWINIT AND WINDOWFADE

WindowInit and WindowFade let you fade any character window to black, so it disappears into a black background. WindowInit, which must be activated first, sets up coordinates for the character window. WindowFade then does the actual step-by-step fading with a program loop. See Listing 3 for a sample routine that uses these commands.

Activate WindowInit with

```
SYS SA,X1,Y1,X2,Y2
```

where SA is the starting address of Text FX, X1 and Y1 are the X and Y coordinates of the top-left corner of the window, and X2 and Y2 are the bottom-right coordinates.

Activate WindowFade with

```
SYS SA+3
```

No parameters are needed here, but a loop is required to make the screen fade in steps. I designed WindowFade with a loop, so you can regulate the speed of

the fade. Simply insert a delay between the SYS statement and the If statement in line number 40 of Listing 3.

When the screen is completely black, WindowFade tells your program by storing 1 in address 2. The loop will be broken, and your program will go on to the next line.

FADEINIT AND FADESCREEN

This pair of commands fades the entire screen, including the background and border, to black. FadeInit must be activated before FadeScreen for your program to work correctly.

Activate FadeInit with

```
SYS SA+6
```

No parameters are needed, since FadeInit involves the entire screen, not just a window.

Activate FadeScreen with

```
SYS SA+9
```

No parameters are needed here, either, but a loop similar to the one in WindowFade is required. Here again, you can put a delay in the loop if needed. FadeScreen operates much like WindowFade, except for affecting the entire screen.

COLORFILL AND TEXTFILL

As the name implies, ColorFill fills any portion of color RAM with the color you specify. It's much faster—and more versatile—than using Pokes from Basic. ColorFill should be activated prior to TextFill, especially on old C-64s where Pokes to screen RAM are invisible. A sample routine that uses these commands appears in Listing 4.

Activate ColorFill with

```
SYS SA+12,X1,Y1,X2,Y2,COLOR
```

where X1, Y1, X2 and Y2 are the window coordinates, and COLOR is the ▶

RUN it right: C-64

GEOBASIC IS HERE AT LAST!

Now you can bring point-and-click performance to all your programs. Write your own utilities, games and more. Create your own checkbook register or appointment book. Compose music; create color charts; build a recipe file; index your collectibles or experiment with quilt designs. Even beginners can become accomplished programmers with these advanced Basic commands that make programming rewarding, interesting and fun.

More than 100 Commands!

GeoBasic is the long awaited high level programming language from Berkeley Softworks for the C64/C128 GEOS user. Now, with GeoBasic's 100+ commands, all your programs can have the fun and excitement, the professional look and feel of pulldown menus, icons, dialog boxes and more.

Includes Graphics, Fonts and More!

Commands for drawing graphic images, using fonts, moving sprites making sound and more. Printing text or bitmap graphics on your printer has never been easier. Read and write data to disk files using powerful disk commands. GeoBasic even has support for

structured programming. And that's not all . . .

5 Specialized Editors

The GeoBasic Package includes 5 specialized editors that make programming easier than you've ever dreamed. A *Menu Editor* lets you design the exact pulldown menu you need. The *Bitmap Editor* makes it a snap to include bitmap graphics within a program.

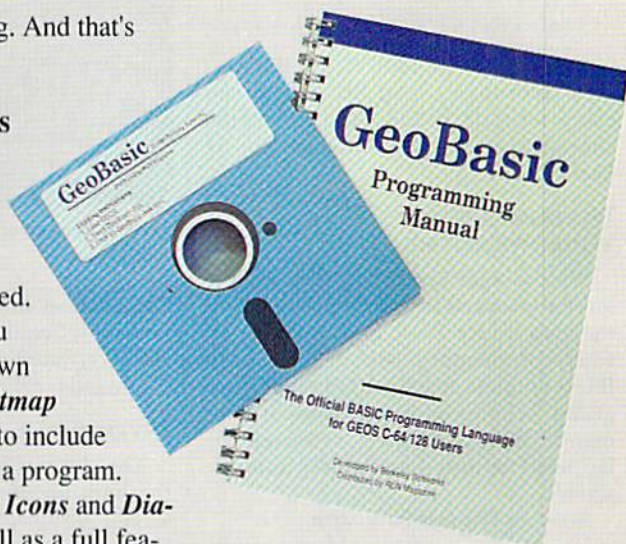
There are editors for *Icons* and *Dialog boxes* as well as a full featured *Sprite Editor*. And all these are readily accessible from the built-in *Text Editor*. Best of all — each uses the GEOS point-and-click interface you already know how to use! In addition, GeoBasic comes complete with *sample applications* that show you what you can do with this versatile programming language!

Rich with Features!

- Over 100 commands!
- Works under GEOS
- Point and Click Interface
- Specialized Utility Editors
- GEOS Mouse, Menu, Dialog Box & Icon support
- Graphic commands
- Sprite commands
- Sound commands
- Printer commands
- Disk commands
- Sample Applications

Available only from RUN!

Developed by the GEOS pros at Berkeley Softworks, GeoBasic is not sold in stores. It's available only through RUN magazine, so don't delay. Take advantage of this super GEOS offer now!



Complete the coupon below, or for immediate service, CALL TOLL FREE:

1-800-343-0728

and CHARGE IT to your credit card. Not available in retail stores.

Advanced Programming Features Include:

- Line Labels
- Longer Variable Names
- Definable Print Windows
- WHILE . . . LOOP
- REPEAT . . . UNTIL
- Process Routines
- CALL command for user written ML routines

YES! Send me GeoBasic (disk plus complete manual) for only \$39.95 postpaid.

- Payment enclosed
 CHARGE IT to my:
 MasterCard VISA Amex
 Discover

Card # _____ Exp. _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____
Canadian and foreign orders add \$4.50 per program. US funds drawn on US bank. All programs require GEOS. GeoBasic runs in 64 mode (40 column) on C64/C128. Allow 4-6 weeks for delivery. GB1190

GEOS Products • RUN Magazine
P O Box 802 • Peterborough, NH 03458

GeoBasic

number, 0-15, of the Commodore color to put in color RAM.

TextFill has two main purposes: to clear portions of the screen used for windows and to provide borders for windows. Activate it with

```
SYS SA+15,X1,Y1,X2,Y2,SC
```

where X1, Y1, X2 and Y2 are the window coordinates, and SC is a screen character code, 0-255. You can find the character codes in the *Commodore 64 User's Guide*.

WINDOWSAVE AND WINDOWRESTORE

WindowSave saves any portion of the screen (characters and their colors) to the area under Basic or Kernal ROM, where no memory can be stolen from Basic or most machine language programs. WindowSave's companion command, WindowRestore, retrieves the last window stored and places it on the screen.

Activate WindowSave with

```
SYS SA+18,X1,Y1,X2,Y2
```

where X1, Y1, X2 and Y2 are the window coordinates. Up to eight windows can be active at once.

Activate WindowRestore with

```
SYS SA+21
```

This command needs no parameters.

SCROLLINIT AND MULTISCROLL

These commands are used together to scroll all or part of the screen in any direction. ScrollInit is the set-up routine, while MultiScroll does the actual scrolling.

Activate ScrollInit with

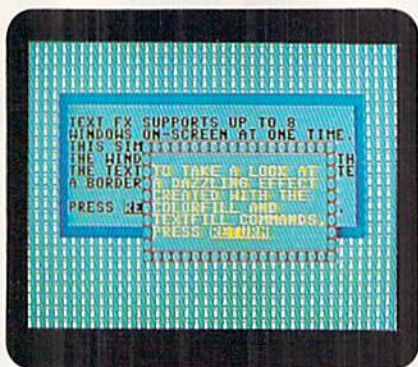
```
SYS SA+24,D,B1,B2
```

where D is the direction you want the screen to move, and B1 and B2 are the X or Y boundaries of the area that moves. The possible direction values are 1 for up, 2 for right, 3 for down and 4 for left. When scrolling up or down, B1 and B2 are X coordinates in the range 0-39; when scrolling right or left, B1 and B2 are Y coordinates in the range 0-24.

Activate MultiScroll with

```
SYS SA+27
```

This command needs no parameters.



Text FX lets you create fantastic screen effects.

Once you've set a direction and boundaries with ScrollInit, you can use MultiScroll repeatedly until another Text FX command is executed.

INVERTCHAR

The InvertChar command toggles the high bit of screen memory in the screen window you specify, inverting the video in the window. This is especially handy for highlighting menu options and flashing part of the screen. Activate InvertChar with

```
SYS SA+30,X1,Y1,X2,Y2
```

where X1, Y1, X2 and Y2 are the window coordinates.

MEMFILL

MemFill is a general-purpose command for clearing a hi-res screen or erasing a section of memory. Activate MemFill with

```
SYS SA+33,ADDRESS 1,ADDRESS 2,VALUE
```

where ADDRESS 1 and ADDRESS 2 are the beginning and ending addresses for the fill operation, and VALUE is the number of the character to insert.

MEMCOPY

Copying memory at machine language speed is easy with MemCopy. Try using this command to copy character sets or hi-res screens, or, with MultiScroll, to scroll screens for an arcade game. Activate MemCopy with

```
SYS SA+36,ADDRESS 1,ADDRESS 2,DESTINATION START
```

where ADDRESS 1 and ADDRESS 2

are the beginning and ending addresses of the memory area you're copying from, and DESTINATION START is the beginning address of the memory area you're copying to.

DESIGNER'S NOTES

I certainly liked the effect of the fade routines when I wrote them, but after a while, I began to wish for fade-ins, too. At first, I thought the mechanics of doing a fade-in would be beyond my ability and patience, but when I started thinking about how to use the window routines in programs, it came to me. While the screen is blanked, you can save each step of a fade-out as a window, then flip the screen back on and resurrect the text in a few easy steps. And, this takes only a few seconds! To turn off the screen, use POKE 53265, PEEK (53265) AND 239; to turn it back on, use POKE 53265, PEEK (53265) OR 16.

Text FX doesn't provide for restoring windows in a different order and at different locations, but it can be done—at your own risk and with your own error checking. Here's how:

Address 826 (\$033A) is used by Text FX to hold the number of the window currently open. This number increases or decreases accordingly each time a window is opened or closed. To change the window order, change the value in this address to the number of the window you want.

The X and Y values specified in each WindowSave command are stored as the first four bytes of the window's data with the starting memory addresses of the eight windows at \$A000, \$A800, \$B000, \$B800, \$E000, \$E800, \$F000 and \$F800. Changing these X and Y values changes the location on the screen where WindowRestore places the window. There's only one problem: WindowRestore doesn't check to see if the data it resurrects is off screen, so you could end up overwriting your Basic program.

Text FX will make a world of difference in your programming capability. Its ready-made machine language routines will free you to do the creative programming you want to do. ☐

Brandon Corfman enjoys designing utilities and has been programming on Commodore machines for six years.

Listing 1. Text FX Data program. (Available on ReRUN disk. See order card facing page 48.)

```

Ø REM THIS LIST 1 CREATES (AND                :REM*156      D                :REM*129
SHOULD NOT BE CALLED) TEXT FX                6 CT=Ø:PRINT"{SHFT CLR}":REM*56      12 PRINT"{HOME}READING LINE "+S
.ML                :REM*223      1Ø READ A$:IF A$="-1" THEN CLOS      TR$(CT):CT=CT+1                :REM*141
5 OPEN 8,8,8,"TEXT FX.ML,P,W"                E8:PRINT:PRINT"ALL DONE!":EN      15 IF LEN(A$)<62 THEN 55

```


IT'S VIDEO

IT'S AUDIO

IT'S COMPUTERS

Searching for a camcorder that will help you make terrific videos? ... Shopping for a quality CD player that won't bust your budget? ... Trying to create great graphics with your computer? ... Looking to upgrade your VCR system? ... It's all here in *ON!*

ON! explores emerging trends and exciting breakthroughs. You'll find out what's hot and what's not--the products you'll enjoy for years and those that are merely passing fads.

With each monthly issue you'll become a more savvy consumer. *ON!* gives you advice from the experts without confusing technical jargon.

And then, *ON!* helps you get the very best buys for your money.

But that's just the beginning. *ON!* is filled with important tips and helpful hints on how to get the most out of all the home electronics equipment you already own.

In *ON!* you'll discover...

- ▼ how ingenious camera techniques used by the pros can help you produce professional-quality videos.
- ▼ how easy it is to create a sound system that will satisfy even the most discerning music lovers and not take over your living room.
- ▼ how to take full advantage of your home computer - from preparing outstanding presentations to helping the kids with their homework.
- ▼ how to "build" a home theater and still have money left over for popcorn.
- ▼ and more!

Turn to *ON!* It's an experience you won't want to miss!

Order your FREE Premiere Issue of *ON!* today! Just call 1-800-343-0728 or fill in the coupon at right. This FREE offer is available for a limited time only.

The Premiere Issue of *ON!* will also go on sale at your newsstand
www.onmag.com
May Not Reprint Without Permission

WIN A \$5000 HOME THEATER!
VIDEO, AUDIO & COMPUTERS

ON!

FOR WORK AND PLAY

ULTIMATE HOME VIDEO

- Laserdisc Reborn
- Widescreen TV on the Way

LATEST CAMCORDERS

Best and Worst in Features, Formats

SOUND OUT OF SIGHT

Hideaway Speakers That Sound Great

PLUS!

Features:
Home Computer
Camcorder

PREMIERE ISSUE

U.S.A.
Canada's
DECEMBER 1990



IT'S HOT

ON! is NEW. It's dynamic! ON! is the one magazine that puts you on the inside track of the fast-changing world of video, audio and home computers.

✓ YES! Send me my FREE Premiere Issue of *ON!* and reserve my Charter Subscriber privileges. If I like *ON!* my price for a full year (11 more issues for a total of 12) is just \$12.97. That's a savings of 63% off the single copy price. If I choose not to subscribe, I'll write "cancel" on the bill you send, owe absolutely nothing, and keep the Premiere Issue with your compliments.

SEND NO MONEY NOW. WE WILL BILL YOU!

Name _____
Address _____
City _____ State _____ Zip _____

YOUR SATISFACTION IS 100% GUARANTEED!

I understand that if I am not completely satisfied, I may cancel at any time and receive a full refund.

ON! P.O. Box 802, 80 Elm Street, Peterborough, N.H. 03458 • 1-603-924-9471 • 1-800-343-0728

WIN A \$5000 HOME THEATER!

For complete details on how you can win, order your FREE issue today.

M L M A G I C

```

:REM*254
20 B$=MID$(A$,1,20)+MID$(A$,22,
20)+MID$(A$,43,20) :REM*242
25 FOR I=1 TO 30 :REM*181
30 C$=MID$(B$, (I*2)-1, 2) :H$=LEF
T$(C$,1) :L$=RIGHT$(C$,1)
:REM*209
35 H=VAL(H$) :IF H$>"9" THEN H=A
SC(H$)-55 :REM*85
40 L=VAL(L$) :IF L$>"9" THEN L=A
SC(L$)-55 :REM*136
45 BY=H*16+L :PRINT#8, CHR$(BY) ;
:REM*67
50 NEXT :GOTO 10 :REM*115
55 IF LEN(A$)<21 THEN B$=A$ :GOT
O 70 :REM*184
60 IF LEN(A$)<42 THEN B$=LEFT$(
A$,20)+RIGHT$(A$, (LEN(A$)-21
)) :GOTO 70 :REM*176
65 B$=LEFT$(A$,20)+MID$(A$,22,2
0)+RIGHT$(A$,LEN(A$)-42)
:REM*140
70 FOR I=1 TO LEN(B$)/2 :REM*221
75 C$=MID$(B$, (I*2)-1, 2) :H$=LEF
T$(C$,1) :L$=RIGHT$(C$,1)
:REM*140
80 H=VAL(H$) :IF H$>"9" THEN H=A
SC(H$)-55 :REM*56
85 L=VAL(L$) :IF L$>"9" THEN L=A
SC(L$)-55 :REM*84
90 BY=H*16+L :PRINT#8, CHR$(BY) ;
:REM*148
95 NEXT :GOTO 10 :REM*160
100 REM HEX DATA FOR TEXT FX 64
:REM*201
101 DATA 00C04C27C04C46C04CFE*C
04C06C14C4FC14C92C1*4C2DC24
C98C24C5AC34C :REM*56
102 DATA 93C34C80C54CB4C54CFC*C
520FEC020C9C120FFC1*18AD350
36D340385F88D :REM*249
103 DATA 3403A5F969D885F98D35*0
360A200A0002085C0C8*CC3603F
0034C4AC0E8EC :REM*115
104 DATA 3703F01018A5F8692885*F
8A5F9690085F94C48C0*EE3B03A
D3B03C904D004 :REM*6
105 DATA A9018502AD340385F8AD*3
50385F960B1F8290FF0*F9C901F
03DC902F03EC9 :REM*137
106 DATA 03F03FC904F059C905F0*2
8C906F024C907F034C9*08F035C
909F018C90AF0 :REM*9
107 DATA 32C90BF010C90CF02FC9*0
DF030C90EF031C90FF0*32A9009
1F860A90F91F8 :REM*126
108 DATA 60A90991F860A90E91F8*6
0A90891F860A90991F8*60A9029
1F860A90B91F8 :REM*62
109 DATA 60A90591F860A90691F8*6
0A90C91F860A9008D3B*0385026
0A000A92085F8 :REM*136
110 DATA A9D085F9A2002085C0E6*F
8E8E004D0F6A90085F8*A9D885F
92085C0E6F8D0 :REM*70
111 DATA 02E6F9A5F8C9E8F0034C*2
4C1A5F9C9DBF0034C24*C1EE3B0
3AD3B03C904F0 :REM*113
112 DATA 0160A901850260D820C9*C
1209BB786FA20FFC118*AD35036
D340385F8A5F9 :REM*173
113 DATA 69D885F9A200A000A5FA*9
1F8C8CC3603F0034C70*C1E8EC3
703F01018A5F8 :REM*37
114 DATA 692885F8A5F9690085F9*4
6CC160D820C9C1209B*B786FA2
0FFC12046C3A2 :REM*182
115 DATA 00A000A5FA91F8C8CC36*0
3F0034CA7C1E8EC3703*F01018A
5F8692885F8A5 :REM*87
116 DATA F9690085F94CA3C16020*9
BB7E028B02C8E340320*9BB7E01
9B0228E350320 :REM*117
117 DATA 9BB7E028B018EC340390*1
38E3603209BB7E019B0*09EC350
390048E370360 :REM*216
118 DATA 4C08AF38AD3603ED3403*1
869018D360338AD3703*ED35031
869018D370318 :REM*221
119 DATA A900A2086A6E35039003*1
86928CA10F485F960D8*AD3A03C
90890034CFCC1 :REM*167
120 DATA 20C9C1200CC3A000B934*0
391FAC8C004D0F6EE3A*032039C
3A2002064C2AD :REM*63
121 DATA 380385F818AD390369D8*8
5F9A200A0008C3403B1*F8A0009
1FAAC3403E6FA :REM*4
122 DATA D002E6FBC8CC3603F003*4
66C2E8EC3703F01018*A5F8692
885F8A5F96900 :REM*123
123 DATA 85F94C64C260D8AD3A03*D
0034C08AFCE3A03200C*C378A93
58501A000B1FA :REM*192
124 DATA 993403C8C004D0F62039*C
3A20020D8C2AD380385*F818AD3
90369D885F9A2 :REM*164
125 DATA 0020D8C2A93785015860*A
0008C3403A000B1FAAC*340391F
8E6FAD002E6FB :REM*226
126 DATA C8CC3603F0034CDAC2E8*E
C3703F01018A5F86928*85F8A5F
9690085F94CD8 :REM*166
127 DATA C260A90085FAA008AD3A*0
3186D3A0388C000D0F7*85FBAD3
A03C904B00A18 :REM*105
128 DATA A5FB69A0085FB4C38C318*A
5FB69C085FB6018A5FA*690485F
A20FFC18D3903 :REM*59
129 DATA 18AD35036D340385F88D*3
803AD880265F985F960*209BB7E
000F051E005B0 :REM*249
130 DATA 4D8AA88C3603209BB720*8
2C38E3403209BB72082*C3EC340
390348E350360 :REM*51
131 DATA AC3603C003B005E028B0*2
560E019B0260AE3603*E001F00
CE002F00BE003 :REM*56
132 DATA F00AE004F0094CB5C34C*3
2C44CB2C44C3DC54C08*AFAD880
285F985FBA900 :REM*253
133 DATA 85FA85FEA92885F885FC*A
9D885FD85FFA9C08D38*03A9DB8
D3903AC3403B1 :REM*172
134 DATA F891FAB1FC91FECC3503*F
004C84CDBC18A5F869*2885F8A
5F9690085F918 :REM*254
135 DATA A5FA692885FAA5FB6900*8
5FB18A5FC692885FCA5*FD69008
5FD18A5FE6928 :REM*29
136 DATA 85FEA5FF690085FFA5FE*C
D3803D007A5FFCD3903*F0034CD
8C36018AD8802 :REM*137
137 DATA 690385F985FBA9C085FA*8
5FEA99885F885FCA9DB*85FD85F
FA9008D3803A9 :REM*5
138 DATA D88D3903AC3403B1F891*F
AB1FC91FECC3503F004*C84C5BC
438A5F8E92885 :REM*221
139 DATA F8A5F9E90085F938A5FA*E
92885FAA5FBE90085FB*38A5FCE
92885FCA5FDE9 :REM*230
140 DATA 0085FD38A5FEE92885FE*A
5FFE90085FFA5FECD38*03D007A
5FFCD3903F003 :REM*215
141 DATA 4C58C46020F7C4A0000C8*B
1F88891F8C8B1FA8891*FAC8C02
7F0034C7C4A5 :REM*139
142 DATA FACD3803D008A5FBCD39*0
3D0016018A5F8692885*F8A5F96
90085F918A5FA :REM*34
143 DATA 692885FAA5FB690085FB*4
CB5C4AD340385FC202A*C5A5FC8
5F885FA18A5FD :REM*240
144 DATA 6D880285F918A5FD69D8*8
5FBAD350385FC202AC5*A5FC8D3
80318A5FD69D8 :REM*151
145 DATA 8D39036018A900A2086A*6
6FC9003186928CA10F5*85FD602
0F7C4A002788B1 :REM*48
146 DATA F8C891F888B1FAC891FA*8
8F0034C42C5A5FACD38*03D008A
5FBCD3903D001 :REM*153
147 DATA 6018A5F8692885F8A5F9*6
90085F918A5FA692885*FAA5FB6
90085FB4C40C5 :REM*156
148 DATA D820C9C120FFC12046C3*A
200A000B1F8498091F8*8C8C360
3F0034C8EC5E8 :REM*221
149 DATA EC3703F01018A5F86928*8
5F8A5F9690085F94C8C*C56020F
DAE208AD2007 :REM*204
150 DATA B784F885F920FDAE208A*A
D20F7B784FA85FBC5F9*F005B00
94C48B2A5FAC5 :REM*155
151 DATA F890F7209BB7A0008A91*F
8AAA5FAC5F8D007A5FB*C5F9D00
160E6F8D002E6 :REM*85
152 DATA F94CE2C520FDAE208AAD*2
0F7B78C34038D350320*FDAE208
AAD20F7B78C36 :REM*11
153 DATA 038D370320FDAE208AAD*2
0F7B784FA85FBAD3703*CD3503F
005B00B4CD4C5 :REM*8
154 DATA AD3603CD340390F5AD35*0
3C5FB0F56B05D38AD36*03ED340
38D3803AD3703 :REM*86
155 DATA ED35038D390318AD3803*6
5FA85FAAD3903365FB85*FBAD360
385F8AD370385 :REM*228
156 DATA F9A000B1F891FAA5F8CD*3
403D008A5F9CD3503D00*0160A5F
8D002C6F9C6F8 :REM*82
157 DATA A5FAD002C6FBC6FA4C73*C

```


M L M A G I C

```

6AD3403C5FA90A5F0E3*AD34038      3D008A5F9CD3703D001*60E6F8D    160 DATA -1                      :REM*18
5F8AD350385F9                      :REM*14                          002E6F9E6FAD0                    :REM*212
158 DATA A000B1F891FAA5F8CD36*0    159 DATA 02E6FB4CAEC6           :REM*29
    
```

Listing 2. Text FX Demo program. (Available on ReRUN disk. See order card facing page 48.)

```

10 IF PEEK(49152)=76 AND PEEK(4          :REM*16
   9153)=39 THEN 30                      :REM*36
20 LOAD"TEXT FX.ML",8,1:REM*2003
30 POKE53280,6:POKE53281,12:DIM
   A$(15):POKE826,0:GOSUB540
   :REM*167
40 SA=49152:WI=SA:WF=SA+3:FI=SA
   +6:FS=SA+9:CF=SA+12:TF=SA+15
   :WS=SA+18:WR=SA+21 :REM*149
50 SI=SA+24:MS=SA+27:IC=SA+30
   :REM*50
60 PRINT "{SHT CLR}{CRSR DN}{C
   TRL 8}RUN MAGAZINE PRESENTS
   ...":REM*196
70 PRINT"{5 CRSR DNs}"SPC(14){
   CTRL 2}TEXT FX DEMO":REM*29
80 PRINTSPC(19){CRSR DN}{CTRL
   1}BY":REM*111
90 PRINTSPC(13){CRSR DN}{CTRL
   7}BRANDON CORFMAN":REM*211
100 PRINTSPC(8){6 CRSR DNs}{CO
   MD 4}PRESS {CTRL 9}RETURN{C
   TRL 0} TO CONTINUE":REM*17
110 GETZ$:IFZ$<>CHR$(13)THEN110
   :REM*232
120 SYSFI:FORT=1TO1000:NEXT
   :REM*167
130 SYSFS:IFPEEK(2)=. THEN130
   :REM*229
140 FORI=1TO1000:NEXT :REM*56
150 PRINT "{SHT CLR}{8 CRSR DN
   s}{CTRL 1}"SPC(7)"YOU JUST
   SAW AN EXAMPLE OF":REM*0
160 PRINTSPC(6)"TEXT FX'S FADES
   CREEN COMMAND.":REM*46
170 PRINTSPC(6){3 CRSR DNs}NOW
   HIT {CTRL 9}RETURN{CTRL 0}
   FOR A LOOK AT":REM*68
180 PRINTSPC(8)"ITS WINDOW CAPA
   BILITIES.":REM*146
190 SYSCF,0,0,39,24,11:SYSCF,0,
   0,39,24,12:SYSCF,0,0,39,24,
   15:SYSCF,0,0,39,24,1
   :REM*166
200 GETZ$:IFZ$<>CHR$(13)THEN200
   :REM*59
210 SYSCF,0,0,39,24,15:SYSCF,0,
   0,39,24,12:SYSCF,0,0,39,24,
   11:SYSCF,0,0,39,24,0
   :REM*111
220 PRINT"{SHT CLR}":FORI=1TO1
   000:NEXT :REM*239
230 POKE53280,11:POKE53281,12:S
   YSCF,0,0,39,24,1:SYSTF,0,0,
   39,24,33 :REM*31
240 SYSWS,4,5,35,16:SYSCF,4,5,3
   5,16,6:SYSTF,4,5,35,16,160:
   SYSTF,5,6,34,15,32 :REM*185
250 PRINT"{HOME}{CTRL 1}{7 CRSR
   DNs}"SPC(5)"TEXT FX SUPPOR
   TS UP TO 8":REM*136
260 PRINTSPC(5)"WINDOWS ON-SCRE
   EN AT ONE TIME.":REM*183
270 PRINTSPC(5)"THIS SIMPLE EXA
   MPLE UTILIZES":REM*69
280 PRINTSPC(5)"THE WINDOW COMM
   ANDS ALONG WITH":REM*228
290 PRINTSPC(5)"THE TEXTFILL CO
   MMAND TO CREATE":REM*242
300 PRINTSPC(5)"A BORDER FOR TH
   E WINDOW.":REM*196
310 PRINTSPC(5){CRSR DN}PRESS
   {CTRL 9}RETURN{CTRL 0} NOW
   TO CONTINUE.":REM*20
320 GETZ$:IFZ$<>CHR$(13)THEN320
   :REM*234
330 SYSWS,13,9,32,18:SYSCF,13,9
   ,32,18,2:SYSTF,13,9,32,18,2
   09 :REM*202
340 SYSTF,14,10,31,17,32
   :REM*150
350 PRINT"{HOME}{11 CRSR DNs}"S
   PC(14){CTRL 8}TO TAKE A LO
   OK AT":REM*23
360 PRINTSPC(14)"A DAZZLING EFF
   ECT":REM*245
370 PRINTSPC(14)"CREATED WITH T
   HE":REM*155
380 PRINTSPC(14)"COLORFILL AND"
   :REM*59
390 PRINTSPC(14)"TEXTFILL COMMA
   NDS," :REM*0
400 PRINTSPC(14)"PRESS {CTRL 9}
   RETURN{CTRL 0}" :REM*71
410 GETZ$:IFZ$<>CHR$(13)THEN410
   :REM*22
420 SYSWR:FORI=1TO1000:NEXT:SYS
   WR:FORI=1TO1000:NEXT
   :REM*146
430 FORI=0TO12:SYSTF,12-I,12-I,
   27+I,12+I,160:SYSCF,12-I,12
   -I,27+I,12+I,3:NEXT:REM*237
440 POKE53281,0:POKE53280,0
   :REM*37
450 FORI=0TO12:SYSTF,12-I,12-I,
   27+I,12+I,32:SYSCF,12-I,12-
   I,27+I,12+I,0:NEXT :REM*255
460 SYSSI,2,0,39 :REM*95
470 SYSMS:Z=Z+1:PRINT"{HOME}"A$
   (Z);:IFZ<15THEN470 :REM*186
480 GETZ$:IFZ$=""THEN 480
   :REM*162
490 IFZ$="{FUNCT 1}"THEN 530:
   :REM*246
500 SYSWI,0,10,39,14 :REM*234
510 SYSWF:FORI=0TO1000:NEXT:IFPEE
   K(2)=0THEN510 :REM*227
520 CLR:GOTO 30 :REM*105
530 END :REM*144
540 FORI=6TO15:A$(I)="{40 SPACE
   s}":NEXT :REM*171
550 A$(1)="{CTRL 4}{CRSR DN}PRE
   SS A KEY TO RUN AGAIN OR {C
   TRL 9}F1{CTRL 0} TO END"
   :REM*175
560 A$(2)="{40 SPACES}":REM*89
570 A$(3)="{PROGRAMMING - AND MA
   KES IT MORE FUN TOO!}"
   :REM*88
580 A$(4)="{CTRL 8}TEXT FX{CTRL
   4} SPEEDS UP YOUR BASIC{12
   SPACES}":REM*218
590 A$(5)="{FROM SCREEN SCROLLIN
   G TO COPYING DATA,}":REM*223
600 RETURN :REM*228
    
```

Listing 3. Sample routine for using WindowInit and WindowFade. (Available on ReRUN disk. See order card facing page 48.)

```

10 IF A=0 THEN A=1:LOAD "TEXT F
   X.ML",8,1:REM LOAD TEXT FX
   :REM*166
20 SA=49152:REM STARTING ADDRES
   S OF TEXT FX :REM*212
30 SYS SA,10,10,20,20:REM SET U
   P THE FADE WITH WINDOWINIT
   :REM*5
40 SYS SA+3:IF PEEK(2)=0 THEN 4
   0:REM LOOP FOR WINDOWFADE
   :REM*214
    
```

Listing 4. Sample routine for using ColorFill and TextFill. (Available on ReRUN disk. See order card facing page 48.)

```

10 IF A=0 THEN A=1:LOAD "TEXT F
   X.ML",8,1:REM LOAD TEXT FX
   :REM*166
20 POKE 826,0:REM ALWAYS, ALWAY
   S USE THIS POKE BEFORE USING
   WINDOW COMMANDS! :REM*40
30 SA=49152:CF=SA+12:TF=SA+15:W
   S=SA+18:REM DEFINE VARIABLES
   :REM*94
40 SYS WS,10,10,20,20:REM SAVE
   A WINDOW :REM*59
50 SYS CF,10,10,20,20,1:REM FIL
   L THE WINDOW WITH THE COLOR
   WHITE :REM*25
60 SYS TF,10,10,20,20,160:REM F
   ILL THE WINDOW WITH REVERSED
   SPACES :REM*129
70 SYS TF,11,11,19,19,32:REM CL
   EAR A SMALLER WINDOW INSIDE
   THE LARGER ONE :REM*191
    
```


128 Mode

This month we direct our attention to handy uses for Direct mode.

By MARK JORDAN

ACCORDING TO the official Commodore literature, Direct mode is "the mode of operation that executes Basic commands immediately after the return key is pressed." For example, DLoad and Run are Direct mode operations. You can't, as they say, miss it, but you certainly can miss using Direct mode to its fullest potential.

Almost the entire Basic vocabulary works in Direct mode, and the rules for using Direct mode are quite simple:

1. You can stack commands as long as they're separated with a colon.
2. You must have your cursor on the line to be executed.
3. You must press the return key to start execution.

PROGRAM DEBUGGING

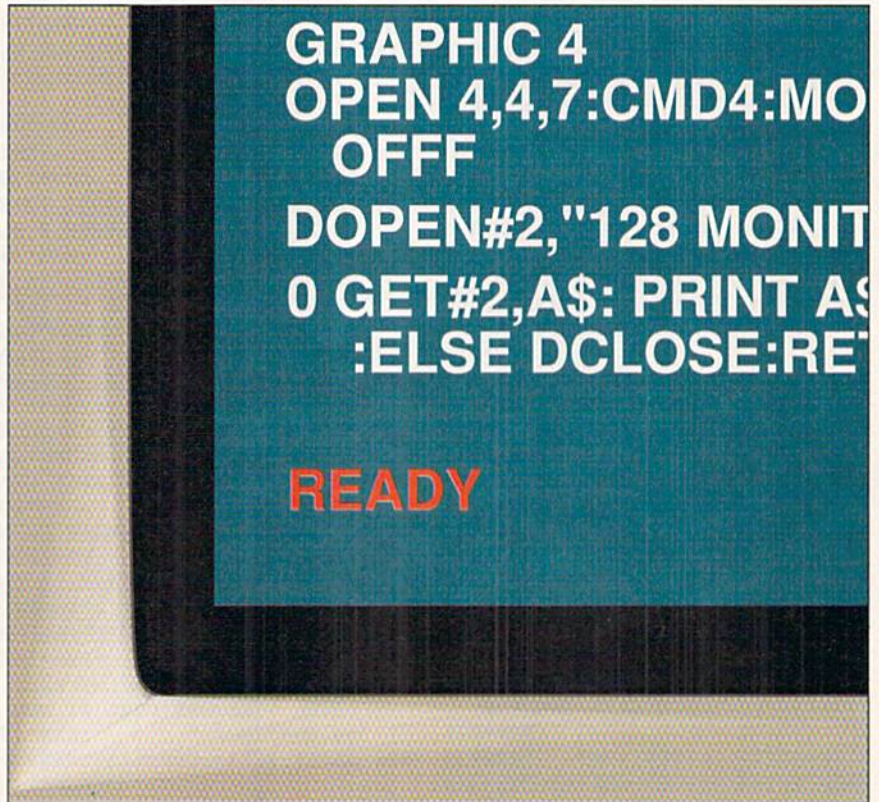
Direct mode commands can be executed with or without a program in memory. When one is resident, Direct mode lets you check or change variables, read values in Data statements, jump in and out of Program mode, and more. Jumping from one mode to the other is especially handy. Both GoTo and GoSub can get you from Direct mode to Program mode, but GoSub offers the further advantage of shipping you back.

A reversal of this process can be forced by using the Stop and Cont commands. When the computer encounters the Stop command within a program, it halts Program mode and kicks in Direct mode. There, you can do work like checking variables, and, when you're done, head back into the program with Cont.

I employed these commands in the Horseshoes game that appeared in the August/September issue of *RUN*. To test for the location of a toss, I inserted GRAPHIC 0:STOP in the program immediately after the toss landed. This transported me to the text screen in Direct mode where I could type PRINT RSPPOS(1,0) to see exactly which pixel the horseshoe spire landed on.

GRAPHICS DESIGN

Direct mode's strength is especially evident in designing graphics screens for use in a Basic program. This is nor-



mally tricky and slow, because you can't see what a graphic will look like until you run the program. Direct mode offers three clever ways to view your work as you create it.

The first method is to place the computer in Split Screen mode with GRAPHIC 2 (or 4, for multicolor). If you're designing a graphic that will occupy half a screen or less, set the split at about line 12 (GRAPHIC 2,1,12). Then move your cursor down until it appears in the text area, press escape followed by T, and you'll have defined the bottom half of the screen as a text window. Once that's done, it's a simple matter to type any graphics commands you want to try, press return, and watch the commands execute in the top half of the screen. (Just remember to locate them in the top.) When you've got your circles and lines the way you want, insert a line number in front of each graphics command, and it becomes a permanent part of your program.

In the second method, if you want to fill the bottom half or all of the screen with graphics, you'll need a different technique: the old screen switcheroo.

Type your graphics commands on the 80-column screen, then switch your monitor to 40-Column mode to observe the results. You don't even need to enter ESC X to go back and forth, since the graphics commands will do their work even while you're editing in 80-Column mode. Be sure you're in Slow mode, or you won't be able to see the graphics.

The only drawback to this technique is the wear and tear on the switch. If this bothers you, or if you're really in a hurry, you can use a third method: typing blind. Just keep the screen in Graphics mode while you type the commands. The fact that you can't see what you're typing doesn't mean it's not there. (Type in GRAPHIC 0 if you don't believe me.)

CHANNELING

With apologies to Shirley MacLaine—Direct mode offers more powerful channeling than any I've read about in the tabloids. You can use it to save and print out (on paper) all kinds of information. The key to using this power is knowing the ropes of the Open command.

The Open command establishes a line of communication between the comput-

er and a peripheral. When using it, you must follow it with a file number (any number from 0 to 255 will do), then a device number. A device number of 3 accesses the screen (with some interesting possibilities), 4 accesses the printer, and 8-11 access the disk drives. After you've opened the channel, CMD gets the conversation going.

Let's say you want to turn your computer into a calculator, complete with printout, from Direct mode. Begin with OPEN 4,4,7:CMD 4, which will send anything you ask to be printed to the printer instead of the screen. For example, the Direct mode command PRINT 26 * 2 would send 52 to the printer.

That's easy enough. Now, what if you want to save your machine language disassembly from the built-in machine language monitor? The same OPEN and CMD line would work. Here's how they would look in a one-line stack:

```
OPEN 4,4,7:CMD4:MONITOR:D0E00
OFFF
```

To exit the monitor, wait until the printing is done, then type X, and, finally, close the channel (CLOSE 4).

Opening a channel to the disk drive is even more handy, because you can use the newer command, DOpen. The line DOPEN#2,"filename",W:CMD2

will send information that would normally be printed to the screen to a file instead, thereby saving it. Be sure to have the "W" tacked on to the end, so the computer knows it's to write information rather than read it.

Here's a sneaky trick: Use the Append command in Direct mode to tack messages on to the end of files. If you're too tired to boot up your word processor and wait for your diary file to load, type

```
APPEND#2,"Diary":CMD2:PRINT "Too
tired today.":D CLOSE
```

press return and, sure enough, the phrase will appear at the bottom of your previous file (along with the Ready prompt).

By the way, the CMD command in the above cases isn't absolutely necessary. If you omit it, you can still print to the device that's open by using PRINT# instead of PRINT.

You can also read data in Direct mode—that is, if you cheat a little. The cheating is necessary because Basic 7.0 won't let you use GET# or INPUT# outside of Program mode. Begin by opening your file of choice, then insert the one-liner

```
0 GET#2,A$: PRINT A$;IF ST=0 THEN 0
:ELSE DCLOSE:RETURN
```

Now enter GOSUB 10 and watch the data flow past.

The best way to really squeeze the juice out of Direct mode is to try it yourself. The more you use it, the more you'll want to choose it. ■

Mark Jordan, who teaches high school English, has been in Commodore Programming mode during his spare time for many years.

GET MORE FEATURES FOR BIBLE STUDY

LANDMARK The Computer Reference Bible offers:

- Complete Old and New Testaments in King James Version or New International Version. Individual verse (marginal) references, words of Christ in color, complete NIV footnotes and a Concordance.
- Searching for up to 12 partial words, wildcard characters, words or phrases at once. Search not only the Bible, but also your own files, or even the results of a search, to narrow your search down further.
- Creating of your own files, using the built in text editor to copy Scripture, text or search results into your file. You can also convert your files for use with most wordprocessors, like Paperclip and GEOS to add graphics or different type styles.
- Compiling your own Personal Bible containing all your notes, comments, outlining of text in color and keep it organized. Make new references, add to the existing references, or reference your own files!
- Compatibility with all disk drives for the C64/128 including 1541, 1571, 1581, SFD1001, and hard disk drives. Also will take advantage of cartridge or hardware speedup products like FAST LOAD or Jiffy DOS to improve performance of the program. Entire Bible with references fits onto eight 1581 disks. C64 v1.2 and C128 v2.0 on same program disk!

KIV \$89.95 NIV \$99.95/Both \$155.00

plus \$4.00/\$6.50 shipping in cont. USA

CALL OR WRITE FOR FREE BROCHURE

P.A.V.Y. Software P.O. Box 1584

Ballwin, MO 63022 (314) 527-4505

MC/VISA accepted. Foreign orders call or write for shipping charges

FOOTBALL • BASKETBALL

**SPORTS FANS...
THE SPORTS SIMULATIONS YOU HAVE
BEEN WAITING FOR ARE HERE!**

3 IN 1 FOOTBALL

- with Stats Compiler for each player and team
- you choose from 14 offensive plays and 6 defensive formations • includes 180 college teams and the 28 Pro teams from the '89 • season PLUS 174 great college and 189 great pro teams of the past

BASKETBALL: THE PRO GAME

- each player contributes as they did in real life • Stats Compiler • you determine starting lineup, substitutions, shot selection, passing, offensive and defensive styles of play and more • the Pro Game features the 23 Pro teams from '89-'90 and more than 190 great teams of the past

Send check or money order for **\$39.99** each.
Visa and MasterCard accepted on phone orders only.
Please add \$2.00 for postage and handling.

LANCE HAFFNER GAMES

P.O. Box 100594 • Nashville, TN 37224 • 615/242-2617

PROTIPS

Tips on how to use commercial productivity software, ranging from personalizing form letters to debugging a printer driver.

By HAROLD R. BJORNSEN

GEOS (VERSION 2.0): If you use a 1571 disk drive with this operating system, always choose the "Format both sides of disk" option, as it will give you twice as much room on a disk for files.

The best investment for GEOS is a 1764 REU. I've found the most productive way to employ the unit is to copy the frequently used applications onto a disk that contains the deskTop icon and a printer driver file. I then use the Commodore key to select the files I want to copy to the REU, and replace the disk with my data disk when the copying is complete. That way, I'm always working in the REU and need only access the drive when I save a file.

—JOEL M. SANDA
BOISE, ID

GEOS DESKTOP (VERSION 2.0): If you want to rearrange the files on a page, use this time-saving method. Using the Multi-file function (hold down the Commodore key while you point and click), pick up the files in the order you will eventually want them on your page. Move them to the border, then select all files (from the Select menu, or press Commodore/Y) and replace them on the page. They will be placed back in the order you picked them up.

—STEVE VANDER ARK
GRAND RAPIDS, MI

GEOWRITE: This GEOS program takes forever to redraw the screen if it is filled with your prose. And, if you use more than one font, geoWrite must access a drive to get the information for the new font; it does this every time the font changes on the screen.

One way around this is to use a 1750 REU, which costs around \$200. However, if you don't want to spend that much money, here are a few tips to make your geoWriting easier. When you're typing, advance your text to the top of the screen now and then by moving down the page until there is only a line or two of text left at the top of the screen. This will ensure that GEOS has

a minimum of text to redraw each time you shift around the screen. Or, you can speed things up by typing your text in BSW 9-point first, and then change the fonts when you're finished typing. Simply highlight the text you want to change, and then click on the Font box at the top of the screen. Select the font and appropriate point size, and geoWrite will do the rest. This trick also works with the options in the Style box.

—STEVEN JOHN SATAK
SEATTLE, WA

PAPERCLIP III: With this word processor, I can easily produce "personalized" form letters. I first load the form letter with the variable blocks. Then I open the variable datafile with control/shift Z, manually fill the blocks (control/shift V), edit the letter according to my needs, change the disk drive number to 9 (F1, F1), and save the "personalized" letter on unit 9. Next, I change the disk drive number back to 8, empty the blocks (control/shift N), and fill them again with the next variable data. If I want, I can edit this letter, too, and save it again on a disk on another drive. When all this is done, I print the letters, and each one is similar. This capability is undocumented in the users' manual.

—MICHAEL HABERMANN
BALTIMORE, MD

RUN SHELL: If you're a RUN Shell user (*RUN*, July 1989 and Super Starter Pak), you may become a little flustered at times when the program corrupts the operating system in both 64 and 128 modes. For instance, after copying some files and pressing the F1 key to exit RUN Shell, you may have discovered that the Run command no longer functions.

There's an easy, surefire solution that doesn't require powering down the computer. After exiting RUN Shell, enter SYS DEC("4000") on the C-128 or SYS 64378 on the C-64 to reset your computer. Now you have access to all Basic commands.

To reactivate RUN Shell, just type

SYS 4864 in either 64 or 128 mode. You'll find that these tips will greatly increase the usefulness of both the 64 and 128 version of RUN Shell.

—PAOLO GHINQUE
BUFFALO, NY

WORD WRITER 4 (VERSION 9-1.2): I've found a bug in the Commodore MPS-1200 printer driver. To use Font mode, these switches must be set: SW1-2 (on), SW1-3 (on). This puts the driver into Epson/ASCII mode.

To use Draft mode, these switches must be set: SW1-2 (on), SW1-3 (on), SW1-7 (on, or linefeeds, option E, on). This puts the printer into Epson/ASCII mode with automatic linefeeds.

To format an 80-column document in a 40-column document, load the 80-column file and go to the top of the document. Then insert the checkmark (control/£) and enter "m,0,40". Next, run through the document and add hard returns (Commodore/R) at the end of each line. If you don't add these returns, the file will resave in its original format. Resave the file under a new name that reflects the format change.

—ALAN RATELIFF II
CANNON AFB, NM

WORD WRITER 128: The line that contains the checkmark, margin and line length information can be used as a REM line for special reminders such as naming which printer is to be used, or which printer codes apply. The term REM is not needed; the line will not go to the printer anyway.

The line that contains the checkmark and printer codes must not be used as a REM line. In fact, an invisible space after the code will cause the printer to ignore or misinterpret the directions. If you suspect this problem, run the cursor across the code line to see if it goes even one space too far to the right. If so, delete everything past the code.

—ROBERT M. MAYO
BATON ROUGE, LA ■

MAGIC

From p. 6.

Basic program that was erased by the New command will be restored automatically. There's no need to remember any Pokes or other commands, and you don't have to load this handy utility before it's needed.

```

Ø REM UNNEW 64 - D.J. LAURIA           :REM*185
1Ø PRINT"{SHFT CLR}{CRSR DN}THIS PROGRAM C
  REATES A FILE NAMED UNNEW ON DISK."
                                           :REM*213
2Ø PRINT"{CRSR DN}PRESS ANY KEY TO BEGIN:
  "                                           :REM*236
3Ø POKE198,Ø:WAIT198,15:POKE198,Ø       :REM*11
4Ø FORI=1TO74:READA:N=N+A:NEXT          :REM*2Ø9
5Ø IFN<>6932THENPRINT"ERROR IN DATA STATEM
  ENTS." :END                               :REM*38
6Ø OPEN15,8,15,"IØ":OPEN8,8,8,"Ø:UNNEW,P,W
  ":INPUT#15,E,E$                          :REM*8Ø
7Ø IFTHENPRINT"{CRSR DN}DISK ERROR> {CTRL
  9}";E;E$:CLOSE8:CLOSE15:END           :REM*2Ø2
8Ø RESTORE:FORI=1TO74:READA:PRINT#8,CHR$(A
  );:NEXT:CLOSE8:CLOSE15:END           :REM*19
9Ø DATA 188,2,76,211,2,13,8Ø,82,79,71,82,6
  5,77,32,82,69,83,84,79,82,69         :REM*2Ø4
1ØØ DATA 68,46,13,13,169,1,141,2,8,32,51,1
  65,165,34,133,45,165,35,133,46       :REM*72
11Ø DATA 169,131,141,2,3,169,164,141,3,3,1
  62,Ø,189,191,2,32,21Ø,255,232       :REM*42
12Ø DATA 224,2Ø,2Ø8,245,32,96,166,1Ø8,2,3,
  139,227,188,2                         :REM*127

```

—D. J. LAURIA, BARRINGTON, RI

\$5A9 MORE "NEW" RELIEF

A nice compliment to the above program is my Are You Sure? 64 program. Like the C-128, which gives you the "Are you sure?" prompt when you issue certain disk commands, this does the same when the New command is given in 64 mode.

To use it, just type in the listing, save it to disk, and then run it. Afterwards, whenever you type NEW, the "Are you sure?" prompt will appear. Pressing any key other than Y will preserve your file in memory. It's a great safeguard for anyone who programs in Basic on the C-64.

```

Ø REM ARE YOU SURE PROMPT 64 - PAUL FRAZIE
  R                                           :REM*195
1Ø FORJ=53Ø93 TO 53245:READ A:POKE J,A:NEX
  T:SYS 53Ø93                               :REM*186
2Ø PRINTCHR$(147) "'ARE YOU SURE ?' PROMPT
  IS ACTIVE."                               :REM*211
3Ø DATA 173,4,3,141,254,2Ø7,173,5,3,141,25
  5,2Ø7,169,124,141,4,3,169,2Ø7         :REM*16
4Ø DATA 141,5,3,96,173,Ø,2,2Ø1,78,24Ø,3,1Ø
  8,254,2Ø7,173,1,2,2Ø1,69,2Ø8         :REM*195
5Ø DATA 246,173,2,2,2Ø1,87,2Ø8,239,169,13,
  32,21Ø,255,169,65,32,21Ø,255         :REM*96
6Ø DATA 169,82,32,21Ø,255,169,69,32,21Ø,25
  5,169,32,32,21Ø,255,169,89,32       :REM*85
7Ø DATA 21Ø,255,169,79,32,21Ø,255,169,85,3
  2,21Ø,255,169,32,32,21Ø,255         :REM*215
8Ø DATA 169,83,32,21Ø,255,169,85,32,21Ø,25
  5,169,82,32,21Ø,255,169,69,32       :REM*151
9Ø DATA 21Ø,255,169,63,32,21Ø,255,169,Ø,13

```

```

3,198,32,228,255,2Ø1,Ø,24Ø           :REM*228
1ØØ DATA 249,24,2Ø1,89,2Ø8,3,1Ø8,254,2Ø7,2
  4,169,32,162,Ø,157,Ø,2,232,224:REM*11Ø
11Ø DATA 81,2Ø8,248,24,1Ø8,254,2Ø7:REM*177

```

—PAUL W. FRAZIER, LEBANON, PA

\$5AA No OVERFLOW 64/128

Anyone who has tried to perform mathematical calculations on his or her Commodore knows the limitations of the 64/128. The largest number for which a factorial can be calculated is only 33, whereas a scientific calculator can compute 69.

No Overflow 64/128 alleviates that problem with a simple base-ten logarithm. My program lets your 64 or 128 calculate a factorial from any number up to 5109! Be forewarned, however, that the larger your number, the longer the calculations take.

```

Ø REM NO OVERFLOW 64/128 - DENNIS CULLEY
                                           :REM*77
1Ø INPUT "FIND FACTORIAL OF";N:F=1:P=Ø:C=1
                                           :REM*36
2Ø IFC+11<N THEN FOR X=C TO C+9:F=F*X:NEXT
  :C=C+1Ø:GOSUB 5Ø:GOTO2Ø               :REM*89
3Ø FOR X=C TO N:F=F*X:NEXT:GOSUB5Ø:REM*212
4Ø PRINTN;"FACTORIAL = ";F;"E";P:GOTO1Ø
                                           :REM*214
5Ø L=INT(LOG(F)/LOG(1Ø)):P=P+L:F=F/1Ø{UP A
  RROW}L:PRINTL: RETURN                 :REM*186

```

—DENNIS ALLEN CULLEY, WEST CHICAGO, IL

\$5AB MEMORY DISPLAY 64

Programmers, listen up! Tired of exiting your programs and typing PEEK (X) to find the value of a memory location? With Memory Display 64, the contents of any memory location are displayed in binary numerals in the upper-left corner of the screen.

After running Memory Display 64, which is relocatable in memory, you can enter a memory location for, say, joystick input, and watch the results as you move the joystick. While the number is displayed in white, you can change the color by entering POKE 828,X, where X is a number from 0 to 15.

```

Ø REM MEMORY DISPLAY 64 - STEPEHEN DIRSCHA
  UER                                           :REM*163
1Ø FOR T=828 TO 897:READ A:POKE T,A:NEXT
                                           :REM*1Ø6
2Ø INPUT "ENTER LOCATION";LC:HI=LC/256
                                           :REM*25
3Ø LO=LC-256*HI:POKE 861,LO:POKE 862,HI
                                           :REM*25Ø
4Ø SYS 828                                   :REM*174
5Ø DATA 12Ø,174,2Ø,3,172,21,3,142,13Ø,3,14
  Ø,131,3,162,85,16Ø,3,142,2Ø,3       :REM*Ø
6Ø DATA 14Ø,21,3,88,96,169,128,141,132,3,1
  6Ø,Ø,173,133,3,45,132,3,2Ø5         :REM*24
7Ø DATA 132,3,24Ø,5,169,48,76,11Ø,3,169,49
  ,153,Ø,4,169,1,153,Ø,216,2ØØ       :REM*19Ø
8Ø DATA 192,8,24Ø,6,11Ø,132,3,76,92,3,76
                                           :REM*11Ø

```

—STEPHEN DIRSCHAUER, TORONTO, ONTARIO, CANADA ■

GOLD MINE

Gaming tips this month include giving aid to your Contra and learning how to make your Last Ninja last longer.

By LOUIS F. SANDER

CONTRA: While in the tunnel scenes, if you drop to the floor and fire at the wall, you'll get a capsule, usually either Laser or Scatter Fire.

—BRITAIN WOODMAN
ANN ARBOR, MI

LAST NINJA 2: In Central Park, kill the thug in the theater. Punch the flashing light. Go back to the first screen and drop down the trapdoor. Get the key. The pieces for the numchucks are in the toilets guarded by the stick warriors. To get extra lives, eat lots of hamburgers. The shurikens are in the basket in the screen before the knife-throwing clown. To pass the clown, get as close as you can. Flip down the sidewalk instead of running. Get the map in the next screen. Climb up the iron gate, then walk south. Jump across the ledges in the next screen. Get the stick, then jump back. Climb down the iron gate backwards. Flip past the clown to the next screen north, then go west. Unlock the gate with your key. In the next screen, hop on the boat and wait until it stops before jumping to the other side. Go south. You must destroy the beehive with the shurikens.

In the city, the tools you must get are the sword, the manhole key and the drunk man's bottle.

In the sewer, get past the alligator by lighting the drunk man's bottle with the low-hanging torch. Use this Molotov cocktail like shurikens to destroy the alligator.

In the opium factory, climb the ladder and go south. Get the card key and go north, north, east. Enter the office and get the fried chicken in the dog bowl. Go down the ladder. Get as close to the rails as you can, and run across them as soon as the rail car passes. Play hopscotch over the crates to cross the moat. Go as southeast as you can, then dip the fried chicken in the open bag of opium. Go to where you enter the laboratory, then go east. Give the drugged fried chicken to the guard dog. Jump over him, then use the card key to enter the elevator.

In the office building, go into the first room and search the computer. Remember the four-digit number. In one of the rooms, there is a secret door, activated by tugging on a lamp string. To get past the fan, get against the wall and run north, north, east (your man will run in slow motion). Remove the screen door. Go outside the building and go south, south, west on the ledges. Climb the ladder. Wait until the helicopter goes away, then sprint off the north end of the building and flip.

In the mountain hideaway, push the firebutton when you are lined up with the ledge closest to the top of the screen. Jump south. Go to the bedroom and cut the rope off the bell ringer. There is a secret door down the stairs behind a plant. Fix the pipes with the rope; otherwise, you'll die if you try to pass through the steam.

In the final confrontation, pull on the Oriental wall rug. Open the safe using the code from the computer, then take the disk out. To kill the man in white, you have to strike him down in the middle of the room and light all the candles. (I find it's easiest to light all the candles except one, then strike him down. When he's unconscious, I light the last candle to "lift his spirits.") Put the disk back into the safe, then accept my congratulations for completing this excellent game!

—RAYMOND W. LOUIS
KINGS PARK, NY

NEUROMANCER: The biggest hint I can give is to read the book. This will give you information on the world and the characters, and an understanding of some of the inside jokes.

As soon as possible, move all or most of your money to another bank. The Justice Department can only get at the money in the PAX Bank.

Use the message from Armitage to get more money. Answer the message, transfer the money to your credit chip, then get arrested and fined. Alternatively, you can transfer all the money from the bank to your credit chip, then

get arrested and killed. If you have nothing in your chip, having your brain kickstarted costs nothing.

Get a job, but don't apply for it. Instead, use a corporate database that lets you edit employee names and ID numbers, put your own name into the database, then go and collect your paycheck.

Larry Moe can be a hindrance to you, since he won't let you by. Find his ID in the corporate databases, then give it to the police.

Use skill chips to combat Artificial Intelligences (AIs). You can use the Psychotherapy skill to determine their current weakness, then hit them with whatever skill is appropriate.

Don't worry about old friendships when buying a cyberspace deck. You can get ten percent off anything at Asano Computing if you insult Crazy Edo.

Watch out for the program from CFM. It will destroy you.

In cyberspace Zone 0 (Cheap Hotel), AIs are in the Psychologist and Chess Databases. The databases with the most useful software are Regfellows (208/32) and Panther Moderns (224/112).

When you're near the man in Zion Cluster, don't mention anything having to do with computers, cyberspace or banks. It will offend him, and he'll send you back to Chiba City. He is, however, impressed by a good musician.

Avoid the Massage Parlor. You may learn something important, but you'll get arrested.

—JOSHUA BRANDT
STAYTON, OR ■

Send your C-64 or C-128 game tips to Gold Mine, PO Box 101011, Pittsburgh, PA 15237. Put your name, complete address and Social Security number on every sheet of paper you send, and please use 8 1/2-by-11-inch paper. Be sure to state which Commodore computer your tip is for. RUN pays \$5 per submission upon publication.

To order a book of over 1200 Gold Mine tips on 500 games for Commodore computers, call TAB Books at 800-822-8158 (in Pennsylvania, call 717-794-2191). Ask for Book #3323.

SPECIAL OFFER FROM RUN MAGAZINE!

MODEM LIQUIDATION SALE!

ONLY \$10.00!

GET A BRAND-NEW...

Commodore 1660[®] modem for only \$10.00! It's the perfect telecommunications starter kit for every C64 and 128 owner!

WHAT CAN A MODEM DO?

It hooks your C64 or 128 via a phone line to the excitement of telecommunications. Use it to get in touch with other Commodore users, connect to on-line services (like Q-Link, GENie, and CompuServe), access local bulletin boards, and so much more!

WHY SUCH A LOW PRICE?

The 1660 modem is a 300 baud model — slower than today's modems, but still easy to



use and extremely affordable. If you've never used a modem — this one's for you!

YOU GET ALL THIS!

- Commodore 1660[®] Modem
- Cable to connect to your phone line.
- Commodore's "Common Sense[®]" software.
- Complimentary Q-Link Starter Kit (with FREE software and FREE time on Q-Link!).
- All for just \$10.00!

YES! Send me a brand-new 1660 modem for only \$10.00, plus \$3.50 shipping & handling per modem.

My check MasterCard Visa AmEx Discover account information is enclosed:

Account# _____ Exp. _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Please allow 4-6 weeks for delivery. Outside North America, surface shipping/handling is \$6.00. Payment in U.S. funds drawn on U.S. bank, or by Visa, MasterCard or American Express. Limit: 3 modems per order. All sales final. All modems have 30 day replacement guarantee.

RUN Modem Offer, 80 Elm St., Peterborough, NH 03458

603-924-9471 or 1-800-343-0728

MD1190

HURRY!
Order now, because
the supply is
definitely limited!

Call
1-800-343-0728
or mail this coupon,
today!

Hurry!
First Come,
First Served!

RE RUN

~~Just
\$9.97
 per Disk!
 (per order
 of 3 or more)~~

3-for-1 Clearance Sale!!!

3 for
 \$16.47!!

RUN magazine has long published the acclaimed ReRUN software series of useful, economical programs for the C-64 and C-128!

Now, after a long absence, ReRUN's entire program library is available again—at reduced prices! Take a look at this extensive collection of personal productivity software, utilities, games, educational programs and much more! But hurry—quantities are limited!

* Denotes program runs in C-128 mode. ** Denotes both C-64 and C-128 modes. All other programs run in C-64 mode only.

#4 Landlord. Invoices. Money Manager. Teacher. Number Puzzle. Graphmaker. Joystick Artist.

#5 Auto Menu. Disk Doctor. Big Letters. Title Maker. Turtle Graphics. Calculator. Test Maker. Home Run Derby.

#26 Stack 64. Credit Cards 64. Word Jumbler. Lister. * Ultra Hi-Res. Baroque Music.

#27 * Reminder 128. ** Retir'eze. * Twiddle. * Mind Your Mortgage. Keeping Up to Date. Hook Up to a Portable. Monthly Labels, Envelope Maker.

#28 * RUNTerm 128. RUN's Memo Book. Calendar Maker. RUN Copy 64. Time Keeper 64. * Blank-It 128. C-64 Sprite ML Commands.

#46 RUN Script 64. Create Your Own Keyboard. Songfest. Autoboot. Automatic Line Numbers. * Gradebook 128. A Modern Metronome.

#47 DataFile 3.6. DFPrint. DFCalc. * C-128 Screen Dump. Commodore in the Kitchen. The Menu Machine.

#48 ** Home Inventory. Commodore Lanes. * Time Keeper 128. Window Construction Set. Fantastic 64. Video Flash Cards. Mister Poster.

#65 Pay the Bills. Ultraquiz. Perfect Pitch. Spirited Sprites. Wedge Utilities. Brainstorming. RUN Assembler. Songfest.

#66 Disk Reader. Swish! Label Maker. Arithme-Sketch. Murder Mystery. * Ultra Hi-Res II.

#67 * Presto Write 128. * 80-Column Custom Windows. PrintRite 64. Disk Stuffer. 64 Notepad Command Center. Puzzler's Choice.

#68 Moving Messages. * Graphix to the Max. * Tick-Tock 128. ** Form Writer. Unlockup. Math Whiz. Now You See It.

#86 * Video Fantasia. Hi-Res Writer. Needlegraph. Extra! Extra! Read All About It! Disk Keeper. * 3-D Object Editor.

#87 Tri-Solitaire. Attention, Shoppers! * Linker 128. Flash Cards. DFClone. * Typing Tachometer 128. Electronic Address Book. Pegboard.

#88 Alphabet Cadet. The Amazing 16-Color Print Machine. * Bill Minder. Travel Tally. ** Loan Analysis. Islands! Video Poker. ** Mom's Kitchen Aid.

#106 ** Loan Arranger. Turtle-Tutor for Tykes. Programmers, Take Note! Sign Maker. Instant Data Statements. 64 Personal Ledger.

#107 * 128 Notepad. Phaser Phire. Screen Genie. DFCopy. * Outline 128. The Money Program. Cursor Commotion.

#108 Programmer's Pager. Knock! ** Vacation List Generator. ** Easy Banners. Joystick

Mouse Emulator. ** Instant Test Maker.

#126 CalcAid 64. Put It on Paper. Dashing Off the Dots. Math Square-Off. * Micro Artist. Extra! Newsletter Graphics. * RUN Script 128.

#127 64 DOS Shell. Wordman. * Color Hi-Res Graphics. Super Sort. Delete 64. Sizzle! Brickout! * RUN Investor. Smart Shopper.

#128 For Good Measure. Mystery Match. * Savings Forecaster. ** Mass File Deleter. Cozy Caverns. ** Finance 64/128. * Instant Address Book.

#P1 Productivity Pak I. (in limited quantities) DataFile. DFMail. DFReport. DFPrint. DFCalc. RUNTerm. Screen Print. Finance Aid. Disk Master. Graph Maker.

#P2 Productivity Pak II. (in limited quantities) ** RUN Script. * Reminder. * Gradebook. 1670 Annodial. RUNTerm Plus. Logo for Kids. Disk Backup. DataFile.

#P3 Productivity Pak III. ** RUN Script 64/128. ** RUN File 64/128. ** RUN Calc 64/128. ** RUN Notepad 64/128. * RUN Investor 128. RUN Dex 64.

Buy 1 disk at the regular price—and get 2 more for FREE! Postage Paid!

ORDER NOW! CALL 1-800-343-0728

Please send me the following ReRUN disks:

1-2 disks \$16.47 each

Total Disks _____

3 or more \$9.97 each

Price/Disk _____

Payment Enclosed

Total Due \$ _____

Charge my: Amex MC VISA Discover

Account # _____ Expires _____

Signature _____

Name _____

Address _____

City, State, Zip _____

ReRUN, 80 Elm St., Peterborough, NH 03458 1-800-343-0728

Foreign Orders: Add \$1.95 per disk for air mail. Payment required in US

Funds drawn on US Bank. RRB11190

G E O W A T C H

41 DATA A1C28AF06204B07B850 EB 60AD8D84C901F01B18 69088D480 9AD49091869 :REM*91	04C906D00EA9078503 A98F85022 00507B850AA :REM*177	000000000000 :REM*72
42 DATA 01CD48099002A908A8B9 86 84F0F09860AD490960 8AF0005686 84C4B00760A9 :REM*224	51 DATA C914D00620B404B850A0 60 810B820A18060B8214 5C0910040 40511191211 :REM*197	60 DATA 00626173696300A97185 3C A900853BA9E5853A20 FF0410040 63A263B4C56 :REM*111
43 DATA 12CD0FC01007AD13C010 02 A53F60ADB784D01CA9 1AA2054C3 605203205A5 :REM*140	52 DATA 3B7C0602114C06112A00 18 6F6E206469736B3A1B 00C2DF000 5FF82FE8000 :REM*207	61 DATA C2AD490938E9080AA8B9 45 078502B946078503A0 00B102F00 AC9A0F00699 :REM*250
44 DATA 07186908850718A90865 0A 850A9002E60B4C24C1 A90EA2058 DB1848EB284 :REM*0	53 DATA 008203800400B80380F8 00 C0000380CC00000003 80C6FDD99 E0380C6E0D9 :REM*91	62 DATA 5C09C8D0F2A9000995C09 60 1E843084DC88E020B0 07CA8A0AA 8B85021E073 :REM*76
45 DATA 60A9022039C1A980852F 20 FF04300EAD008C8D58 0520B4C1E 803008C0060 :REM*136	54 DATA B30380C6C0D9B30380C6 C0 CF3F0380C60CF3003 80CCC0C63 30380F8C0C6 :REM*51	63 DATA D00AA908850DA9F7850C D0 1DE02A900AA909850D A904850CD 00F8AE9130A :REM*220
46 DATA 20FF041020ADFD050980 8D FD05AD020609808D02 06AD0D060 9808D006AD :REM*153	55 DATA 1E038004008203800400 81 0306FF817F5FF0CBF 260600000 6108406A914 :REM*6	64 DATA A8B91A09850CB91B0985 0D A9078503A9BC850220 05074C600 4810B101099 :REM*132
47 DATA 800609808D8006207D04 A9 068D7D06A9268D7C06 AE8D84CAD 008A9008D7C :REM*104	56 DATA 8D1D854CBFC20315BFFF FF F0800018BF8014A080 12BF801F8 400018E0001 :REM*7	65 DATA 070111480018496E7365 72 74206E657720646973 6B20696E7 46F20646973 :REM*22
48 DATA 068D7D06A9068D1406A4 BA B986841005A9008D14 0620A1C22 01D07A9008D :REM*89	57 DATA 840001BF8BF9A0FE09FB 8B F980008187FF818400 018E00018 40001BF8000 :REM*48	66 DATA 6B2064726976652E1B00 81 0B10100A090C10300C 011148004 E6F7420456E :REM*43
49 DATA 4009A909850DA94B850C A9 068510A9068517A923 8516A9058 503A9FB8502 :REM*188	58 DATA A08001BF8001840001FF FF FF8306010004FF0300 046261736 9632070726F :REM*192	67 DATA 6F75676820426C6F636B 73 00496E76616C696420 547261636 B00496E7375 :REM*242
50 DATA 200507A502C902D0034C 67	59 DATA 67202056312E30000000 00 0000000000000000 0000000000	68 DATA 6666696369656E742053 70 6163650046756C6C20 446972656 3746F727900 :REM*46
		69 DATA 46696C65204E6F742046 6F 756E64004261642042 414D20696 E2044726976 :REM*204
		70 DATA 65005556E6F70656E6564 20 564C49522046696C65 005374727 56374757265 :REM*139
		71 DATA 204D69736D6174636800 42 7566666572204F7665 72466C6F7 700435F4552 :REM*224
		72 DATA 52004E6F204465766963 65 004E6F204865616465 7200556E6 66F726D6174 :REM*174
		73 DATA 746564204469736B004E 6F 204461746120426C6F 636B00446 17461204368 :REM*241
		74 DATA 65636B73756D000496E63 6F 6D70617461626C6520 46696C657 47970657300 :REM*29
		75 DATA 57726974652056657269 66 790057726974652050 726F74656 37400486561 :REM*179
		76 DATA 64657220436865636B73 75 6D004944204D69736D 617463680 0444F53204D :REM*167
		77 DATA 69736D61746368003F3F 3F 3F3F00182A20446973 6B2045727 26F72202A00 :REM*118
		78 DATA CA07DC07EA07FD070C08 1B 082C08040904093F08 520862086 80872087C08 :REM*230
		79 DATA 8D089B08A908C008CD08 DB 080409EB08 :REM*130
		80 DATA -1 :REM*193

RUN is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes over 130 computer publications in more than 40 countries. Nineteen million people read one or more of International Data Group's publications each month. International Data Group's publications include: ARGENTINA's *Computerworld Argentina*; ASIA's *Asian Computerworld*; AUSTRALIA's *Computerworld Australia*, *PC World*, *Macworld*; AUSTRIA's *Computerwelt Oesterreich*; BRAZIL's *DataNews*, *PC Mundo*; CANADA's *Computer Data*; CHILE's *Informatica*, *Computacion Personal*; COLUMBIA's *Computerworld Columbia*; DENMARK's *CAD/CAM WORLD*, *Computerworld Denmark*, *PC World*, *Macworld*, *Unix World*; FINLAND's *Mikro PC*, *Tietoviikko*; FRANCE's *Le Monde Informatique*, *Distributive*, *InfoPC*, *Telecom International*; HUNGARY's *Computerworld SZT*, *Mikrovilag*; INDIA's *Computers & Communications*; ISRAEL's *People & Computers*; ITALY's *Computerworld Italia*, *PC World Italia*; JAPAN's *Computerworld Japan*, *Infoworld*, *Publish*; KOREA's *Hi-Tech Information/Computerworld*; MEXICO's *Computerworld Mexico*, *PC Journal*; THE NETHERLANDS' *Computerworld Netherlands*, *PC World*, *AmigaWorld*; NEW ZEALAND's *Computerworld New Zealand*, *PC World New Zealand*; NIGERIA's *PC World Africa*; NORWAY's *Computerworld Norge*, *PC World Norge CAD/CAM*, *Macworld Norge*; PEOPLE'S REPUBLIC OF CHINA's *China Computerworld*, *China Computerworld Monthly*; POLAND's *Computers*; SPAIN's *CJM World*, *Comunicaciones World*, *Computerworld Espana*, *PC World*, *AmigaWorld*; SWEDEN's *ComputerSweden*, *Mikrodatorn*, *PC/Nyheterna*, *PC World*, *Macworld*; SWITZERLAND's *Computerworld Schweiz*; TAIWAN's *Computerworld Taiwan*, *PC World*; UNITED KINGDOM's *Graduate Computerworld*, *PC Business World*, *ICL Today*, *Lotus UK*, *Macworld U.K.*; UNITED STATES' *AmigaWorld*, *CIO*, *Computerworld*, *Digital News*, *Federal Computer Week*, *GamePro*, *inCider*, *InfoWorld*, *International Custom Publishing*, *MacWorld*, *Network World*, *PC Games*, *PC World*, *Portable Computing*, *PC Resource*, *Publish!*, *RUN*, *SunTech Journal*; USSR's *World USSR*, *Manager*, *PC Express*, *Network*; VENEZUELA's *Computerworld Venezuela*, *Micro Computerworld*; WEST GERMANY's *Computerwoche*, *Information Management*, *PC Woche*, *PC Welt*, *AmigaWelt*, *Macwelt*.

MOVING? Subscription Problem?

Get help with your subscription by
calling our new toll free number:

1-800-274-5241

In Colorado: **1-447-9330**

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.

RUN

P.O. Box 58711
Boulder, CO 80322-8711

DYNAMICALLY MODIFIABLE BULLETIN BOARD SYSTEM

The Bulletin Board Of The 90's

- Full Commodore™ color graphics & ASCII
- Fully compatible with CMD's HD series & Xetec's Lt. Kemal hard drives.
- Fully supports JiffyDos operating environment & various other burst ROM's
- 300-2400 baud, Supports 1650, 1660, 1670, Avatex & ALL Hayes compatibles!
- C64, 64C, SX64, C128, C128D (64 mode), 1700 series RAM expanders, ALL 1541's & compatibles, 1571, 1581, SFD 1001
- Menu driven, user-friendly BBS
- On-line game modules available
- NOT Copy Protected, make as many back-ups as you need.
- 2-24 hour BBS main support numbers
- 1 Voice support number
- Various info lines throughout North America
- INCLUDED: CLEAR AND CONCISE MANUAL IN A SLEEK BINDER

D.M.B.B.S. Series V
\$6995

Includes BASIC Source Code.

update from Version 4.0 \$39.95

Add \$5. s/h \$8. outside U.S.
MD Res. add 5% sales tax

20% Discount on D.M.B.B.S. In
Exchange for any PAID FOR & Reg.
C= 64/128 BBS prog.

**30 Day Money Back
Guarantee!!!**

Mail Check or
Money Order to: ARTISOFT,
P.O. Box 96, Glen Burnie, MD 21060

Or Call (Orders Only)
(301) 553-0301

Dealer Pricing Available

WE OFFER
CMD HD's
AT DISCOUNT
PRICES TO
REGISTERED
D.M.B.B.S.
OWNERS.

ARTISOFT
A division of Dynamic Technologies, Inc.

Inquiries: (301) 553-0201
24 Hr. BBS: (301) 553-0001

Your best source for computer equipment & access.

WHY?

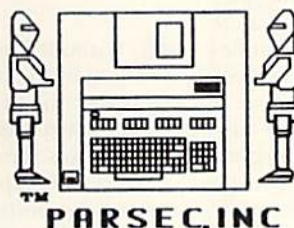
Why do people buy our catalog and products?
Why have we been in business since 1986?
Why do we have steady repeat customers?

BECAUSE

We have the least expensive, most extensive,
best organized disk collection.
We believe in the 8 bit computers.
We try the hardest !!

Our catalog now contains over 350,000 blocks of
music, graphics, applications, educational,
GEOS, and Basic 8 programs. Most disks avg.
less than 10 blocks free per side!

Make an investment in your future,
send \$2.00 for our catalog to:



Parsec, Inc.
P.O. Box 111
Salem, MA
01970-0111

COLOR RIBBONS & PAPER

COLOR RIBBONS

RED, BLUE, GREEN, BROWN, PURPLE, YELLOW

Ribbons	Price Each	Black	Color	Heat Transfer
Brother M1109	4.95	5.95	7.00	
Alps ASP 1000	6.00	8.00		
Citizen 1200/180D	4.50	5.50	7.50	
Commodore MPS 801	4.50	5.25	5.75	
- MPS 802/1526	6.25	7.25		
- MPS 803	4.95	5.95	7.00	
- MPS 1000	3.50	4.50	6.50	
- MPS 1200/1250	4.50	5.50	7.50	
- 1525	6.50	8.00		
Epson MX80/LX800	3.75	4.50	6.75	
Okidata 82/92	1.75	2.25	4.50	
Okidata 182/192	5.50	7.50		
Panasonic K-XP 1080	5.75	7.75		
Seikosha SP 800/1000	5.00	6.00	7.50	
Star Sg10	1.75	2.25	4.50	
Star NX10/NL10	5.00	6.00	7.95	
Star NX1000	3.75	4.75	6.75	
Star NX1000C - 4-Color		6.75	12.00	

COLOR PAPER

BRIGHT PACK —
200 Sheets/50 ea. color:
Red, Blue, Green, Yellow.
9 1/2 x 11 — \$10.90/pk.

PASTEL PACK —
200 Sheets/50 ea. color:
Pink, Yellow, Blue, Ivory.
9 1/2 x 11 — \$8.90/pk.

COLOR BANNER,
NEON AND BRIGHT,
PARTY BANNER,
CHRISTMAS BANNER,
HAPPY B-DAY BANNER,
CONGRATS BANNER —
45/Roll — \$8.95/ea. roll

COLOR CERTIFICATE
PAPER —
100 Shts./pk. — \$9.95/pk.

T-SHIRT RIBBONS (Heat Transfer) — Call For Price & Avail.
COLORS: Red, Blue, Green, Brown, Purple, Yellow, Black

COLOR DISKETTES

5 1/4" DS/DD Rainbow Pack/ 10/pack — \$12.50

For ribbons & paper not listed above, call for price. Price & spec. subject to change w/o notice. Min. order \$25.00. S&H \$4.00 minimum. Visa, MC, COD.

RAMCO COMPUTER SUPPLIES

PO Box 475, Manteco, IL 60950 U.S.A.

(U.S.A.) 800-522-6922 • (Canada) 800-621-5444

815-468-8081

COMPUTER REPAIR

205-739-0040



AUTHORIZED COMMODORE SERVICE CENTER

COMMODORE DISK DRIVES	COMMODORE COMPUTERS
1541 \$45.00	C-64 \$45.00
MSD, 1571 85.00	C-128 85.00
COMMODORE MONITORS	SX-64 Portable 69.00
1701, 1802, 1084,	COMMODORE PRINTERS
1702, 1902 \$85.00 \$75.00

MOTHERBOARD REPAIR (Send Board Only)
64, 1541 \$35.00 128, 1571 \$59.00

Amiga
Call for price

!!! FAST TURNAROUND !!!

All parts and labor included. \$6.50 shipping
\$15.00 APO and business equipment.

WE BUY ALIVE	CABLES AND MISC.	PARTS
C64 \$ CALL	REG 6 PIN DIN \$ 4.45	901 ROMS \$11.95
1541 NEWT 50.00	12' 6 PIN DIN 6.95	STR54041 12.50
1541 ALPS 45.00	18' 6 PIN DIN 7.95	41464 9.95
SX64 150.00	MONITOR CABLES 4.45	6560 PULLS 10.00
1571, C128 100.00	TV SWITCHES 2.50	74LS629 4.95
1526/802 45.00	COMMODORE	82S100 12.95
MUST BE COMPLETE	KEYBOARD CALL	325302 9.95
SCALL ON DEAD	WICO BAT HANDLE 18.95	325572 9.50
EQUIPMENT	DSDD-Disk 25 for 10.95	8701 6.85
POWER SUPPLIES	COMPUTER EQUIPMENT	8502 9.00
C64 \$ 21.95	C64 REFR \$ 99.00	6526 12.50
C128 49.95	C128 REFR 219.00	6522 4.50
1541, 1581 36.75	1702 CBM 169.00	6520 3.85
AMIGA 500 75.95	CBM 1541 ALPS 159.00	6532 6.29
AMIGA 1000 134.95	STAR NX 1000C 199.00	6502 2.85
AMIGA 2000 141.98	EPSON INTERFACE 53.95	6510 9.95
COMPUTER SHOPPE OF ALABAMA		6581 12.50
1310 2nd Ave. NW, Suite C		6567 19.95
Cullman, AL 35055		4164 2.75
		8721 16.85
DEALERS SEND FOR	PRICE SUBJECT TO	C128 UPGRADE
PARTS CATALOG	CHANGE	ROMS 23.65
		\$25.00 MIN ORDER

COMMODORE CLINIC

Autobooting, sticky keys, and a one-dimensional 1571 are this month's fare.

By ELLEN RULE

Q I'm using my C-64 in a dedicated application, and I'd like the computer to automatically load and run a program stored on disk when the power is turned on. That way, if there's a power failure, the system will automatically recover when the power is restored. I've written a machine language program (derived from an example in the C-64 Programmer's Reference Guide) that can automatically load a program named Autostart, but I don't know how to make it run. Is there an addition I can make to my current machine language program that would run the program? Or is there an expansion cartridge available that does what I've described?

—BRIAN TORR
SANTA ROSA, CA

Q I'd like to add autoboot features to GEOS. Is this possible, and if so, how do I go about it?

—RYAN OLSON
SIMI VALLEY, CA

A The Quick Brown Box (QBB) cartridge, from Brown Boxes, Inc. (26 Concord Rd., Bedford, MA 01730), will provide the exact autostart capabilities you are looking for. A program that is included on the Brown Box utility disk will load and run the first program on your disk. Depending on the size of your application program, and whether it's copy-protected, you may be able to install the application program in the QBB cartridge.

The QBB comes in 64K, 128K and 256K configurations. Brown Boxes has supplied cartridges for many dedicated applications and provides excellent on-going support.

As for autobooting GEOS, Joe Buckley at Storm Systems has developed programs for booting and autobooting GEOS out of the QBB in both 64 and 128 modes, using Commodore's REU. For more information, contact Storm Systems at 464 Beale St., W. Quincy, MA 02169.

Q On a number of occasions, the return key on my C-64 has stuck and become

inoperative, and I've needed to send the computer out for repairs. Now the cursor-up/down key and, at times, the left shift key won't function. What do you think is the problem?

—DAVID P. HOLMAN
ERIE, PA

A Without knowing what you were told by the repair technician, I can guess that the problem lies either with the keyboard itself or with the CIA chip that receives the keyboard signal.

When a key is pressed, the metal coating on the bottom of the key makes contact with a small metal pad, causing a short between a row and a column on the keyboard matrix, which sends a signal to the operating system. The metal coating is extremely sensitive to smoke and dirt.

A polymer keyboard protector called SafeSkin, manufactured by Merritt Computer Products, Inc., (5565 Redbird Center Drive, Suite 150, Dallas, TX 75237) can protect your keyboard from liquids and airborne pollutants. Unlike dust covers, SafeSkin stays in place even during keyboard use. Look for this product in your local office supply or computer store. If you can't find SafeSkin in a store near you, try The Memory Location (396 Washington St., Wellesley, MA 02181). Of course, you can also protect your computer's components by reducing airborne pollutants such as smoke.

Some Commodore owners clean their keyboard contacts themselves. This requires some technical expertise, as you must not only open the computer but desolder some wires. Isopropyl alcohol is recommended by computer technicians to remove residue on the keyboard contacts. A word of warning, however: Don't use silicon-based keyboard cleaners. These are really meant for typewriter keyboards and leave an oily residue.

There may be an electronic cause for the problem, rather than a mechanical one. The same CIA chip that receives the keyboard input also receives signals from the two joystick control ports.

Normally, the keyboard and the joysticks are not made to perform at the same time, so there's no signal conflict. A faulty joystick (sending a continuous signal) or even a joystick that's out of position can corrupt the signal from the keyboard. The next time your keyboard acts strangely, try unplugging the joystick to see if the problem disappears. A Commodore-authorized technician can run diagnostics to determine if a CIA chip needs replacement or whether the problem lies with your keyboard.

Q My 1571 disk drive works fine loading files, but when it comes to formatting a new disk or saving a file, it doesn't seem to work. Is it possible for a drive to stop formatting and saving, yet do other things?

—ROSS BELT
OAKLAND, CA

A In the disk drive, a photosensitive switch paired with an LED light source indicate whether the disk is write-protected. The signal this setup produces is sent to a chip that enables the drive's write capabilities. During normal use, a write-protect tab applied to a disk prevents the LED light from reaching the detector. Then the switch sends a signal that the disk is write-protected, and the drive won't write to the disk. Without a tab, the disk is write-enabled.

Failure on the part of the write-protect circuitry will prevent the disk drive from writing to the disk, whether it be to format or save. After you attempt a drive operation, a blinking light on the front of the drive may be a clue that such an error has occurred. A qualified technician can determine whether your problem is with the LED or the drive's electronic circuitry. ■

Do you have questions about your Commodore computer system, software or programming? Just send them to Commodore Clinic, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Queries are answered only through this column, and, due to the volume of mail, only those likely to appeal to a majority of our readers can be published.

MASTERPIECE DESIGNS IS

a collection of 141 hi-res 640x400 screens packed with borders, objects, patterns, symbols and designs. This collection cover an impressive array. Masterpiece Design contains many beautiful and elegant patterns to frame your Desktop Publishing and works of art. This ad itself was designed using Masterpiece Designs!!

This collection comes with color diskettes, a diskette box and a big 8x11, 74-page manual. Masterpiece Designs is available in any disk format and 2 graphic formats. A utility is supplied for Spectrum 128 users so they can clip from these big screens. All Basic 8 users will require a C-128D or a flat C-128 with 64K VCD RAM.

Circle one: Basic 8 format — GEOS format
Circle one: (4)1481 — (9)1571 — (10)1541 disk formats

Checks and money orders must be in US funds.
\$67.90 for US orders \$71.90 for Canadian orders

Send your orders to:

Parsec, Inc., PO Box 111, Salem, MA 01970-0111

Masterpiece Design contains a shrink-wrap license which is available for your viewing with a SASE. We acknowledge the trademarks and product names of their respective companies. We can be reached online at: QLink=Parsec GENie=Parsec CompuServe=76456.3667

! bitters do it in bytes !

Exclusive Offer From RUN Magazine!

SUPER SNAPSHOT 4 UTILITY CARTRIDGE

Attention Programmers and Users! Get the perfect cartridge for your 64 or 128 system—for only \$19.95. That's a savings of \$15.00 off the manufacturer's retail price.

With the simple press of a button, Super Snapshot 4 enhances your C-64 or C-128 with this incredible assortment of special features:

- Turbo load & save
- Screen dump
- DOS wedge
- Pre-programmed function keys
- Machine language monitor
- Sprite editor and monitor
- File manager
- Fast formatter
- Fast disk copier
- One-key program loads
- Reset switch
- Supports all disk drive formats
- All for just \$19.95!

HURRY! ORDER NOW — quantities are limited.

Call 1-800-343-0728 or mail this coupon today!

FACTORY AUTHORIZED COMMODORE REPAIR CENTER 1-800-772-7289

(312) 879-2888 IN ILLINOIS

C64 Repair (PCB ONLY)	42.95	C128D Repair	CALL
C128 Repair (PCB ONLY)	64.95	Amiga Repair	CALL
1541 Permanent Alignment	29.95	Printers	CALL
1541 Repair	79.95	Monitors	CALL
1571 Repair	79.95	Other Equipment	CALL

CALL BEFORE SHIPPING FOR AUTHORIZATION NUMBER

(Have Serial and Card Numbers ready)

PARTS AND LABOR INCLUDED

FREE RETURN SHIPPING

(A.P.O. F.P.O. AIR ADD \$10.00)

24-48 HR. TURNAROUND

(Subject to Parts Availability)

30 DAY WARRANTY ON ALL REPAIRS

COMMODORE PARTS CALL (708) 879-2350

C-64 Power Supply	34.95*
C-128 Power Supply	59.95*
Other Parts	CALL

*(Plus \$3.00 Shipping/Handling)

TEKTONICS PLUS, INC.

150 HOUSTON STREET
BATAVIA, IL 60510



YES! Send me the Super Snapshot 4 Utility Cartridge, Operating Manual and System Disk for only \$19.95, plus \$4 postage and handling. I save \$15.00 off the retail price.

Enclosed is my check/money order

Charge my account below:

MasterCard

Discover

VISA

American Express

Account# _____ Exp. _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____ SS1090

Please allow 4-6 weeks for delivery. Outside North America, surface shipping/handling is \$6.00. Payment in U.S. funds drawn on U.S. bank, or by VISA, MasterCard, American Express or Discover. All cartridges have a 30-day replacement guarantee.

SUPER SNAPSHOT

PO Box 802, Peterborough, NH 03458

RUN'S CHECKSUM & PROGRAM TYPING HINTS

TYPE IN *RUN'S CHECKSUM*, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running it. When typing in a program from *RUN*, first load and run *RUN's* latest version of the Checksum program, which contains a new feature explained below. The screen will display a SYS number (49152 for the C-64; 3328 for the C-128) that deactivates and reactivates the Checksum. Always disable *RUN's* Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

When you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line as you typed it is correct. If the number that appears doesn't match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN's* Checksum, using the appropriate SYS number, and save the finished program.

We sometimes get letters and phone calls from new readers who have typed in the Checksum program for the first time. They are confused by the "Out of Data Error in Line 30" message that appears when they try to run the Checksum program. Understandably, they compare line 30 of the listing with line 30 as they typed it in, and cannot find anything wrong. The message unintentionally misleads them into thinking the error is in line 30, whereas the typing mistake is actually somewhere in one of the Data statements in lines 190-350.

So, we've added a new feature to the Checksum program that alerts readers to the number of the Data statement line in the Checksum program where an error has actually been made. Note that this feature works only on the Checksum program itself, and not on any other program listing in *RUN*.

After you've entered and saved the Checksum program to disk, run it. If you've made any errors in any of the Data statements, the program will give you a specific line number. Find the mistake, correct it, press return, save the program and run it again. Repeat this procedure until the Checksum program runs flawlessly.

CONTROL CHARACTERS DEMYSTIFIED

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key once. You do not type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

- {22 SPACES}—press the space bar 22 times.
 - {SHIFT CLR}—hold down the shift key and press the clr-home key once.
 - {2 CRSR DNs}—press the cursor-down key twice.
 - {CTRL I}—hold down the control key and press the I key.
 - {COMD T}—hold down the Commodore logo key and press the T key.
 - {5 LB.s}—press the British pound key (£, not #) five times.
- Refer to the following paragraphs for any other Error messages you get from running any program listing in *RUN*.

OTHER ERROR MESSAGES

Having heard from many users over the years about their difficulties with typing in listings, we've identified a few recurring problems that plague many people but are easy to fix. So read on and see if your problem is one of these.

- You get an "Out of Data in Line xxx" message. This means that a program line was reading from Data statements and reached the end of the data before it was done reading. There are two possible problems.

One might be with the program line that reads the data, usually a For-Next loop. Make sure you have the proper values for the loop, because if, for example, the listing has a loop of 0 to 150, and you've typed 0 to 160, you'll get the Out of Data message. If the loop is

correct, then the problem lies in the Data statements themselves. One possibility is that you omitted a whole line of data. That's easy enough to find and correct. It's more likely that you've skipped one or more individual data items or typed in a period instead of a comma, which causes two data values to be read as one number. Check your typing carefully against the listing. Using *RUN's* Checksum program when you type in listings from the magazine should help in this case.

- You get an "Illegal Quantity Error in Line xxx" message. This means you've read a number from a Data statement and tried to poke it into a memory address. The error occurs because the number is larger than 255 (the largest value a memory address can contain), which means that somewhere in your Data statements you've made an error by typing in a number larger than 255. Again, this is easy to check for and correct. First look in your Data statements for a number larger than 255. You might have added an extra digit, or perhaps you ran two numbers together (23456 instead of 234,56).

- You get a "Syntax Error in Line xxx" message. This could be almost anything. What it tells you is that there is something wrong in the indicated line. Usually you've misspelled a Basic keyword or omitted some required character. List the line and examine it carefully.

- You get an "Error in Data" message. This occurs in programs that add up all the data as read, and, when finished, compares that sum with what it should be if the data were typed in correctly. If it isn't the same, it means an error somewhere in typing the Data statements. Go back and check the data carefully. Correct the mistake(s), save the new version and try again.

- Finally, we urge everyone who intends to type in one of our listings to use *RUN's* Checksum program, which will help you avoid every mistake we've mentioned above, except that it won't detect the omission of a line. ☐

Listing. *RUN's* Checksum program. This program is available on *RUN's* BBS for users to download.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(40960) THEN MO=64:SA=49152
30 I=0:CK=0:CH=0:LN=190
40 FOR K=0 TO 16
50 FOR J=1 TO 10:READ B:IF B>255 THEN GOTO 170
60 CH=CH+B:POKE SA+I,B:I=I+1:NEXT
70 READ LC
80 IF LC<>CH THEN GOTO 170
90 CH=0:LN=LN+10
100 NEXT K
110 POKESA+110,240:POKESA+111,38:POKESA+140,234
120 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
130 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
60
140 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
6,165
150 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+12
4,189
160 POKESA+4,INT(SA/256):SYS SA:NEW
170 PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
180 REM DO NOT CHANGE THESE DATA STATEMENTS!
190 DATA 120,162,24,160,13,173,4,3,201,24,884
200 DATA 208,4,162,13,160,67,142,4,3,140,903
210 DATA 5,3,88,96,32,13,67,152,72,169,697
220 DATA 0,141,0,255,133,176,133,180,166,22,1206
230 DATA 164,23,134,167,132,168,170,189,0,2,1149
240 DATA 240,58,201,48,144,7,201,58,176,3,1136
250 DATA 232,208,240,189,0,2,240,42,201,32,1386
260 DATA 208,4,164,180,240,31,201,34,208,6,1276
270 DATA 165,180,73,1,133,180,230,176,164,176,1478
280 DATA 165,167,24,125,0,2,133,167,165,168,1116
290 DATA 105,0,133,168,136,208,239,232,208,209,1638
300 DATA 169,42,32,210,255,165,167,69,168,170,1447
310 DATA 169,0,32,50,142,169,32,32,210,255,1091
320 DATA 32,210,255,169,13,32,210,255,104,168,1448
330 DATA 96,104,170,24,32,240,255,104,168,96,1289
340 DATA 56,32,240,255,138,72,152,72,24,162,1203
350 DATA 0,160,0,32,240,255,169,42,208,198,1304
```


VIDEO BYTE II the only FULL COLOR! video digitizer for the C-64, C-128

Introducing the world's first **FULL COLOR!** video digitizer for the Commodore C-64, 64-C, C-128, & 128-D computer. **VIDEO BYTE** can give you digitized video from your V.C.R., LASER DISK, B/W or COLOR CAMERA or OFF THE AIR or CABLE VIDEO (thanks to a fast! 2.2 sec. scan time). New version 3.0 software features full **RE-DISPLAY** with **MULTI CAPTURE MODE**, **BUILT IN PRINTING MODE**, **EXPANDED COLORIZING MODE**, **FREEZE COLOR** feature and much, much more! (Works with P.A.L. system also.)

FULL COLORIZING! Is possible, due to a unique SELECT and INSERT color process, where you can select one of 15 COLORS and insert that color into one of 4 GRAY SCALES. This process will give you over 32,000 different color combinations to use in your video pictures. **SAVES as KOALAS!** Video Byte II allows you to save all your pictures to disk as FULL COLOR KOALA'S. After which (using Koala or suitable program) you can go in and redraw or color your V.B. pic's.

LOAD, DISPLAY & PRINT Video Byte II allows you to load, display & print all **VIDEO BYTE** or **KOALA** pictures from Video Byte's menu.

MENU DRIVEN! Video Byte II comes with easy to use menu driven UTILITY DISK with V3.0 video digitizer program. (64 MODE ONLY).

COMPACT! Video Byte II is compact! In fact no bigger than most cartridges! VB II (plugs into MODEM PORT) comes with 3' cable.

INTEGRATED! Video Byte II is designed to be used with or without EXPLODE! V5.0 color cartridge. Explode! V5.0's menu will return you to VIDEO BYTE II's menu. EXPLODE! V5 is the **PERFECT COMPANION!** AT ONLY \$44.95 or W/DISABLE SWITCH \$49.95.

FREE! Video Byte II users are automatically sent **FREE SOFTWARE** updates along with new documentation, when it becomes available.

PRINT! Video Byte II will printout **VB** or **KOALA** pictures in 4 GRAY SCALE to most printers. However when used with Explode! V5.0 your printouts can be done in FULL COLOR 8 by 11's SIDEWAYS on the **RAINBOW NX - 1000, RAINBOW NX - 1000 C, JX - 80, Seikosha 3000 AI.** (OKIDATA 10/20's (print larger 6" by 9"))

USER SLIDE SHOW program w/auto or manual display is standard with **VIDEO BYTE** program. And can be backed up! Why DRAW a car, airplane, person or for that matter... anything when you can **BYTE** it... **VIDEO BYTE** it instead!

ONLY
\$79.95

All units come w/90 day WARRANTY. All orders add \$3 for UPS BLUE LABEL S/H. UPS BLUE available only in 48 states. FOREIGN ORDERS are US FUNDS +\$6.35 S/H. ORDER BOTH EXPLODE! V5 & VIDEO BYTE II together and receive FREE!! UPS S/H. ***Note all SALES are FINAL. 90 DAY WARRANTY covers PARTS & LABOR ONLY. All SOFT GROUP UTILITY DISKS COME w/built-in CATALOG of PRODUCTS.

*IN 64 MODE ONLY TO ORDER CALL 1-708-851-6667 IL RESIDENTS ADD 6% SALES TAX PLUS \$3.00 S/H. NO C.O.D.'S. FOREIGN ORDERS U.S. FUNDS ONLY \$6.35 S/H. Personal Checks 10 Days to Clear

THE SOFT GROUP, P.O. BOX 111, MONTGOMERY, IL 60538

VOICE MASTER[®] Junior

Clearance Sale!

~~\$39.95~~ #15.95

RUN Magazine has obtained a limited quantity of the fascinating and useful VoiceMaster Jr. This unique device combines speech output and voice recognition for one amazing low price! Your voice controls programs, appliances and lots more with simple spoken commands. Put VoiceMaster Jr. to use at home, in school, your office or anywhere your imagination takes you!

- ◆ Recognizes and Executes Spoken Commands!
- ◆ Records and Replays Music and Sound!
- ◆ Runs in 64 Mode on C-64 and C-128!
- ◆ Comes Complete with
 - ◆ Microphone
 - ◆ Operating Software
 - ◆ Demo Program
 - ◆ Connecting Cable
 - ◆ Comprehensive Operating Guide
- ◆ ALL FOR JUST \$15.95

That's \$24 off the original price!

ORDER NOW! SUPPLIES ARE DEFINITELY LIMITED!

(Limit: 3 per order)

Call 1-800-343-0728 or
mail this coupon today!

YES! Send me a brand-new VoiceMaster Jr. for only \$15.95, plus \$4.00 shipping and handling each.

My Check MasterCard Visa AmEx Discover Account information is enclosed:

Account # _____ Expires _____

Signature _____

Name _____

Address _____

City, State, Zip _____

Make checks payable to **RUN** Magazine. Please allow 4-6 weeks for delivery. Outside North America, surface shipping/handling is \$6.00. Payment in US funds drawn on US bank or by credit card. VoiceMaster Jr. comes with a 30 day replacement guarantee. VM1190

VoiceMaster Jr. Offer / **RUN** Magazine
PO Box 802
Peterborough, NH 03458
603-924-9471

1-800-343-0728

ORGANIZE AND PROTECT YOUR COPIES OF RUN

Now there's an easy way to keep copies of your favorite magazine readily available for future reference.

Designed exclusively for **RUN** by Jesse Jones Industries, these custom-made titled cases and binders are sized to hold a year's issues (may vary with issue sized).



RUN
Jesse Jones Industries, Dept. RUN
499 East Erie Ave., Philadelphia, PA 19134

Cases:	1-\$7.95	3-\$21.95	6-\$39.95
Binders:	1-\$9.95	3-\$27.95	6-\$52.95

Enclosed is \$ _____
Add \$1 per case/binder for postage & handling. Outside USA \$2.50 per case/binder (US funds only).

Please send _____ cases; _____ binders for **RUN** magazine.

Charge Orders: Call TOLL FREE 7 days, 24 hours 1-800-972-5858 (minimum order \$15)

Print Name _____

Address _____

No P.O. Box numbers please

City/State/Zip _____

PA residents add 6% sales tax

SATISFACTION GUARANTEED

RUN CLASS ADS

HIGH QUALITY PUBLIC DOMAIN PROGRAMS!

Thousands of Public Domain Programs at money saving prices. Send \$3.00 for our large catalog and sampler disk to:

EAGLE ENTERPRISES
50 Baker Lane
Dumont, NJ 07628

√Book™

Your spreadsheet or data base doesn't really understand your personal checking!
Check out these features:

- √ 17 types of checking transactions
- √ Handles overdraft protection
- √ Remembers payees for fast entry
- √ Full screen editing and selective queries
- √ 8 types of reports plus check printing
- √ C64/40 col. and C128/80 col. programs
- √ Supports 1541/1571/1581 drives
- √ Schedules periodic transactions
- √ Custom transaction categories
- √ Monthly balancing
- √ Optional password protection
- √ Utilities with partition tools for sub-directories on 1581 drives
- √ Calculator, and more...

Computer Craftware • 17966 Arbolada Way • Tustin, CA 92680
(714) 953-8177 • \$34.95 + \$2.50 S&H (CA res. add 6¼%)

KASARA MICRO SYSTEMS 1-800-248-2983

Mention this ad and receive a 1541/C64 Diagnostician (a \$6.95 value) FREE with any \$30.00 parts/repair order

SAVE MONEY

on MONTHLY SPECIALS and 90 DAY WARRANTY on all Parts and/or Repairs

LOW PRICES

on EXTENSIVE INVENTORY of Commodore ICs, PSs, PC Bds., and Accessories.

QUALITY SERVICE

at GUARANTEED below suggested retail with quantity discounted prices

FOR 10 YEARS

your RELIABLE SOURCE for Amiga, CBM, and now PC Product Line ICs

Weekday Hours 9:00 AM-6:00 PM EST

LOTS OF DISKS! THE BEST in 64/128 PD.

GEOS, Graphics, Clipart, Demos, Games, Bible, MIDI, Music, Educational, Basic 8

We have what you want!

Low prices! Large selection! Fast service!

Send stamp for FREE catalog or \$2 for sample disk.

Diskoveries
The Best
in PD Software

Diskoveries
PO Box 9153, Waukegan, IL 60085



C-128	\$63.00	Amiga 500	\$70.00
1541 Repair	\$40.00	Amiga 1000	\$87.00
1571 Repair	\$50.00	Amiga 2000	\$125.00
SX64	\$66.00	All Commodore monitors	\$67.00
PC-10, PC Colt Motherboard	\$110.00		

C-64 repair \$37.95 **128D — \$70.00**

Prices include parts/labor.

Call for unlisted products.

Discount for dealers & schools

Prices subject to change without notice.

Computer Technologies
1313-B Washington Ave.
Titusville, FL 32780
(407) 269-1081
Toll Free 1-800-237-2835

AUTHORIZED COMMODORE SERVICE CENTER

ReRUN DISKS

Great software at affordable prices from *RUN* magazine. Each disk is packed with programs from the two most recent issues of *RUN*, plus never-before-published BONUS programs.

1-year subscription \$69.97 (Single issue \$16.47)

CALL TOLL-FREE 1-800-343-0728

Commodore 1764 REU Owners Upgrade!

Upgrade your 256K REU to 512K for \$79. This low cost is for a limited time only. So don't delay. New 1764 upgrades with Commodore heavy duty power module \$195. Send cashiers check or money order only. Include payment, REU, name, phone, address and zip clearly printed. Send to:

R.R. Electronics
PO Box 57607
Murray, UT 84157

For recorded message, call 801-265-2871. For orders out of continental US add \$10.00.

Maidstone Quest

Maidstone Quest is the exciting new adventure game for the C-128. Travel the 28 levels in search of clues and weapons you will need to destroy Ganef and recover the Maidstone. With 14 commands and dozens of attack/fight sequences, you will be treated to colorful animations on the 80-column screen. Hardware requirements: C-128 with 64K VDC and 1571 disk drive or a C-128D, 80-column RGB monitor. Input via mouse or joystick. Send check or money order for \$28.50 (includes shipping) payable to:

Silvasoft • PO Box 1006 • Charlotte, VT 05445

COMMODORE 64 SUPER SOFTWARE

Las Vegas Games #1 — Roulette, Slots, Horse races, Blackjack, and more. Over 20 games **\$10.95**

Best of Games #1 — 2 disk set includes Football, Baseball, Bowling, Break-out, Golf and more. Over 50 games **\$15.95**

Adventure #1 — Gladiator, Sorcer's Castle and 11 others. **\$9.95**

Mixer Disk #1 — Mixture of games, music, business, utilities, etc. **\$7.95**

Special Package Deal of the 4 above packs. **\$39.95**

Add \$2.00 shipping/handling. Send check or money order to:

GSR Productions
3800 Old Cheney Rd., Suite 101/106
Lincoln, NE 68516

RUN

Class Ads

RUN Class Ads were specifically designed to provide the effectiveness of display advertising at the cost of classified advertising. This opportunity gives the Class Ad buyer the lowest cost available to reach *RUN*'s highly qualified circulation of exclusive Commodore 64 & 128 owners.

Need help in designing your Class Ad, questions about rates, frequency or size? Call **HEATHER PAQUETTE** at **1-800-441-4403** or **603-924-0100**. We accept checks, money orders, Master Card or VISA.

RUN CLASS ADS

NOW AVAILABLE FOR THE AMIGA!

The MicroFlyte JOYSTICK, the only fully proportional continuously variable joystick control for Flight Simulator II
 "...it transforms an excellent program into a truly realistic flight simulation system" B.A.C.E.

MICROCUBE PRODUCTS

- Commodore 64/128
 • MicroFlyte ATC Joystick \$59.95
 • Test/Calibration Disk: A diagnostic tool for your joystick \$ 4.95
Amiga
 • MicroFlyte Joystick—Plugs into the mouse port & works with most software . . . \$119.95
 • Analog Joystick \$ 74.95
 Include \$4.00 shipping of joystick orders. FSII is a trademark of subLOGIC Corp.

MICROCUBE CORP., PO Box 488, Leesburg, VA 22075 (703) 777-7157

C* BASE BBS SYSTEMS

If you are looking for the fastest, most efficient BBS with the most features for the C64, your wait is NOW OVER! And now CBASE has a C128 version as well. C*BASE supports nearly all hardware additions including SFDs, popularly advertised harddrives, 1581s (Supports partitioning), and ram expanders! Both systems come with BASIC source code, extensive documentation, and free modules such as Empire and Murder Motel! An extensive network of support lines allows easy access to updates and more modules also! To order send check or m.o. & your Name, Alias, Address, Voice#, BBS#, BBS name, and Equip. List.

- For More Information Contact **\$50.00 64 CBASE** (301) 761-9773 VOICE
 Gunther Birznies **\$70.00 128CBASE** (301) 761-0306 64 BBS
 6390 Apt. B Smithy Square (703) 751-2729 128BBS
 Glen Burnie, MD 21061 (703) 620-8897 128BBS

C64/128 PUBLIC DOMAIN SOFTWARE

REQUEST FREE CATALOG or send \$2 for sample disk and catalog (RE-FUNDABLE). Categories include education, utilities, games, business, PRINT SHOP graphics, pre-tested programs and more. Rent for 75¢ or buy as low as \$1.00 per disk side or for 80¢ for 70 or more. \$20 order gets 4 free disks of your choice.
 NEXT DAY SHIPPING! SINCE 1986

CALOKE INDUSTRIES (Dept BK)
 PO Box 18477, Kansas City, MO 64133

COMMENTS ON QUICK BROWN BOX

"I bought a 64K Quick Brown Box for my C64 and it is absolutely, positively the best addition I ever made to my machine. I now run my whole business with my C64 at lightning speed thanks to you."
 Paul Mazaika, THE FLOOR STORE, Fitchburg, MA

"I have found many uses for combining the QBB with programs captured using Super Snapshot V5. These two utilities have made my two C64 computer systems really whistle!"

Richard Jongstra, Stony Mtn., Manitoba, Canada

Store your C64 or C128 programs in this battery backed cartridge.
 32K to 256K units priced from \$75 to \$199 BROWN BOXES, Inc.
 26 Concord Rd., Bedford, MA 01730 (617) 275-0090, 862-3675

DON'T MISS THIS INTRODUCTORY OFFER

Screen-Pro is a complete graphic screen and animation production system for the C-64/128!

Create FAST menus, displays, intros, windows, instructions, game backgrounds, cartoons, video titles, slide shows, and easily use them in your OWN PROGRAMS! Satisfaction Guaranteed!

SCREEN-PRO
 Up to 34 screen animations!
 Full color & mode support!
 Powerful cut, paste, copy!
 Draw in any direction fast!
 Load and save screens to disk. No need to program!
 DOS & directory support!
 Plus much, much more!

Whether you're a beginner or an expert, whether this is your first program or your last, we're so sure that you'll agree Screen-Pro is the best program of its kind we'll give you a FREE action game just to try it!

2 Disk Set & Full Documentation only \$24.95 postage paid

Send check or money order payable to:

AccuTone Productions 36 Myers Ct. Medford, OR 97501

PD NUDES 1

Public domain collection of attractive adult pictures fill each disk. Order disk 1, 2 or 3 for \$10 each or all 3 for \$25. You must state you are over 18. Send CHECK ONLY:

Data Foundations, Dept. 300D
 PO Box 9324, Akron, OH 44305



SAVE YOUR FAMILY!

Genealogy software with features to fit every budget and requirement: LINEAGES/Starter, LINEAGES/Standard, LINEAGES/Advanced, and our most comprehensive FAMILY ROOTS. Prices \$29 & up. Data is compatible between systems and you may upgrade from one to another. Call for FREE information. Satisfaction guaranteed.

QUINSEPT, INC.

PO Box 216, Lexington, MA 02173
 1-800-637-ROOT 617-641-2930

COMMODORE 128 & CP/M USERS

WORDSTAR®

WORDSTAR V.2.26 or SuperCalc V.1.05 or WORDPAC (including Grammatic and Spellguard) or MBASIC with compiler, BASIC or FORTRAN 80. **\$39.00** each

Wordstar/SuperCalc/MBASIC includes a 763 page Osborne System Manual with extensive CP/M Tutorials as well. 3/\$95.00

800-221-7372 Don Johnson
 PDSC, 33 Gold St. L3, NYC, NY 10038

COMMODORE AMIGA SERVICE CENTER

AMIGA 500	C-64 (Repair)	C-128	\$64.95
(Repair) \$75.00	\$39.95	1541	49.95
includes parts/labor flat rate repair		1571	64.95
8372A *Fatter Agnus* (installed) \$95.00		SX-64	74.95

CALL for Commodore Chips & Power Supplies at low prices.

24 Hour Turnaround
A&M Computer Repair
 20 Guernsey Drive, New Windsor, New York 12550
 1-800-344-4102 (914) 562-7271

C-64/128 — AMIGA — IBM SOFTWARE

Thousands of PD/Shareware programs on 100's of disks. Send for free large descriptive catalog or send \$2 for catalog and sample disk.* (SPECIFY COMPUTER TYPE.)

*Shareware programs require separate payment to authors if found useful.

DISKS O'PLENTY, INC.

7958 PINES BLVD., SUITE 270R
 PEMBROKE PINES, FL 33024

New from Keystone Software® New

Two new programs featuring easy-to-use drop down menus and entry windows. View up to 15 records at a time. Scrolling is fast! Records are in memory for fast access and fast sorts. Print one record at a time, pick and choose many or print the entire list- you have complete control. Import & export records between lists. Both 64 & 128 versions (40 & 80 col.) are included. Ready to use, no setup required.

Mail List Manager™ \$29.95

The first C64/128 program designed specifically to manage your mailing lists. Sort on Name, Zip Code or any of 9 fields. Print labels, index cards, name badges, file folders.

Video Cassette Library™ \$29.95

Now easily organize your Video cassette collection! Sort on Title, Category or any of 9 fields, print standard labels or VHS labels.

Label Maker™ by Keystone Software

For C64 & C128 (40 or 80 columns) \$29.95
 11 pre-designed label layouts, including Audio & Video Cassettes or "design your own". Use your printer's font and color capabilities. Merge data from your data base.
 Rated A by Run Magazine.

SH \$4.50 per order
 PA residents add 6% tax.

Name _____
 Address _____
 City/St _____ Zip _____

Cheatsheet Products Inc.
 Dept R11 PO Box 8369 Pittsburgh, PA 15218
 (412) 243-1049 (9 to 5)

DECEMBER

COMING ATTRactions

HOW TO MAKE \$\$\$ WITH YOUR COMPUTER—

Computers can be used for many applications—entertainment, productivity, education—but did you know that you can also use your computer system to pocket some extra cash? Next month, we'll provide some money-making hints and tips.

DESKTOP PUBLISHING—

The marriage of text and computer graphics has given users the opportunity to create some eye-popping presentations—greeting cards, banners, calendars, newsletters. Find out how you, too, can become a "publisher" with your Commodore.

COMPANION DISKS—

What's the best way to rejuvenate tired, old programs that are collecting dust in your disk storage box? Find out what accessory software is available to bolster the value, and playing enjoyment, of some time-honored programs.

HOLIDAY SHOPPING LIST—

What do you get the computerist who has everything? This roundup of unique gift ideas may provide the answer.

AND THAT'S NOT ALL, FOLKS!—

RUN readers will encounter some interesting type-in programs, reviews of the latest software releases, news, hints about programming and computer use, game and productivity tips, answers to computing questions, feedback from fellow computerists, geoWatch, and lots more.

LIST OF ADVERTISERS

603-924-7138 or 800-441-4403

NATIONAL ADVERTISING SALES MANAGER: **KEN BLAKEMAN**

NORTHEAST/MIDWEST/SOUTHEAST SALES: **NANCY P. THOMPSON**

WESTERN STATES SALES MANAGER: **GIORGIO SALUTI, 415-363-5230**

	Page		Page
Artisoft	57	RUN	
Briwall	13	RUN Works	39
Creative Micro Design	10, 11	GEOBASIC	43
Damark Int'l, Inc.	7	Modem	53
GameTek	CIV	ReRUN Back Issues	55
Lance Haffner Games	49	Super Snapshot	59
Loadstar	1	Voice Master Jr.	61
Lyc0 Computer	CIII	Class Ads	62-63
Micro Express	9	Schnedler Systems	17
Montgomery Grant	2	Software Discounters	15
ON! Magazine	45	Software Hut	28
Origin Systems	CII	SOGWAP Software	41
P.A.V.Y. Software	49	Tab Books, Inc.	23
Parsec, Inc.	57	Tektonics Plus, Inc.	59
Parsec, Inc.	59	Tenex Computer Express	25
Protecto's Computer Direct	5	The Grapevine Group	41
Ramco Computer Printer	57	The Soft Group	60
Rio/Datel	36, 37	Utilities Unlimited	33

RUN ALERT: As a service to its readers, *RUN* will periodically publish the names of companies who are having difficulties meeting their customer obligations or who have gone out of business. Readers are advised to contact **Margot Swanson, Customer Service Representative, RUN Magazine, 80 Elm St., Peterborough, NH 03458**, before dealing with this company: **Diskette Emporium.**

PRESIDENT

ROGER J. MURPHY

VICE PRESIDENT OF MANUFACTURING/OPERATIONS

DENNIS S. CHRISTENSEN

DIRECTOR OF CORPORATE CIRCULATION & PLANNING

BONNIE WELSH-CARROLL

DIRECTOR OF TECHNOLOGY RESEARCH

JEFFREY D. DETRAY

SINGLE COPY SALES DIRECTOR: **LINDA RUTH**

NEWSSTAND PROMOTION MANAGER: **DEBBIE WALSH**

DIRECTOR OF CREDIT SALES & COLLECTIONS: **WILLIAM M. BOYER**

MANUFACTURING MANAGER: **LYNN LAGASSE**

SYSTEM SUPERVISOR: **DOREEN MEANS**

TYPESETTER: **DEBRA A. DAVIES**

FOUNDER: **WAYNE GREEN**

Manuscripts: All manuscript contributions, queries, requests for writer's guidelines and any other editorial correspondence should be directed to *RUN*, Editorial Offices, 80 Elm St., Peterborough, NH 03458; telephone: 603-924-0100.

Subscription problems or address changes: Call 1-800-274-5241 (in Colorado, call 447-9330), or write to *RUN*, Subscription Services, PO Box 58711, Boulder, CO 80322-8711.

Problems with advertisers: Send a description of the problem and your current address to: *RUN*, 80 Elm St., Peterborough, NH 03458, ATTN.: Margot Swanson, Customer Service.

Back Issues: *RUN* back issues are available for \$3.50, plus \$1 postage and handling, from: *RUN*, Back Issue Orders, 80 Elm St., Peterborough, NH 03458; or call 1-800-343-0728.

Inquiries regarding ReRUN: Write to ReRUN, 80 Elm St., Peterborough, NH 03458, or call 1-800-343-0728.

RUN's BBS: The *RUN*ning Board is *RUN*'s reader feedback bulletin board, which you can call anytime, day or night, seven days a week, for up-to-date information about the magazine, the Commodore industry and news and information of interest to all Commodore users. Call: 603-924-9704.



Lycocomputer Marketing & Consultants



COMMODORE SOFTWARE

Access:		Geopublish	\$29.95
Echelon	\$28.95	Geofile 128	\$39.95
Mach 128	\$29.95	Broderbund:	
Mach 5	\$22.95	Print Shop	\$28.95
Activision:		Print Shop Comp	\$22.95
Maniac Mansion	\$23.95	GraphicLib 1,2,3, ea	\$15.95
Neuromancer	\$25.95	Carmen San Diego W1	\$22.95
Rampage	\$22.95	Carmen San Diego US	\$25.95
Berkeley Softworks			
Geofile 64	\$29.95		
Geos 64 2.0	\$35.95		
Geos 128 2.0	\$39.95		

*** Call for *
New Titles**

Microprose:	
Gunship	\$25.95
Stealth Fighter	\$28.95
Red Storm Rising	\$28.95
Origin:	
Ultima IV	\$38.95
Ultima V	\$38.95
Timeworks:	
Swiftcalc 128	\$31.95
Data Manager 2-64	\$12.95
Data Manager 128	\$28.95
Word Writer 128	\$31.95

Joysticks:	
Boss	\$12.95
Bathandle	\$16.95
1 Controller	\$10.95
3-Way	\$22.95
Diskettes:	
5 1/4 Disk Notcher	\$5.95
Xidex 5 1/4 DSD	\$4.95
Xidex 3 1/2 DSD	\$9.95
Surge Protectors	
QVS PP-102	\$15.95
QVS PP-112	\$15.95
QVS PP-104	\$23.95

ACCESSORIES

Printer Interfaces	
Xetec Jr.	\$38.95
Xetec Supergraphics	\$55.95
Xetec Gold	\$74.95
Printer Paper:	
1000 sheet laser	\$16.95
Banner Paper 45" Roll	\$10.95
Drive Maintenance:	
5 1/4 Drive Cleaner	\$4.95
3 1/2 Drive Cleaner	\$4.95



- 180 cps draft
- 45 cps NLQ
- 4 resident fonts
- 216x240 dpi resolution and print pitches ranging from 3 to 20 cpi



NX-1000 II \$149⁹⁵

Star	
NX-1000 II	\$149.95
NX-1000 Color	\$184.95
NX-1000C	\$179.95
NX-1000C Color	\$219.95
NX-2410	\$255.95
Epson	
LX-810	\$184.95
LQ-510	\$279.95
FX-850	\$309.95
FX-1050	\$429.95
LQ-850	\$469.95
LQ-950	\$469.95

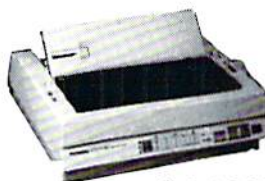
PRINTERS

Panasonic

1180	\$149.95
1191	\$219.95
1124	\$285.95
1695	\$409.95
1624	\$349.95



- 9-Pin personal printer
- EZ-Set operator panel
- adjustable push/pull tractor feed
- multiple paper paths
- 192 cps draft
- 38 cps NLQ

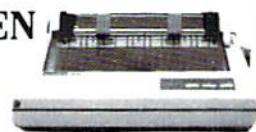


KX-P1180 \$149⁹⁵

Printer ribbons, cables, connections and accessories available for all applications. Please Call.

CITIZEN

- 120 cps draft speed with improved throughput capabilities
- Built-in variable-width tractor*compact design w/bottom paper feed minimize space requirements.



120 D \$134⁹⁵

Citizen

120 D	\$134.95
180 D	\$154.95
HSP-500	\$319.95
GSX-140	\$289.95

Brother

M1809	\$335.95
18241	\$449.95
M1909	\$429.95

Okidata

172	\$195.95
182 Turbo	\$229.95
320	\$329.95
321	\$459.95

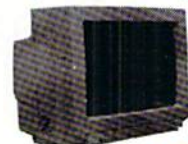
COMMODORE UPGRADES

Excel FSD-2+ Disk Drive

100% Commodore 64C drive compatible, the Excelator Plus Disk Drive is quieter, smarter, faster, and more reliable than the 1541 and 1541C.

1-year warranty

\$139⁹⁵



MAGNAVOX

- RGB, TTL, and comp inputs
- text switch
- Built-in tilt stand
- 6 1/2" H x 21 1/2" W

CM8764 \$229⁹⁵



GoldStar

- 12" amber display
- 640h x 200v
- IBM and Commodore compatible

2105 A \$74⁹⁵

MONITORS

Magnavox:	
BM7652 Mon. Comp	\$81.95
BM7622 Mon. Comp	\$84.95
CM8702 Color Comp	\$169.95
CM8764 CGA	\$229.95
1CM135 RGB Analog	\$249.95

GoldStar	
2105 A Composite	\$73.95

MODEMS

Cardinal:	
MB2400X EX 1 2400 Baud	\$99.95
MB1200X EX 1 1200 Baud	\$68.95

Everex:	
Evercom 12 (INT)	\$54.95
Evercom 24 (INT)	\$109.95
Evercom 24+ (INT) MNP level 5	\$129.95
Evercom 24E+ (MNP level 5)	\$169.95

HARDWARE

64C Computer	SCA11
C 128 D Computer Drive	SCA11
1541 II Disk Drive	SCA11
Colr PC	SCA11
1670 Modem	SCA11

64 Power Supply

The MW 701-A power supply made by Micro R&D features double fused systems, schematics, and a one-year warranty. Stay with the best, stay with Micro R&D.



\$34⁹⁵

Cardinal

- Low error data transmission and reception over standard dial-up telephone lines
- Hayes compatible with the universally-accepted AT command set
- Automatic Data Standard and Speed Adjust features



MB2400EX External Modem \$99⁹⁵

Why shop at Lycocomputer? Lycocomputer offers quality name brand computer products at prices 30% to 50% below retail. If you do not see the product you want advertised, call Lycocomputer toll free. How do I know I will get the product I need? Our marketing staff receives continuous formal training by our manufacturers. Though our strict guarantee on providing only new merchandise prohibits free trial periods and a guarantee on compatibility, a wealth of knowledge is available to our customers. As thousands of people every week capitalize on our savings and services, we hope you too, will make Lycocomputer your first choice. What about warranty or service? Our Customer Service Department is available at (717) 494-1670 to assist you. We back all of our manufacturer's stated warranty terms. Before returning any item that appears to be defective, we ask that you call our Customer Service Department. Will you rush an item to me? We offer next day air, two day air, standard UPS, and postal international shipping services. Temporary shortages are normally filled within 10 days. How do I order? We have always accepted COD orders through UPS. Prepaid cash orders over \$50 are shipped freight-free. For orders under \$50, please add \$3 for freight. Personal and company checks require a 4 week waiting period. Visa, MasterCard, American Express and Discover Card orders are accepted for your convenience, but we cannot pass along the 4% discount offered for cash. Prices in this ad reflect cash prices. Purchase orders are accepted from Educational Institutions. We charge sales tax on deliveries in Pennsylvania. For APO, FPO, and international orders, add \$5 plus 3% for priority mail. Advertised prices and availability are subject to change. Simply send your order to Lycocomputer, P.O. Box 8288, Jersey Shore, PA, 17740. Or, call 1-800-233-8760 or (717) 494-1030. Return restrictions apply. Not responsible for typographical errors.

ATTENTION EDUCATIONAL INSTITUTIONS:

If you are not currently using our educational service program, please call our representatives for

Sales: 1-800-233-8760 or
717-494-1030
Fax: 717-494-1441
Hours: Mon-Fri.
9a.m.-9p.m.
Sat. 10a.m.-6p.m.
Customer Service:
717-494-1670
Hours: Mon-Fri.
9a.m.-5p.m.



Our friendly sales staff can help you with any questions you have!

1-800-233-8760

Price Guarantee

Since 1981, we have set the industry by continuing to offer the lowest national prices while providing quality service. Many companies have come and gone trying to imitate our quality and service. If by some oversight, we do not have the lowest prices advertised on the products you desire, then we would appreciate the opportunity to rectify this oversight.

YOUR MOVE...



Now, your favorite board games from Parker Brothers® and Milton Bradley® have been brought to life on GameTek software. Enhancing these American classics with exciting computer graphics and intriguing sound effects makes games like Payday™, Advance to Boardwalk™, and Candy Land™ come to life. (Plus, you don't have to worry about losing all the pieces or cleaning up afterwards!) GameTek computer software is so much fun, it'll Boggle™ your mind. You won't be Sorry™! It's your move!

GameTek™

2999 NE 191st Street • North Miami Beach • Florida 33180 • (305) 935-3995 • Fax (305) 932-8651

©1988 GameTek/IJE, Inc. CHUTES AND LADDERS, CANDY LAND AND GO TO THE HEAD OF THE CLASS ARE REGISTERED TRADEMARKS OF MILTON BRADLEY CO
 ©1990 MILTON BRADLEY CO. Sorry is Parker Brothers' registered trademark for its slide pursuit computer game. ©1934, 1950, 1972, 1990 Parker Brothers. Big Boggle is a Parker Brothers' registered trademark for its hidden word computer game. ©1973, 1976, 1990 Parker Brothers. Advance to Boardwalk is Parker Brothers' registered trademark for its hotel building computer game. ©1985, 1990 Parker Brothers. Pay Day is Parker Brothers' registered trademark for its calendar computer game.
 ©1973, 1990 Parker Brothers, Division of Tonka Corporation, Beverly, MA USA 01915. Used under license from Parker Brothers.

May Not Reproduce Without Permission