

# TUX PUG

June 1984

\$2.95

*magazine*

The official publication for the world's largest international Commodore users group

The MSD dual disk drive

**Super Disk  
Drive<sup>®</sup>**

- POWER
- DRIVE 0
- DRIVE 1

**MSD**

**SD-2**

The magazine for C-64,  
VIC 20, PET and SuperPET  
users.

Documentation for (C)M1,  
(C)M2, (C)M3, (C)M4 and  
(C)M5.

New column—  
David Hook discusses disk format.



# INTRODUCING



## THE PRO-LINE TEAM

★ **PAL 64**  
The fastest and easiest to use assembler for the Commodore 64. Pal 64 enables the user to perform assembly language programming using the standard MOS mnemonics. **\$49.95**

★ **POWER 64**  
Is an absolutely indispensable aid to the programmer using Commodore 64 BASIC. Power 64 turbo-charges resident BASIC with dozens of new super useful commands like MERGE, UNDO, TEST and DISK as well as all the old standbys such as RENUM and SEARCH & REPLACE. Includes MorePower 64. **\$49.95**

★ **TOOL BOX 64**  
Is the ultimate programmer's utility package. Includes Pal 64 assembler and Power 64 BASIC soup-up kit all together in one fully integrated and economical package. **\$89.95**

★ **SPELLPRO 64**  
Is an easy to use spelling checker with a standard dictionary expandable to 25,000 words. SpellPro 64 quickly adapts itself to your personal vocabulary and business jargon allowing you to add and delete words to/from the dictionary, edit documents to correct unrecognized words and output lists of unrecognized words to printer or screen. SpellPro 64 was designed to work with the WordPro Series\* and other wordprocessing programs using the WordPro file format. **\$49.95**

★ **WP64**  
This brand new offering from the originators of the WordPro Series\* brings professional wordprocessing to the Commodore 64 for the first time. Two years under development, WP64 features 100% proportional printing capability as well as 40/80 column display, automatic word wrap, two column printing, alternate paging for headers & footers, four way scrolling, extra text area and a brand new 'OOPS' buffer that magically brings back text deleted in error. All you ever dreamed of in a wordprocessor program, WP64 sets a new high standard for the software industry to meet. **\$49.95**

★ **MAILPRO 64**  
A new generation of data organizer and list manager, MailPro 64 is the easiest of all to learn and use. Handles up to 4,000 records on one disk, prints multiple labels across, does minor text editing i.e. setting up invoices. Best of all, MailPro 64 resides entirely within memory so you don't have to constantly juggle disks like you must with other data base managers for the Commodore 64. **\$49.95**

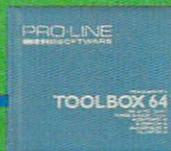
**NOW SHIPPING!!!**  
TOLL FREE ORDER PHONE  
**1-800-387-3208**



†Commodore 64 and Commodore are trademarks of Commodore Business Machines Inc.

\*Presently marketed by Professional Software Inc.

Specifications subject to change without notice...



**PRO-LINE SOFTWARE**

**(416) 273-6350**

755 THE QUEENSWAY EAST, UNIT 8,  
MISSISSAUGA, ONTARIO, CANADA, L4Y 4C5

# WARSI

NOW SHOWING

# BLITZ!<sup>TM</sup>

AT COMMODORE 64<sup>TM</sup> DEALERS

## The Fast BASIC Compiler

A stunning show delighted the crowd at the Whisman Theater in Mountain View last night. Called *BLITZ!*, loaded and performed by Robert Skyles in a one-man virtuoso programming display, the show features the spectacular compiler for the COMMODORE 64.

**"...BASIC programs running up to 20 times faster"**

The *BLITZ!* compiler is faster than PET SPEED, and faster than any other Commodore compiler that has appeared to date.

Shortly after Skyles took his seat and inserted *BLITZ!*, he had normal BASIC programs running up to 20 times faster after he *BLITZed* them.

The performer explained that *BLITZ!* translates the slow BASIC

language into a much faster code, thus improving the performance of the BASIC routines. *BLITZ!* reads the entire BASIC program, decides which operations only have to run once, and compiles the operations. It then re-writes the program into its special P-code.

Skyles also showed how *BLITZ!* adds security to your programs, because once a program has been compiled, it is not readable. That means protection is an automatic part of the re-writing.

The highlight of the show was, for this reviewer, when *BLITZ!* compiled a string of BASIC programs such that one loaded the next. An impressed audience looked on as Skyles effortlessly passed information from one program to another.

***BLITZ!* on disk for the Commodore 64 costs only \$99.00.**  
(You can also get one for the older PET CBMs on a special-order basis. It puts on quite a show!)



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

Available from your local Commodore 64 dealer or call 1-800-227-9998.

*BLITZ!* is a trademark of Skyles Electric Works.  
Commodore is a trademark of Commodore.



**SOFTWARE**

**THE TORONTO INTERNATIONAL  
SOFTWARE SHOW  
SEPTEMBER 20, 21, 22, 23  
1984  
INTERNATIONAL CENTRE,  
TORONTO, CANADA**



Hundreds of software applications will be featured by manufacturers,  
publishers, dealers and distributors  
from all over Canada,  
U.S.A. and around the world.

Seminars will be available to further show you  
first hand how to obtain the best software  
to meet your needs.

Also showing will be operating languages,  
hard disc drives, duplicating services, user interfaces,  
future trends, packaging and marketing services,  
peripherals and accessories.

Plan now to attend!

Mark the dates on your calendar now!

For further information contact:  
Cameron MacDonald, Debbie Bannon, Allan Stiver  
Hunter Nichols Inc.  
721 Progress Avenue,  
Scarborough, Ontario, M1H 2W7  
(416) 439-4140



# Contents

Articles	Page	Machine	Expertise Level
Arcade Challenge — fiction — Paul Hyckie . . . . .	41	*	G
The Assembler Maze — Jim Butterfield . . . . .	14	A	A
The Beginner & The Disk — David A. Hook . . . . .	26	A	B
Blue Max — Ian Wright . . . . .	20	C	B
Combatting Technostress — Stan Koma . . . . .	16	*	G
Decoding Wordprocessor Files — David Williams . . . . .	22	A	I
Fast Save For The C-64 — Elizabeth Deal . . . . .	29	C	I
Forecasting With The 8032 — Part II — John Shepherd . . . . .	32	P	A
Fort Apocalypse — Paul Hyckie . . . . .	21	C	B
Infodisk 64 File System — John David . . . . .	39	C	I
The Last One — Rich Westerman . . . . .	18	C	I
Microcomputing Periodicals — John Easton . . . . .	45	*	G
Monitor Meanderings — John Easton . . . . .	35	P	I
The MSD Disk Drive — Ian A. Wright . . . . .	12	A	G
The Oracle: A Database — J. Allan Farquharson . . . . .	17	C/P	G
Pogo Joe — David Wright . . . . .	20	C	G
Softspan 80 For The C-64 — William Frenchu . . . . .	19	C	I
SuperPET 6809 Assembler — Part 1 — Brad Bjorndahl . . . . .	31	S	I
Word Processing — It's Not Writing, It's Magic — Ian Wright . . . . .	47	A	G
VM101: A Motherboard For The VIC 20 — John McEwen . . . . .	25	V	I

## TPUG NEWS

	Page
Advertisers' Index . . . . .	62
Calendar of TPUG Events . . . . .	8
Classified Advertising . . . . .	62
(C)M1 — List-me — David Bradley . . . . .	57
(C)M2 — List-me — David Bradley . . . . .	58
(C)M3 — List-me — David Bradley . . . . .	59
(C)M4 — List-me — David Bradley . . . . .	60
(C)M5 — List-me — David Bradley . . . . .	61
Editorial — David Williams . . . . .	5
Help! . . . . .	6
Library Order Form . . . . .	56
Marketplace . . . . .	40
Meeting Reports — C-64 March 1984 . . . . .	50
— Communications April 4, 1984 . . . . .	51
New Additions to TPUG Library . . . . .	53
This and That — Doris Bradley . . . . .	10
TPUG Associate Club Chapter Meetings . . . . .	9
TPUG BBS Password . . . . .	51
TPUG Contacts . . . . .	4
TPUG HAM Operators . . . . .	8

A=all, C=C-64, V=VIC 20, P=PET/CBM, S=SuperPET, \*=none  
 G=General, B=Beginner, I=Intermediate, A=Advanced

# TPUG *magazine*

*Publisher*  
Chris Bennett

*Editor*  
David Williams

*Assistant Editor/Production Manager*  
Sandra Waugh

*Advertising Manager*  
Diane M. Hoffmann (Mrs.)  
(416) 782-1861

*Production Assistants*  
Astrid Kumas  
Marya Miller  
Janet Sherbanowski

*Graphic Design*  
Leslie Smart and Associates  
Toronto, Ont.

*Printing*  
Carswell Printing Company  
Toronto, Ont.

*Cover Photo*  
Roberto Portolese Studio  
Toronto, Ont.

TPUG magazine is published 10 times a year by TPUG, Inc. All rights reserved. No material may be reprinted without written permission.

TPUG yearly memberships:  
Regular member (attends meetings) — \$30.00 Cdn.  
Student member (full-time, attends meetings) — \$20.00 Cdn.  
Associate (Canada) — \$20.00 Cdn.  
Associate (U.S.A.) — \$20.00 U.S.  
Associate (Overseas—sea mail) — \$30.00 U.S.  
Associate (Overseas—air mail) — \$40.00 U.S.

TPUG Inc.,  
1912-A Avenue Rd., Ste. #1  
Toronto, Ont.  
M5M 4A1

Telephone numbers:  
Business Office (416) 782-8900  
(416) 782-9252

Magazine Office (416) 782-1861  
VIC 20, Commodore 64 and SuperPET are trademarks of Commodore Electronics Ltd. PET is a registered trademark of Commodore Business Machines, Inc. CBM is a registered trademark of Commodore Electronics Ltd.

TPUG magazine is printed in Canada. Second-class mailing registration pending. Mailed at Toronto, ON and Buffalo, NY. Send change of address to: TPUG Inc., Address Changes, 1912-A Avenue Rd., Toronto, ON M5M 4A1

Subscription: 14,500  
Newsstand: 7,000  
ISSN #0825-0367

*Distributed by:*

Access Computer Services	Compulit Distributors	Micron
630B Magnetic Drive	PO Box 352	409 Queen St. W.
Downsview, ON	Port Coquitlam, B.C.	Toronto, ON
M3J 2C4	V3C 4K6	M5V 2A5
(416)736-4402	(604)464-1221	(416)593-9862
Dealer Inquiries ONLY		
1-800-268-1238		

Subscription-related inquiries  
are handled ONLY with TPUG.

## TPUG CONTACTS

### TPUG Board of Directors

President	Michael Bonnycastle	416/654-2381
Vice-President	Chris Bennett	416/782-9252
Vice-President	Gord Campbell	416/492-9518
Treasurer	Carol Shevlin	c/o 416/782-8900
Recording Sec.	John Shepherd	416/244-1487
	Bruce Beach	519-925-5376
	Rosemary Beasley	416-787-8432
	Gary Croft	416-727-8795
	Mike Donegan	416-639-0329
	John Easton	416-251-1511
	Gerry Gold	416-225-8760
	Louise Redgers	416-447-4811

Business Man.	Chris Bennett	416/782-8900
Asst. Bus. Man.	Doris Bradley	416/782-8900

### TPUG Magazine

Publisher	Chris Bennett	416/782-1861
Editor	David Williams	416/782-1861
Asst. Editor	Sandra Waugh	416/782-1861
Ad Manager	Diane Hoffmann	416/782-1861

### Meeting Co-ordinators

Brampton	Gary Ledez	c/o 416/782-8900
Central	Michael Bonnycastle	416/654-2381
Commodore 64	Louise Redgers	416/447-4811
Comal	Don Dalley	c/o 416/782-8900
	Victor Gough	c/o 416/782-8900
Communications	David Williams	416/782-1861
Eastside	Kelly Grinton	c/o 416/782-8900
	Peter Schwartz	c/o 416/782-8900
Machine Language	Jim Carswell	416/531-9909
SuperPET	Gerry Gold	416/225-8760
VIC 20	(Doris Bradley)	416-782-8900
Westside	John Easton	416/251-1511
	Al Farquharson	519/442-7000

### Librarians

Commodore 64	David Bradley	416/782-8900
	Richard Bradley	416/782-7320
French	Baudouin St-Cyr	c/o 416-782-8900
PET	Mike Donegan	416/639-0329
SuperPET	Bill Dutfield	416/224-0642
VIC 20	Craig Bonner	416/663-4025
Assistant	Chris Covell	416/925-9296

Bulletin Boards	Steve Punter	416/624-5431
Conference	Gord Campbell	416/492-9518

---

---

# EDITORIAL

---

A couple of years ago, I wrote a BASIC program which calculates the times of sunrise and sunset at any location on the earth's surface on any date of the year. (The program is called "Sunrise/Sunset" and is in the TPUG library on disk (O)N3. It should run on any Commodore computer.) My initial purpose in writing the program was to help a friend who needed sunrise and sunset times to help in communicating with distant places by shortwave radio. However, I found that writing this program, and successfully completing it, assumed different forms of importance to me. Indeed, to a small extent, it altered the ways in which I think.

We all know, of course, that computers can perform mathematics much faster than can human brains. I imagine that every reader of *TPUG Magazine* has used some electronic device — computer or calculator — to help with financial or other calculations. Normally, these calculations are ones which we could have done by old-fashioned pencil-and-paper methods. The electronic devices are mere labour-savers. However, the trigonometrical computations which are involved in figuring out sunrise and sunset times are so long and tortuous that I suspect that I could never have succeeded in completing them accurately by hand. The computer enabled me to investigate a problem which I would never have been able to tackle without it. In a very real sense, it extended my intellectual capability.

In writing the program, I fed the computer with a mathematical description

of a spherical planet revolving around a star in a slightly elliptical orbit, and rotating on a tilted axis. This is, of course, the description of the earth which we all accept. Yet, never having travelled in space, I have never perceived our planet and its motions directly. Prior to writing the program, I accepted the description mainly on the basis of the assurances of others that it was true. Certainly I had observed some qualitative agreements with my own experiences, such as the changing seasons and the variations in climates and time-zones which I had seen when I travelled, but these were very imprecise observations. After writing the program, however, and finding that it produced quantitatively accurate predictions, I had much more secure grounds for accepting the usual description of the earth. My intellectual grasp of reality was strengthened.

This anecdote is of little importance in itself, but I suspect that it illustrates a way in which people are likely to be affected by the availability of computing power. They are able to set up quantitative models of situations which could formerly be described only in vague, qualitative terms. They can then use these models to make predictions which can be tested against experience and against other predictions made by other people or other models. Their ability to make well-informed judgements and their resistance against being misled by incorrect assumptions is thus enhanced.

It would be naive for us to expect that

all users of home computers are employing them in this way. Most systems are undoubtedly being used merely as playthings or as labour-savers, and there is nothing wrong with either of these uses. But, among all the home systems which have been sold in the past few years, I am sure there are some which are being used for the genuine enhancement of human intellect.

I am also sure that virtually all the people who are using their computers in this way have one ability in common — they can write programs. Instead of following the recent trend toward the exclusive use of pre-written software, they have learned at least one programming language and are using it to mould the computer's behaviour to suit their own intellectual explorations.

One of the main purposes of *TPUG Magazine* is to help its readers to make the most of their computers. While many pre-written programs (including plenty in the TPUG library) are very useful, I am sure that the ability to write programs remains extremely valuable. For this reason, *TPUG Magazine* will not become, as have many other publications, merely a vehicle for the promotion and description of packaged software. It will continue to carry articles on programming, and on the results which its readers have obtained from programs which they have written themselves. Home programming is one of the most important aspects of home computing. We will not abandon it.

David Williams

---

P.S. The final, printed version of the May issue of *TPUG Magazine* has reached this office just a few hours before this, June, issue is to go to press. We have therefore had very little time to examine it, but it is obvious that it contains a couple of notable errors. In particular, Tom Shevlin's article on page 56 appears without its title, and is given an incorrect page number in the table of contents.

What seems to have happened is that the version of this page which was printed was not the final version which we gave to the printers. Instead, an earlier, unfinished copy of the page somehow found its way into the printing process.

This may turn out to be due to the fact that a key person at the printing company was unfortunately sick at a crucial time.

There is nothing to be gained by my using a lot of page space in crying over spilt milk. All I can do is to express our regret to anyone who may have been inconvenienced by these errors, and to assure all readers of *TPUG Magazine* that we will be working closely with the printers to make sure that mistakes such as these do not happen again.

dow

# HELP!

Do you have anything for this column? The three headings are:

- (1) Helpful Hints,
- (2) Who's Got the Answer? and
- (3) "PET" Pals Wanted.

Just send your contributions (including answers to any questions which have appeared) to:

Toronto PET Users Group  
Dept. Help  
1912A Avenue Rd., Ste. 1  
Toronto, Ontario, Canada  
M5M 4A1

Please let us know if you wish your full address published.

## HELP-Questions

I have a problem which, I am afraid, has a simple answer. The problem is that I have a Gemini 10 printer with a cardco interface on my C-64 which has lost its descenders. The Ys are Vs and the commas are periods etc. I have used cleaning fluids and have changed the print head adjustment to no good result. Is there some way to fix this problem without purchasing a new head?

**J. M. Keri**  
463 Upper Bench Rd.  
Penticton, BC V2A 6J6

There must be others out there who purchased a Gemini 10X printer with an MW 302 interface only to discover that you can't list programs with this combination?! What really puzzles me is that Butterfield's LISTER program will convert Commodore characters into text for a screen listing but it will not do so for the printer! If you have any advice on this frustrating problem, please write to me.

In the meantime, be on the alert for computer salespeople who forget to tell you about the limitations of a particular interface!

**Harry VanderMolen**  
10612 Santa Monica Drive  
Delta, BC V4C 1P7

I am looking for a program that will duplicate whatever is on the screen (graphics) i.e. by means of reading the screen, onto the printer (Epson RX-80). Another problem is where do I get a red ribbon for that printer. Any help would be appreciated.

**Stephen Laskey**  
Rochesay, NB E0G 2W0

What is a BASIC compiler? Does someone out there own one? Is it fully compatible with the "SYSRES"? Can someone help?

**Paschal Shum**  
Box 411, Sub 6  
Saskatoon, Saskatchewan  
S7J 0Y8

I have a C-64 with a Gemini 10 printer. I have now learned, thanks to your "HELP" column, how to obtain elite mode with Easy Script. Now can anyone tell me how to obtain either emphasis or double strike while in this mode? I can obtain emphasis in standard 80 column but not on 96 column mode.

**Ira Friedman**  
190 Greenbelt Parkway  
Holbrook, NY 11741

Is there any way to load Infocom's series of adventures (such as Zork) for the Commodore 64 into a PET (4032 f40 with 2031 disk drive)? Any method, no matter how complicated, would surely be worth it to us old PET people who would appreciate access to these stimulating programs.

**Ian Clothier**  
RMB 1320  
Reedy Creek, 3658  
Australia

I have a 64, 1701 monitor, 1541 disk drive, Gemini 10X printer and a CARDCO "card/?" interface. My primary use is word-processing with Paperclip, which I find to be excellent.

I wish to use my 64 as a terminal for my company's mainframe, which is program-

med in I.P.Sharpes APL. I am not proposing to do any APL programming with my machine, but I would like to use the APL operating commands such as "LOAD", "SAVE" etc.

I was proposing to buy the 1650 Automodem and the "AUTOTERM/1650.C" program on the (C)T5 January disk. I would also like to turn my outfit into a teletype terminal directing all output and input onto the printer. The reason for this is that my company's electronic mail system is 80-characters wide and using the screen would result in unsatisfactory wrap-around. Can anybody advise me?

**Patrick Scott**  
141 Erskine Ave. #1205  
Toronto, ONT M4P 1Y9

I need assistance in using a Commodore 64 system for sophisticated high resolution graphics and character generation to interface with a Panasonic commercial video camera (WV-3230) and recorder (NV-8420). I am interested in graphics software (disk or cassette), as well as being able to interface systems so as to superimpose flexible character generation over live camera images, or between video dubbing and editing decks.

**Robert G. Harris**  
P.O. Box 3092  
Moore Haven, FL 33471

I would like to know if it is possible to expand the C-64 to 128K or higher through bank switching, and if so, where I could get that type of expansion, and information on how to write programs (in BASIC) using bank switching.

I would also like to know of a good word processing and database mailing list software which can interact together, and which I can use in my mail order business.

**Jim McCoy**  
c/o C.G.B., Inc.  
P.O. Box 69-5078  
Miami, Florida 33269

I have a PET 2001 BASIC 4.0. Recently I secured a Signalman modem Mark VIII Auto 232. The software for the modem will not work. Where can I obtain the correct software?

**David Lyle**  
652 Boyd Ave.  
Winnipeg, Manitoba  
R2W 1R3

*continued on next page*

# Helpful Hints

With reference to M. J. Winter's article "Printing a Disk Directory with Paperclip", on page 57 of the January 1984 TORPET, some observations. My system is comprised of a Commodore 64 and a Gemini 10X printer.

His idea is valid, but it took me an hour of frustration to make it work. I have two copies of PAPERCLIP, the June/83 edition 64B and the Nov/83 update 64C. Neither version uses the backslash for the Wild Card Search. Incidentally, the article illustrates the backslash backwards!

The manual I have is dated 1982. I looked up Wild Card Search in the index, which directed me to page 5.4. The end of the third line specifies the BACKSLASH!!! I then checked Appendix A-2. Here it says the backslash is used for Subscript end on page 8.3. On this page it is stated that Subscript end is produced by the shifted single quote('). NO WAY! After playing around for a while I found the correct key is the shifted double quote("").

Now back to the original problem. A brief respite over a hot tea laced with rum and I was ready for more aggravation. I finally discovered that it is the ENGLISH POUND key that supports the Wild Card Search.

On my system all the garbage can be removed, as Mr. Winter indicates, with the exception of a leading "aa@@r" and a trailing "@@@" . Since the Search and Replace mode asks "More?", simply type these two in as well and ALL the garbage will be gone. After the removal of the garbage, you must then check the directory for any REVERSE characters and retype them. I don't know about other printers, but mine will not print these REVERSE characters. Lastly, when you are formatting the printout, make sure you hit RETURN after each pair of titles.

I hope that my letter can save others some time and frustration.

Louis Black  
750 Westdale St.  
Oshawa, Ontario

Now that the FICA tax has been increased, the program that I wrote to provide computer assistance for Employer's Quartley U.S. Tax returns will have to be modified. This program is on TPUG library release (C)T4.

Load the program "EMPLOYER TAX.C", then type the following lines:

```
720 S=F*.137
790 IF E<>0 THEN PRINT"LINE
      1A->" ;E
820 PRINT"LINE 3A ->" ;T
830 PRINT"LINE 3C ->" ;T
```

Then SAVE the now updated program. This updated program should work for the increased tax rate and the current IRS Form 941.

John Mesch  
Empire, Michigan

# HELP-Pals

I represent the HAM special interest subgroup of the Sacramento Commodore Computer Club. We are interested in finding sources of HAM applications specifically for the Commodore 64. Is there another HAM special interest group out there? We are interested in program exchanges and other HAM-related computer-related activities.

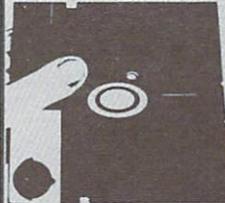
John R. Hester  
Sacramento, California



I am interested in meeting kids about 15 years old in the Don Mills and Steeles area who are interested in exchanging ideas and information about advanced programming on the Commodore 64.

Jonathan Abrams  
82 Chumleigh Cres.,  
Thornhill, Ontario  
Phone: (416) 881-3953

## REDUCES DISKETTE COST 50%!



Make use of the back of your 5 1/4" Diskettes and SAVE

- **NIBBLE NOTCH** tools make it easy.
- Adds the precise notch where you need it.
- Doubles diskette space or MONEY BACK!

### **NIBBLE NOTCH I**

Cuts square notch for users of Apple, II, II+, IIe, III, Franklin and Commodore.

only **\$14.95** each  
add \$1.50 each Postage & Handling (\$4.50 each foreign P&H)

### **NIBBLE NOTCH II**

Cuts square notch and 1/4 inch round "index hole." For use with computers other than those shown above.

only **\$21.90** each  
add \$2.50 each Postage & Handling (\$6.50 each foreign P&H)

\*Florida Residents Add 5% Sales Tax\*

SATISFACTION GUARANTEED OR YOUR MONEY BACK!

## **ORDER TODAY!**

SEND CHECK OR MONEY ORDER TO:

**NIBBLE NOTCH COMPUTER PRODUCTS**

DIVISION OF CORTRAN INTERNATIONAL

4211 NW 75th TERRACE • DEPT. 15 • LAUDERHILL, FL 33319

PAT. PEND.

ALL TRADEMARKS ARE ACKNOWLEDGED

---



---

# TPUG HAM OPERATORS

---

Name	Location	Call Sign	British Columbia	Kitimat	VE7DQV
			Vanessa Oltmann	Kitimat	VE7DQO
			Mr. Oltmann	Kitimat	
	★				
<b>Canada</b>			<b>United States</b>		
<b>Quebec</b>			Herbert Leonard	Canoga Park, CA	K6HPH
Serge Freve	Chicoutimi	VE2FIT	Eddy E. Pollock	Capitola, CA	W6LC
Jean Imbeault	Chicoutimi	VE2XI	Charles Boulin	Port Richey, FL	W2LRJ
Marc Bedard	Chicoutimi-Nord	VE2AUF	Howard Kirshner	Bethesda, Maryland	K3FS
Jean-Rock Gagnon	Chicoutimi-Nord	VE2FNR	Jim Foster	Merna, NE	KB0VH
Ray Boivin	Duburger	VE2BOL	John J. Edell	Rockville Centre, NY	N2JE
<b>Ontario</b>			Melvin M. Ballard	Port Clinton, OH	WD8KTU
John Muscat	Amherstburg	VE3FKH	Daryl Dowty	Ladson, SC	KA4OPP
Geoff Hervey	Copper Cliff	VE3ATM			
R. J. Howard	Dunnville	VE3D0H			
Al Stevens	Thornhill	VE3DQJ			
Dennis Surek	Welland	VE3CCS			
A. Epple	Wyoming	VE3JEX			
<b>Metropolitan Toronto</b>			<b>PET NET</b>		
Bill O'Connor	Scarborough	VE3KDM	There is a PET Net, which meets each Sunday on 14.190 MHz at 12:00 noon Central Time. They have been meeting regularly each Sunday since June of 1978, and would welcome any other amateur radio and PET enthusiasts who would like to check in.		
John Scott	Toronto	VE3EZX			
D. Shannon	Toronto	VE3GGW			

---



---

## CALENDAR OF TPUG EVENTS

---

### 1984 Schedule ★

**CENTRAL CHAPTER** — Leaside High School, Bayview & Eglinton Aves. at 7:30 p.m. in the auditorium for **PET/CBM**

Wed. June 13

**VIC 20 CHAPTER** — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) at 7:30 p.m. in the auditorium

Tue. June 5

**Commodore 64 CHAPTER** — York Mills C.I., 490 York Mills Rd., (east of Bayview) at 7:30 p.m. in the cafetorium — **Note: Changes in place and date**

Mon. June 11

**WESTSIDE CHAPTER** — Clarkson Secondary School, Bromsgrove just east of Winston Churchill Blvd. (south of the QEW) at 7:30 p.m. in the Little Theatre for **PET/CBM/VIC 20/Commodore 64**

Thu. June 21

**SuperPET CHAPTER** — York University, Petrie Science Building, enter campus from Steeles Ave., — park in Lot D. Meet at 7:30 p.m. in front of Room 340.

Wed. June 20

**COMMUNICATIONS CHAPTER** — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) at 7:30 p.m. in the Story Book Room (adjacent to the auditorium).

Wed. June 6

**COMAL CHAPTER** — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) at 7:30 p.m. in the auditorium

Thu. June 28

**BRAMPTON CHAPTER** — Central Peel Secondary School, 32 Kennedy Rd. N. at 7:30 p.m.

Tue. June 19

**PICKERING CHAPTER** — Woodland Centennial School (from the traffic lights at Highway 2 and Whites Road — go north on Whites Rd. to first street on the left) at 7:30 p.m.

Mon. June 11

---

---

# TPUG Associate Club Chapter Meetings

---

## UNITED STATES

### Commodore Houston Users Group (Texas)

Meetings – Nassau Bay City Hall, Clear Lake City, on the 1st Wednesday of each month at 7:00 p.m.

– Bleyl Jr. High School, 10,000 Mills Rd. (Cypress-Fairbanks District), on the 3rd Thursday of each month at 6:30 p.m.

– Hildebrandt Middle School, 22,800 Hildebrandt Rd. (Klein ISD), on the 3rd Tuesday of each month at 6:30 p.m.

Contact Mary F. Howe: 713-376-7000

### Genesee County Area Pet Users Group (Michigan)

– meets at Bentley High School on Belsay Rd. on the 3rd Thursday of each month at 7:00 p.m.

Contact Gordon Hale: 313-239-1366

### Michigan's Commodore 64 Users Group

– meets at Warren Woods High School in Warren on the 3rd Tuesday of each month at 7:00 p.m.

Contact Chuck Ciesliga: 313-773-6302

### Sacramento Commodore Computer Club (California)

– meets at Hiram Johnson High School, 65th St. & 14th Ave. in the cafeteria on the 4th Monday of each month at 7:00 p.m.

Contact Geoff Worstell: 916-961-8699

### Southern Minnesota Commodore Users Group

– meets at Mankato State University on the first Thursday of each month at 7:30 p.m.

Contact Dean Otto: 507-625-6942

## INTERNATIONAL

### Baden Computer Club (Germany)

– meets at CFB Baden-Soellingen on the 2nd Sunday of

each month at 7:00 p.m.

Contact Kevin Rowe

## CANADA

### Edmonton Commodore Users Group

– meets at Archbishop Jordan High School, Sherwood Park on the last Friday of each month at 7:00 p.m.

Contact Bob Kadylo: 403-465-3523

### Guelph Computer Club

– meets at Co-operators Insurance Assoc. on the 2nd Wednesday of each month at 7:30 p.m.

Contact Brian Grime: 519-822-4992

### London Commodore Users Club

– meets at the University of Western Ontario, in Room 40 of the School of Business Administration, on the last Monday of each month at 7:00 p.m.

Contact Dennis Trankner: 519-681-5059

### Sarnia C-64 Users Group

– meets at Lambton College on the first Sunday of each month at 7:30 p.m.

Contact J. C. Hollemans: 519-542-4710

### Commodore Users Club of Sudbury

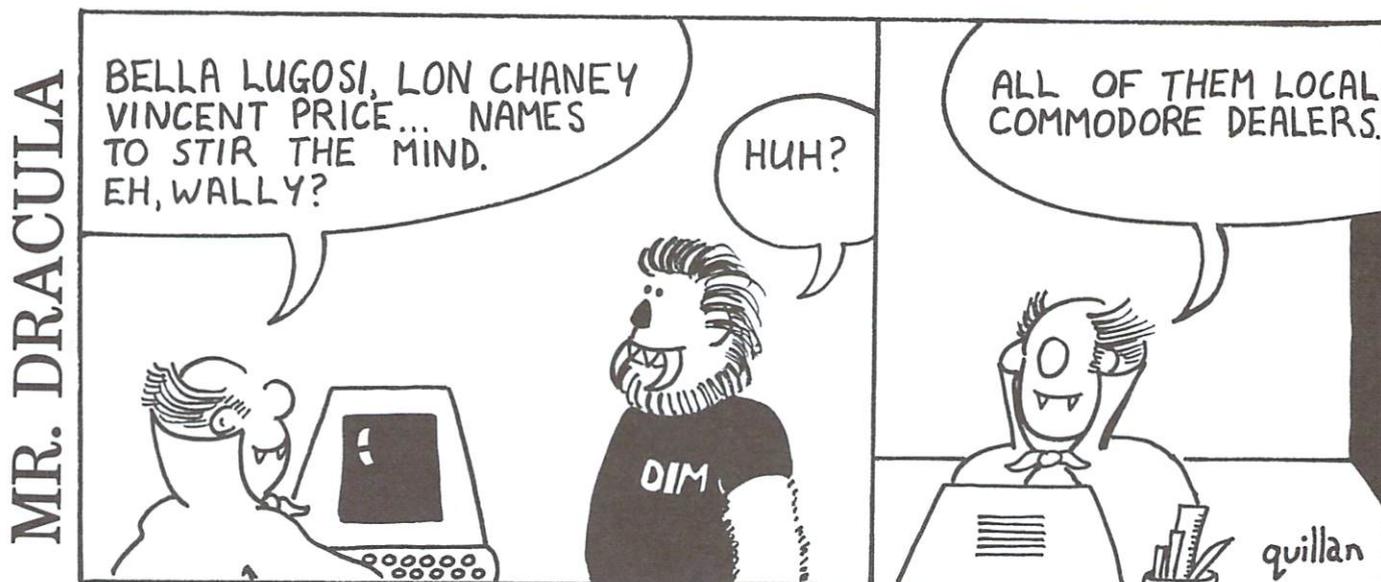
– meets at Lasalle High School in the cafeteria on the last Thursday of each month at 7:00 p.m.

Contact Tim Miner: 705-566-9632

### PET Educators Group (Windsor)

– meets at Windsor Separate School Board Media Centre, 1485 Janette Ave. on the 3rd Wednesday of each month (not July & August) at 7:00 p.m.

Contact John Moore: 519-253-8658



---

# THIS & THAT

---

Doris Bradley  
Asst. Bus. Man.

## Other Computer Clubs

BAY-CUG, the Baltimore Area Commodore Users Group, has just been formed. Membership includes C-64 and VIC 20 users. They welcome other CBM computer users. Meetings will be held May 23rd and June 27th at Loch Raven Senior High School. For more information contact Michael M. Broumberg, 4605 Vogt Avenue, Baltimore — phone 325-2156.

## Detailed C-64 Documentation

Detailed documentation is available for the various monthly releases issued in 1984 (i.e. (C)T5, (C)T6, (C)T7, (C)T8, (C)M1, (C)M2, and (C)M3 as of the middle of April). This information is appearing in the magazine, but if you wish a separate copy of this documentation, it is available for \$2:00 per copy from this office.

## PET and Commodore Educational Series Library Tapes

TPUG is gradually shifting from having tapes for these two libraries done by Richvale Telecommunications to actually using a disk-to-tape program to copy them here in the office. Each tape will take an hour to copy, so at first this will be an experiment to see if we can keep up with the demand by dedicating one computer to the job. The result of this new process will be that the contents of *every* title in either of these libraries will be copied onto *one* tape. Considering the length of time needed for the process, the cost per tape will be \$10 each. The Order Form has been changed to reflect this new policy. We hope to be able to provide a faster and more reliable product using this method. Here's hoping!

## New Chapters

Two new chapters in the Greater Toronto area are having their first meetings either in May or June. The Brampton chapter met on May 15th at Central Peel Secondary School on Kennedy Rd. N. at 7:30 and will meet again on June 19th. The Eastside chapter will meet Mon. June 11th at Woodlands Centennial School at 7:30 (see Calendar of Events for details on finding the school). The South Lake chapter, encompassing the area south of Lake Simcoe and north of Metro, will not be meeting until the Fall.

If you are interested in any of these groups, please call the office during office hours, Monday to Friday, 8:30 to 5:00 p.m.

## Programming Contest

I hope you've already started on your entry to the VIC 20 programming contest. As you may recall, there are two sections to the contest: one for programs written in BASIC, and the other for programs written in Machine Language (or another language). The prizes are expected to be expanders for the VIC 20, and the co-ordinating committee for the VIC 20 chapter will be the judges. The deadline for entries is September 4th. Don't wait — start today!

## More Club Chapters

The last month has seen still more additions to the list of computer clubs which have taken advantage of the offer to have 15 or more of their members join TPUG. There are now over 1700 who have joined or renewed in this way! Additional groups which have joined us are: Zweibrucken Commodore Computer Club — Germany; Toledo Ohio Commodore Users Group; Groupe 64 de Chicoutimi — Quebec; Timmins Computer Club — Ontario and Peninsula Commodore 64 Users Group — Virginia.

## Library Submissions

If it is at all possible, the librarians would appreciate receiving any donations to the library on disk rather than on tape. The librarians often have trouble finding programs on tape, and inevitably the whole process of processing programs on tape takes longer for them. As a result, any request that you have made for a tape from the library will also be delayed. The final decision as to how many library disks should be sent to any donor in response to his/her submissions is made by the librarian, based on the quality of the submissions rather than the number of disks or tapes submitted so please submit programs in as compact a manner as possible. Also, unless you specifically ask for your own disk to be returned to you, you will receive one of our standard disks containing one of the library disks.

## Conference 1984

It is a toss-up as to whether you will read this before or after the Conference weekend. As of April 13th we had more than 550 applicants from far and wide. Peter Fontilus and his wife will likely be the members who travel the farthest to attend — they are from the Netherland Antilles! After the fact, I'll let you know just how many of the 10 provinces, and 50 states were represented. If it's not too late, why not come along on May 26th and register at the door. Some sessions will be full, but I'm sure you would find many of interest which still have room.





Upgrade your Commodore with a high resolution graphics card — installation in our Toronto workshop — call or write for details. Kit form also available.

## C64 CARTRIDGE PROGRAMMER MAKE YOUR OWN CARTRIDGES

Turn your favourite program(s) into a permanent cartridge.

**\$89.95** includes everything needed to program cartridges

- Complete software and documentation
- One blank 8K cartridge included

Blank 8K cartridges **\$19.95**

We erase cartridges **\$2.95**

### Warning:

It is illegal to duplicate copyright cartridges

## C64 POWER UP PAC

At power up this cartridge loads and lists the index of your disk. It then pokes your favourite combination of character, background and border colours.

Your power ups will be happy forever after. **\$29.95** specify colours.

## HIGH RES TECHNOLOGIES

16 English Ivyway

Toronto, Ontario

M2H 3M4

(416) 497-6493

Add \$2.00 shipping and handling

Ontario Res. Add 7% sales tax

## COMPUSOFT Inc.,

High Quality  
Low Price

Wabash Diskettes

SS I SD at \$19.95 (box of 10)

SS I DD at \$29.95 (box of 10)

DS I SD at \$34.00 (box of 10)

DS/QD at \$34.95 (box of 10)

ONLY PREPAID ORDERS ACCEPTED

Mail Cheque or Money order to:

### COMPUSOFT Inc.,

6780 Formentera Ave., Unit 24

Mississauga, Ontario, L5N 2L1

(416) 821-7429

Ontario residents add 7% sales tax. Orders totaling LESS than \$100.00 will be charged \$2.00 for postage and handling.

## C 64 PROVINCIAL PAYROLL

A complete Canadian Payroll System for Small Business.

- 50 Employees per disk (1541) • Calculate and Print Journals • Print Cheques • Calculate submissions summary for Revenue Canada • Accumulates data and prints T-4s • Also available for 4032 and 8032 Commodore Computers.

Available from your Commodore Dealer.

Distributed by:



ICROCOMPUTER  
SOLUTIONS

1262 DON MILLS RD. STE. 4  
DON MILLS, ONTARIO M3B 2W7  
TEL: (416) 447-4811

---

# THE MSD DUAL DISK DRIVE

---



Ian A. Wright  
Toronto, Ont.

For the last six months or so there have been no 4040 disk drives available from Commodore International despite the fact that this drive has the best reputation for reliability and speed of all the Commodore floppy drives. The value of a 4040 dual drive becomes very apparent when a used one sells for  $\frac{3}{4}$  of its original price. The earlier generation of Commodore users smile smugly when they hear about the read/write errors and head alignment problems of 1541 owners — but there is some good news for new owners with the release of a new dual drive from Micro Systems Development Inc. called the MSD Super Disk-2.

The MSD dual drive is a chance for those who missed out on the 4040 to teleport back in time to the “good old days” when you could tell the drive to BACKUP and it did!

## The Appearance of the MSD

The physical appearance of the MSD SD-2 comes as a surprise to those used to the bulky 4040-type dual drives. The outside dimensions are 15.7 x 15.0 x 338.0 mm which means that this drive's footprint is less than that of a 1541. You can't mount a printer on the top of this drive unit like you can on the 4040. Within the SD-2 the drives are mounted vertically and there are levers to lock-in your disks. Inserting disks is rather tricky because there is no immediate way to tell how to put a disk in correctly, so it's as well that this is neatly diagrammed in the manual. The manual is one of the few disappointments — it is complete, but poorly presented. MSD use double-sided loose leaf paper which is stapled at the

upper left corner and this is chintzy. The manual, however, is not representative of the rest of the materials which seem to be high quality.

Visible on the face of the unit are three LEDs — green for power on, and the two red activity/error lights, one for each drive. I should note that the plastic cover over these lights dropped off when I pulled the MSD free of its packing — it seems the glue had not set. The cover was easily replaced. At the rear of the unit are the three drive connectors, a power socket, a fuse, and an on/off rocker switch. The MSD designers seem to be aware that we usually reach over the drive to turn it on and off so they have placed the rocker switch on the upper part of the housing. That's smart. The SD-2 is neatly wrapped in a cream and black metal case that gives the unit good looks and a solid feel.

## The Compatibility of the MSD

Today “compatible” is a word with flexible meaning. For example, IBM-compatible may mean that a competitor's computer might load a few of the simple software programs available for the PC. According to Micro-Systems Development, “. . . the MSD SUPER DISK DRIVE is upward (sic) compatible with the Commodore 2040 disk drive and read/write compatible with the Commodore 2031, 4040, 1540 and 1541 disk drives. This means that disks that were saved from the 2040 can be read by the MSD SUPER DISK DRIVE and disks that have been created on the 2031, 4040, 1540, and 1541 can be both read from and written to without any harm to existing programs on the disk.” This is a bold statement since each of these Commodore drives have not proven to be fully write-compatible.

The SD-2, however, appears 4040-compatible as much as any machine I have used. I have read and written files to and from the MSD drive from within PaperClip, the Class Manager 11, Electronic Chequebook, The Consultant, and WordPro 3+ /64 with no ill effects — so far. My read/write errors from mixing and matching a 2031 with a 4040 took about three months to destroy a disk of data the last time, so this problem may still occur with the MSD-mixed disks. We'll see. The general rule of disk use, however, is that you can read other disks, but only write to those formatted on your own drive. I think you should continue to follow this rule with the MSD drive.

## The Capabilities of the MSD

While testing the MSD at home my desk was even more of a spaghetti of wires than is usual. The MSD, you see, is BOTH a serial and an IEEE device. I had the MSD hooked directly to my C-64 through the serial connector, and by my BusCard II through the IEEE connector. For comparisons I attached my 4040, a 2031 and a 1541 to the C-64, and then the MSD to my 4032/8032 PET. Are you as confused as I have

*continued on next page*

been? The results of this wiring nightmare were interesting, however.

**COMPARISON OF TIME IN SECONDS FOR MSD vs. COMMODORE DRIVES**

Name of Program	MSD		I-EEE	4040
	1541	Serial		
Star Trek (load)	90	96	76	47
WordPro3+/64 (load)	97	75	23	10
Disk formatting	93	17	17	47
Backup PaperClip	—	116	116	137
Save file	16	14	9	8
PaperClip (load)	95	90	41	29

A quick perusal of the chart shows that the MSD drive is indeed quicker at read/write than a 1541, especially in IEEE mode, but it is not as fast as the 4040. However, it is the FASTEST at internal manipulations such as formatting and backup. If speed is important to you then the MSD is a good choice over a 1541. I think the speed is equivalent to, or slightly better than the 2031. (The reason my 2031 is not included on the timing chart is that it decided to misbehave and is away for re-training)

One problem that is a constant annoyance to those like me who have to use a great deal of commercial software, is the prevalence of read-errors as a protection device. The MSD seems to handle these with considerably less noise and vibration than either the 1541 or the 4040. It is not perfect, however. I found that the MSD would not load "Bank Street Writer" whether in serial or IEEE mode. Neither would it load the game board for "Mule". My 4040 will not load these nor a number of other programs, so although the MSD is better than the 4040 for program loading compatibility, it is not perfect.

Some of the software manufacturers are becoming aware that the MSD is now a force in the market and are adapting their software so that it will work without problem on these new drives. (Electronic Arts and Richvale Telecommunications are but two examples). Although most C-64 software is designed for one drive, you can adapt the MSD to act as device #8 and #9 using a single command as explained in the manual. On power-up the SD-2 drives are both part of device #8 and are distinguished by "unit numbers" of 0 and 1. In programs like PaperClip you can use the built in commands to copy, duplicate, verify . . . etc. from one drive to another without changing disks. Spelling checkers can be used without a lot of floppy-flipping. WordPro, Flexfile, and TOTL Text can also access both drives, which makes using these programs much more efficient.

Backing up a disk can take 20 or more minutes using a 1541 drive. The MSD uses the DUPLICATE command which is: OPEN 15,8,15,"D0=1":CLOSE 15. After just over one minute you have a copy of the whole disk — including the disk ID. If you don't want all the programs on a disk you can selectively copy using the command: OPEN 15,8,15,"COPY0:FILENAME = 1:FILENAME":CLOSE 15 which will transfer a program from a disk in drive 1 onto another disk in drive 0. If you want the ultimate copying procedure

you can use a modification of Jim Butterfield's copy program called "Copy-All/64". By the way, none of these commands will copy "protected" software, so the MSD is not a machine for software pirates.

**The Reliability of the MSD**

The manufacturer of this drive considers it to be reliable enough to have extended the warranty to 12 months from 90 days which suggests confidence. It should be noted that the machine has a one 6511Q microprocessor to handle both input/output and to control the drives. The 6511Q chip is very similar to the 6502 but it has some enhancement features that I don't fully understand. The MSD with one chip is thus closer to the 2031 than to the 4040 since the latter has two 6502s.

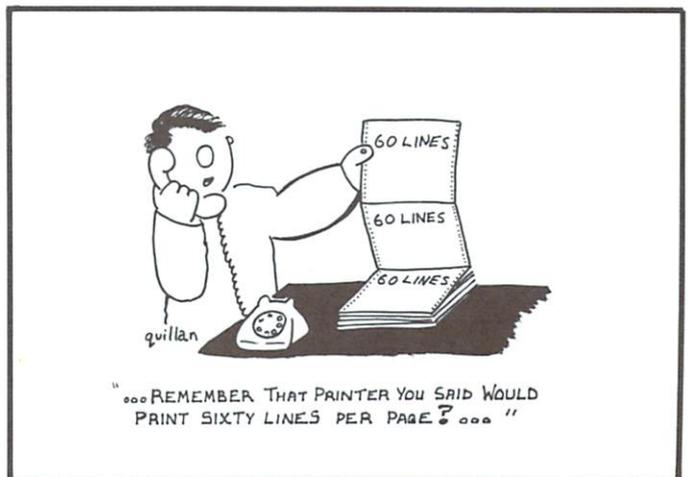
The drive does get hot during use, but the manual explains that the entire case is used as a heat sink to remove unwanted heat. This same case also reduces RF interference. I don't think there will be any MSDs that become mis-aligned due to heat warping like the earliest 1540s and 1541s.

I have not used the drive enough to comment on the long-term reliability of the drive, but David Bradley has used an MSD dual drive to run his 24-hour BBS without any problems.

**The Bottom Line of the MSD**

The MSD SD-2 is the only 4040-type format dual drive that is currently available in Canada. There are many people who are looking for a reliable dual drive that can be used with or without an IEEE interface because their particular job requires lots of disk shuffling and speedy access. For these people the MSD is the perfect answer — and the price is unbelievable. You can buy the MSD SD-2 from The House of Computers, the Canadian distributor, for \$1099.00. Computers For Less in Etobicoke will sell you the same dual drive unit for \$759.00 according to president Steven Duffy. This price is half what I paid for a 4040 over 18 months ago!

For the average Commodore user, the 1541 will load everything (slowly), and two 1541s can be bought for less than the price of the MSD dual drive. However, with two 1541s you still can't say DUPLICATE and leave it to the drive to take over the chore of copying. Neither can you access programs or files with the same speed and reliability. The MSD SD-2 is a fine product — is it the answer for you? TPUG



---

---

# THE ASSEMBLER MAZE

---

**Jim Butterfield**  
*Toronto, Ont*

There are getting to be a lot of assemblers around. I won't attempt a formal review of all the ones I have looked at, but a little information seems in order.

I don't believe that beginners should start to learn programming with an assembler. I say: let 'em do some machine language, some hand coding. For a while, a tiny assembler such as is found in monitors will do the job. When a user's programs regularly start exceeding thirty or forty lines, an assembler can begin to usefully enter the picture.

Here's the problem: assemblers are too powerful. The beginner would need to learn a series of rules on how to control the assembler before getting down to the business of writing the program. I find it hard to explain to a beginner that in an instruction such as LDA TABLE+1,Y the addition +1 takes place at time of assembly, but the addition ,Y takes place at time of program execution. It seems to me that beginners grow into an assembler, rather than starting from there.

A word of terminology: if I write code for a tiny assembler such as is found within a monitor, I believe I'm writing machine language, not assembly language. Even though I use mnemonics, I'm very close to the machine. It's only when I have a source problem, separately saved, that I consider myself as writing in assembly language. That's what assemblers are really about, in my opinion: a source program that can be saved, corrected, updated, converted to another machine or adapted to a new application. An assembler isn't just a program: it's a library, almost a way of life.

Here are a few assembler packages that I have seen on the Commodore 64, with brief personal reactions. Remember that these are notes, not definitive reviews.

## Commodore Development System

The standard system for Commodore machines. It uses a separate editor, assembler and loader, so it's a little

clumsy for doing small programs. Standard mnemonics and assembler directives (sometimes called "pseudo op codes") which I quite like. Capable of assembling very large programs. The "file" command is quite powerful. Sometimes seems to do erratic things.

## MAE

*(Eastern House Software, 3239 Linda Drive, Winston-Salem, NC 27106)*

Combines text editor and assembler to give greater convenience on small jobs. Capable of simple macros — canned code you can call up from a library. Has been available for a long time. Assembler directives are non-standard.

## PAL

*(Pro-Line Software, 755 The Queensway East, Unit 8, Mississauga, Ontario, Canada L4Y 4C5)*

Uses BASIC's built-in editor so that no edit program needs to be loaded. Very fast and efficient on small jobs. Assembler directives mostly standard. Well established.

## DEVELOP-20

*(French Silk, P.O. Box 207, Cannon Falls, MN 55009)*

One of the few assemblers available for the unexpanded VIC 20. Written largely in BASIC, which means slow. Limited features. Documentation, which covers not only the package but VIC 20/C-64 architecture, is splendid.

## IEA Editor Assembler

*(Robin's Software, 10349 Zinran Circle, Bloomington, MN 55438)*

Limited. Seems to be (in its current version) a beginner's "training" assembler, mostly for work within restricted memory areas. Non-standard assembler directives. Documentation thin, but sample source programs supplied. Astonishingly low price (\$10 for disk, documentation and access to "hot line").

## Micol Development System

*(Micol Systems, 100 Graydon Hall Drive, Suite 2301, Don Mills, Ontario, Canada M3A 3A9)*

Separate editor, assembler and monitor programs; users need to switch

between them. Advanced features, including excellent macro capability. Non-standard assembler directives and somewhat unfamiliar operating sequence. Documentation complete, but lacking in examples.

The above list includes new packages and old standbys. If there are others that readers (or software houses) feel merit a mention, drop me a line c/o TPUG and I'll try and extend the list.

I'm not an advocate of standardization. I enjoy seeing the special features of each package. I wish, however, that assembler directives were more consistent, since it would make my job as a writer much easier. For example: if I wanted a program to begin at address \$2000 (the dollar sign means hex), I might tell the assembler about it by typing the following:

<b>Commodore and PAL:</b>	<b>* = \$2000</b>
<b>MAE:</b>	<i>.BA \$2000</i>
<b>Develop-20:</b>	<i>EQU2000</i>
<b>IEA:</b>	<i>ORG \$2000</i>
<b>Micol:</b>	<i>PRG \$2000</i>

Now: how do I write an article intelligently to all assembler users? I rather like the Commodore standard: the asterisk represents the program working point, so that \*= \$2000 can be read as; "set the working point to hex 2000." Hopefully, all readers will be able to use this, regardless of what they use personally. But the other expressions have meaning: BA means "begin address"; EQU means "equate"; ORG means "origin"; and PRG means "program".

It's a problem for the writer, not for the programmer. Once you get used to your own favorite system, you'll be at home with it and it will seem natural.

There will be a need to translate other people's source programs into your own assembler's vernacular; undoubtedly there will be a fairly extensive set of utility programs around to do this. As for magazine articles and books, you'll have to get used to doing a little mental translation as you read. TPUG

# software by mail

GAMES/ ENTERTAINMENT/BUSINESS/ EDUCATION

- One of the largest selections of computer software in Canada.
- First Class service at competitive prices.
- All orders processed within 24 hours.
- All orders delivered by United Parcel Service.
- Write today for your complimentary catalogue.

the  
electric  
software  
company

The  
Electric Software  
Company  
DEPT. T

2 Bloor St. West  
Suite 100-108  
Toronto, Ontario  
M4W 3E2

MAIL ORDERS ONLY

NEW FOR HIGH SCHOOL  
ADMINISTRATORS

IF A STUDENT WANTS TO  
CHANGE HIS TIMETABLE . . .  
CAN YOU DO IT?

YES YOU CAN!



The WYCOR Class Scheduling  
System lets you:

- Add new students, change existing timetables.
- Checks all available classes, class sizes.
- Displays 32 best timetables that minimize class sizes.
- Lets YOU pick the timetable.
- Prints the new timetable.
- Updates class size.
- Prepares a teachers change list.
- Other reports available.

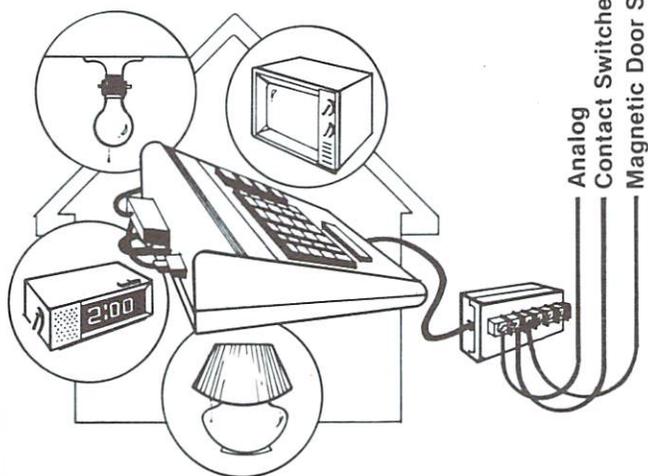


WYCOR BUSINESS SYSTEMS

170 The Donway West, Suite 401  
Toronto, Canada M3C 2G3  
Tel. (416) 444-3492

## COMcontroller & COMsense

### Around the House Use!



### COMsense

\$64.95

The COMsense input device for the VIC-20 and Commodore 64 provides a computer with the ability to sense its environment and make intelligent decisions and carry out commands based on Digital and Analog input.

- 4 digital signals in
- 2 analog signals in
- Plugs into Joystick Port
- Two units can be used
- Sense Temperature, pressure, etc.
- Combine with magnetic door switches to create a security network in your home.

### COMcontroller

\$89.95

The GENESIS COMcontroller constitutes a powerful Home Control System for VIC-20 and Commodore 64 when used in conjunction with Remote Control Modules.

- Control up to 256 Lights and Appliances
- 9 Levels of brightness
- Manual & time control software
- Uses BSR remote switches (switches available at any Radio Shack Store)
- Plugs into user port.

by GENESIS  
Dealer Inquiries Invited



Milne's Computer Control Systems, 62 Wood Crescent, Regina, Saskatchewan, S4S 6J7, Ph: 1 (306) 584-1988

# COMBATTING TECHNOSTRESS

Stan Koma  
Rexdale, Ontario

*Technostress – The Human Cost Of The Computer Revolution*, by Craig Brod. Don Mills, Ont. Addison-Wesley Publishing Company, 1984. 242 pp. \$21.95

There is a new term winding its way into contemporary usage – technostress. And, unless some precautions are taken by intensive computer programmers, they may find out the meaning of this word the hard way.

Craig Brod, an American psychotherapist who is consulted by government and industry on how to integrate new technologies into the workplace, has written an absorbing book entitled “Technostress”. In it, he discusses the psychological disorientations that some computer enthusiasts experience after prolonged exposure to the internal logic of the computer. Technostress may also affect some people who have difficulties working with computers on the job.

While Mr. Brod does not disapprove of computer technology – he is involved in some programming himself – he makes a variety of suggestions how to use these machines without having them inhibit or even distort our essential humanity.

Throughout history technological inventions have had an impact on the way people perceive themselves and the world. But nothing has ever been as mesmerizing as the computer. Mr. Brod warns of the danger of forming a symbiotic relationship with these machines.

The author describes technostress as

“a modern disease of adaptation caused by an inability to cope with the new computer technology in a healthy manner.” He adds that technostress can express itself in a struggle to accept this technology or when there is an over-identification with the machines.

Obviously, not everyone involved with computers suffers technostress. Many work and play with these machines and keep them at arm’s length. They do not permit them to interfere with their ordinary inter-personal relationships.

But when computers are brazenly introduced into the workplace without adequate preparations and staff discussions, some employees may suffer technostress. Mr. Brod points out that people’s needs, desires and apprehensions should be addressed *before* this technology is introduced. Unless this is done, employees who feel pressured to use these machines may suffer technoanxiety.

On the other hand, those who wholeheartedly embrace computers may, over a period of time, internalize the inner structural logic of the machines and become technocentered. And when people are locked into a computer-think thought pattern, they may experience serious difficulties in relating in a human way to their fellow-workers and their families.

The author suggests that these stresses can be eliminated, or at least reduced, when the human factor is given prime consideration. Work diversity and warm human-to-human dialogue are important to counter a constant computer-think pattern.

There is also some advice for teachers and parents, since computers can alter the way young people think, too. Mr. Brod suggests youngsters should be aware that different thought patterns are required for different activities. Computer programming stresses logic, while poetry-writing requires creativity. To encourage creativity – which goes beyond logic – Mr. Brod suggests reflective thinking and the reading of biographies of creative people. The key here is to foster diversity of experiences and thought patterns and limit computer-think to the computer.

To parents, the author recommends they spend “quality time” with their children so that they do not feel alone and isolated and perhaps seek satisfaction in intensive computer involvement. Mr. Brod suggests parents train their children to make conscious transitions from computer-think to social interactions.

Although this book does not cover the complete spectrum of that which makes us human, the author provides some interesting insights into several psychological problems that are emerging as a result of computer proliferation. He suggests that people recognize the social difficulties that may be encountered if they blindly plunge into this technology without serious forethought.

In the context of the limited scope carved out by the author of this book, it is well worth reading. However, I would suggest that the reader relate what he reads to his own insights and experiences. Nothing should be “swallowed” without reflection. TPUG



---

---

# THE ORACLE: A DATABASE

---

J. Allan Farquharson  
Paris, Ontario

I am well pleased to review this database management system. The Greeks went to the Oracle in ancient times for consultation before commencing on a new venture. The ORACLE, from Batteries Included, Toronto, is truly a system which you will consult daily. Unlike the Manager for the C-64, this product allows back-ups to be made. These are essential to any reasonable system use which is beyond the frivolous. The ORACLE can be purchased for the Commodore 8032/4032 and the C-64. The 8032/4032 require a ROM chip be inserted, while the C-64 requires a device to plug into the Joystick port. All are very similar. I am reviewing the 8032 version.

Any database system allows one to input information into the computer, update it, change parts of the information, re-arrange the elements, etc. without having to rewrite the data into completely new files with new programs. Reports are made; specific information may be pulled from the data. You have a mail list system which you may use to create labels, a stock inventory system, a cheque book balancer, a simple financial analyser based on some aspect such as cost of present inventory, a Christmas card list etc. In essence, you can do many things with the same data without the need to change the actual data itself! On a client list you could pull all the plumbers who are listed within a given postal code, or by state or province. A data base eliminates the need for new programs to be written over and over. Access to data is common to all uses.

My first approach is to read the manual *before* I use the system. This does two things: I can evaluate the software and the usefulness of the manual. Since most software programs are deficient on the documentation I look to see if this is satisfactory. In this case it is excellent.

Most writers of manuals assume you already know the program which they will explain, one you have never seen. This one assumes you know nothing. This is great. I can follow it! (I'm slow,

so what.) The manual is excellent and contains new terms as they are encountered. Marvellous!

Instructions include "making a backup copy". A very necessary operation! Then a data disk should be made from the program and the program disk is removed to a safe place. I follow the manual to see if it leaves me high and dry. (It doesn't.) I format a data disk. (NEW in Commodore language.)

The program is menu-driven and not too hard to follow. I followed the instructions and was able to create a "database" without any trouble. The manual walks you through nicely, and it anticipates mistakes and the solution. The creation of a screen and the data "fields" within a "record" are done with no need to understand the underlying computer operation. A non-programmer may create the set-up easily.

I note that one needs enter the filename of the file only once while working on a file. On another system this is asked continually every time one does something different. A nuisance saver.

Individual records may be changed, modified, deleted as desired and all kinds of clever searches for data are available such as all those whose first name is "Al" and whose postal code is 123456. Creating a set-up is relatively easy to do and record maintenance is a snap. Up to seven pages of screen material may be used to present the data in the screen format one wishes.

One value of the system is that calculations can be done to sum certain "fields" in an "accumulate mode." In some ways the data in the location may be worked on by an arithmetic calculation similar to a spreadsheet. The information in certain locations which are subject to a search for particular "records" may then be acted on. One may wish to add the retail value of an inventory of all types of nails, not all the hardware, in the data base. Fine. Can do.

Address labels may be printed, which is very handy, especially for a mailing list. You may choose the number of labels on a line and adjust the print-out accordingly. The result is great and very professional.

Filling in a printed form is possible with the printer placing all the text in the correct places! This could save days of work.

The ORACLE may be tied to a word processor as well, to send out notices to clients with overdue invoices, amounts owing, 30 or 60 days outstanding, etc.

And one more important item: the system may be protected so that only those with an appropriate level of security are able to access certain parts of the data.

Although the ORACLE normally uses relative files which allow access to any single piece of data in any order, sequential files may be created. This means that other programs could access the information from the sequential file.

Further manipulation allows one to recreate a data base with added or deleted items, or in a new order. You may find that a vital piece of information is lacking. By reorganizing things, the data base can accommodate the new information to be added or deleted without re-entering the whole data base. That would be deadly.

I am sure that, with a little practice, I can do anything, using this system. The first time you work through may not complete your learning but it is very friendly. The most interesting part of the manual is that a complete reference section follows the text. Here a description on how to do practically any task is given without having to search through the text. This is the way all manuals should be written! Believe me, I am thoroughly impressed.

The ORACLE is capable of very large and complicated searches. All in all, it is a very good system at a reasonable price. I bought it, so it must be good.

*Available from Batteries Included  
186 Queen St. W.,  
Toronto, Ontario  
M5V 1Z1*

*C-64 price \$125.00 Can.  
8032 4040 price \$125.00 Can.  
Documentation: excellent  
Backups: no problem.  
Overall: 9 out of 10. TPUG*

# THE LAST ONE

Rich Westerman  
St. Anne, ILL.

THE LAST ONE is a program to write programs. Essentially what it does is ask you a lot of questions about the program you wish to end up with, then uses your answers to compose the desired program in BASIC.

Notice that I didn't say: "asks you questions about the job you wish to do". If you don't know how to flowchart a program or if you find it hard to see a program as a series of sub-assemblies then you'd better learn *that* skill before you invest in this software. If, however, you have a rudimentary understanding of program structure, then this is not only a very useful utility, it can be more fun than any game you've ever booted up.

Creating a program is done in 3 steps:

1) *Flowchart creation*—In which you lay out the basic framework of your program. This flowchart is not the usual series of geometric boxes but numbered instructions in English, describing each subroutine or procedure.

2) *Branch resolution and screen displays*—In which you tell THE LAST ONE where its branches (GOTO/GOSUB) should go to and where you create the various menus and data displays. Any output to the printer is taken care of in this part as well.

3) *Coding*—Which is all done by THE LAST ONE: you just sit and watch. (Incidentally, if you have a printer, it will have been giving you a steady hardcopy stream of everything you've done, from flowchart to termination. If you don't have a printer, you can have all that documentation included in your end program in REM statements, if you wish!)

What kind of programs can it write? Well, I'm not sure of its limitations yet. So far, I've written a mailing list program and a database for cataloguing and retrieving magazine articles, with both programs using relative files. The mailing list program uses less than 8K and the database uses about 12K.

I purchased this software with the intention of "building" a general ledger. The problem is, though, that I don't know what a general ledger "looks like" . . . I first have to observe one in action and be able to flowchart its operation. Then I can sensibly answer THE LAST ONE's questions so that it can translate my instructions into BASIC code. And talking about CODE . . . THE LAST ONE uses PET BASIC most efficiently and to its fullest capacity. (Would you believe program lines of 254 characters?) You have to look at a finished program to appreciate the power and flexibility of this software. By the way, it says in the manual that your END PROGRAM's are com-

pletely accessible—you can go in at any time and make all the changes you wish. Or if drastic changes are needed, you can run it through THE LAST ONE again until you end up with the desired program.

In the very well-written manual (100+ pages), THE LAST ONE's development is described as being the result of seven years' work in the field of artificial intelligence.

Will it write a general ledger program after all? I don't think so. It just doesn't have the sophisticated calculation/number manipulation abilities that seem to be required in general ledgers. This is my impression, after becoming quite comfortable with both the manual and the running of the program. But it does have the ability to write quite sophisticated databases and probably could be used to turn out educational programs and tutorials.

At this time, I'm both disappointed and impressed: disappointed that it doesn't seem to be able to do the number-crunching that I originally had in mind for it, but very impressed at how it can crank out lots of nifty databases and such. The fact that it accepts my Gemini 10X and CARD/? interface without a qualm was also a pleasant surprise. TPUG



# SOFTSPAN 80 FOR THE C-64

William Frenchu  
Hopewell, NJ

SOFTSPAN-80 is a utility program from Sound Software that provides Commodore 64 owners with an inexpensive way of obtaining 80 column output. Unlike hardware 80 column boards that can cost \$100 or more (and tie up the cartridge slot), SOFTSPAN-80 uses no external hardware and is available from the manufacturer for \$34.95. It is capable of using both the upper case/graphics and lower case character sets simultaneously, and provides double-width characters as well. Since the display is mapped to the hi-res screen, graphics and text may be displayed (and scrolled upwards!) at the same time.

The user receives a small ring binder containing a 22-page instruction manual, a disk containing the three parts of the SOFTSPAN-80 program and a new wedge program for Commodore's DOS 5.1. The wedge supplied by Commodore will not give a directory listing when used with SOFTSPAN-80. The new wedge corrects this problem and in all other respects works identically to the old.

The manual seems quite complete and covers both the use and mechanics of the program. A section for machine language programmers gives instruction on how to make programs compatible with SOFTSPAN-80 and lists much useful information such as location of the new character sets, operating system vectors that SOFTSPAN-80 changes and their new values, important locations used by the program,

etc. In addition, several BASIC programs are listed that demonstrate screen dump to a 1515/1525 printer, character set redefinition, and text/hi-res graphics combination.

Any BASIC programs that don't PEEK or POKE to the screen should be compatible with SOFTSPAN-80 since it uses RAM from \$A700-\$BFFF, \$C400-\$CBFF and \$D000-\$FFFF. Naturally, machine language programs requiring these locations will not work. Programs that use the sprites may have to be modified so that the VIC 20 bank select points to the top bank (\$C000-\$FFFF) and sprite definitions may need relocation. The current version of the program does not support input or output on any RS232 device. These restrictions prevent using SOFTSPAN-80 with most of the word processing and terminal software currently available. SOFTSPAN-80 also changes the IRW vector. Thus, machine language programs that alter this vector may need to be loaded in a certain order to work properly.

80-column output produced with the program ranged from pretty good to fairly hard to read. Best results were obtained using a black-and-white monitor and the composite video output on the C-64. Next best was probably a black-and-white television using the RF modulator. The Commodore 1702 color monitor gave barely readable output for most color combinations although combinations of grays and black or white were usable. (A color television with RF modulator was unavailable for testing. A good sharp one could

probably be made to give better results than the 1702 monitor.) In all cases proper selection of color combination (even for the black and white sets) and adjustment of the contrast and brightness was essential. The lack of good readability is inherent in the method and not a fault of this particular program. To fit 80 columns of output on the 320 dot hi-res screen individual letters must be only four dots wide. Leaving a one-dot separation between letters requires that the characters be defined in only three dots. This makes diagonals and the wider letters like "m" and "w" very hard to represent. The fact that most monitors aren't quite fast enough to display a single dot with accurate intensity only compounds the problem. Given these limitations, the manufacturer has produced a very good piece of software.

If it can't be used with word processor or terminal software, who will use SOFTSPAN-80? People writing their own applications programs for instrument control or data display will probably benefit from it most. Here the ability to present large amounts of text along with hi-res data should be useful. For the rest, until compatible 80-column word processor software comes along, or SOFTSPAN-80 is adapted to accommodate RS232 devices, its uses will be fairly limited. TPUG

SOFTSPAN-80 is available from:

Sound Software  
2845 Alpine St. SE  
Auburn, WA USA  
98002  
Tel.(206) 525-4365  
The price is \$34.95.

MR. DRACULA



## BLUE MAX

Ian Wright  
Toronto, Ont.

*The Blue Max, a 1541 disk-format game for the C-64 by Synapse Software, 820 Coventry Road, Kensington, CA 94707. Available from most software outlets.*

There are thousands of programs available for the Commodore 64 and many of these are video games of very high quality. This game is called "Blue Max" and it is one of the best.

The scenario is that you are the pilot of a vintage (WW1) biplane and your nickname comes from the famous medal — the Blue Max. Your job is to fly over enemy territory, bombing and strafing, and to return to the airstrip and land. Sounds easy — right?

However, while you are busily dropping bombs and firing your machine gun (both sounds are exceptionally accurate) planes from the 'other side' are incoming as are anti-aircraft shells. Although you are not actually attacked, you can easily fly into these obstacles and crash. For the novice the screen is

very busy, and the colour of the "command bar" at the bottom of the screen is needed to act as a warning of impending disaster — if you are quick!

Here are some of the control features of Blue Max. The joystick can be set to either pull or push for altitude, and your bombs and machine guns are activated by the fire button. Bombs are selected by putting the plane into a dive and simultaneously pushing the fire button. You can strafe the ground and other planes as long as you are flying at the appropriate altitude, but you can run out of ammunition. You must land before running out of gas, but there are only a few airstrips provided. In order to take-off safely again you must stop early so as to have enough runway. While on the ground your plane is repaired and refueled, but enemy planes can drop bombs on you. If you are an advanced pilot you can even have gravity affect your flying ability (I simply crash).

This game is very well conceived and executed. The screen is on a diagonal

for three-dimensional effect and the scrolling is smooth. As you fly, your shadow is accurately portrayed on the ground, and you can use this for pinpoint bombing just as the real pilots of WW1 did. The colours are vibrant but not harsh or intrusive — and the opening music is a treat.

My only reservations are that you only get one plane for any operation. Although my son can rack up over 6,000 points, I usually crash before reaching 1,000 and must start over. The bombing at the airport can also ruin an otherwise record-breaking attempt. Since it is random you have no control over this. For some reason Blue Max lights up my 1650 automodem. No harm is done, but it is weird to see the connect-light illuminated during a game.

There has been some concern expressed that video games are addictive. I don't believe it—but don't try to pry the joystick out of my hands while I'm playing Blue Max! *TPUG*

---

## POGO JOE

David Wright  
Toronto, Ont.

Pogo Joe jumps on his pogo stick from one cylinder-shaped block to another and changes the colour of their tops from white to red. The cylinders are set up in odd patterns and each pattern has a name like "Troutman's Special Recipe". When all the colours are changed, that level is completed and you go on to the next screen with a different pattern and another weird name.

The graphics are good with bright colours, but I find that Joe is hard to control. He is constantly bouncing on

his pogo stick and I often have to wait until his next bounce for him to move. I find this very frustrating because I soon lose all five of my Joes to the purple creatures despite my efforts to get away. Joe is moved by pushing the joystick diagonally; and for double jumps I press the fire button.

Monsters appear on each screen along with my Joe. The purple creatures destroy Joe if they jump on him, but he can get rid of the yellow monsters by jumping on them. The red spinners can also be jumped on and made to disappear, but they turn the red cylinders back to white again until they disappear. All these monsters re-appear

after a short delay but jumping on the special green cylinder will make all monsters disappear again. It sounds complicated, but is simple.

The music is a short catchy tune that goes well with the game. Unfortunately, the tune only changes when a scene changes or Joe is captured, so after a while it becomes boring.

Although many aspects of the game can be changed this is not a game I would play for hours because, despite having an expensive joystick, moving Pogo Joe was a struggle that took away the fun. The program started well but I soon lost interest. *TPUG*

*continued on next page*

## FORT APOCALYPSE

Paul Hyckie  
Toronto, Ont.

*Fort Apocalypse* by Steven Hales: a review

I've been playing this game for hours now and I haven't even *seen* the fort. While we only just got our C-64 a month ago and I can hardly be considered an expert, I always thought I had pretty good reflexes. But the outer defenses of *Fort Apocalypse* are so impressive and filled with interesting variables that the challenge lives on.

Don't get me wrong: it's not impossible. I am making slow progress and it is all the more satisfying because of the effort needed. But *sometimes!*...

*Fort Apocalypse* is a positional game of the kind I like best; one player, joystick-commanded, airborne and full of heavy-duty destruction. The graphics are good and full of lots of lightning-like effects. It has three basic levels to overcome in your battle to find the alien Kralthan's fort, located underground. You are one of the Sky Dweller elite of chosen pilots.

You can choose degrees of difficulty; but eliminating some of the Kralthan defenses does away with some of your pilots, too. They won't make it easy for you.

There is a nice piece of fanciful introduction but the actual directions are

straightforward and take you step-by-step through each of the many variables.

You fly a helicopter with suitable thrup-thrapping and explosive sound effects, and you can vary the strength of gravity, as well, to gain a much-needed edge by slowing your gradual drift towards the surface. After fighting your way past four tanks, a variable number of enemy robot copters and a myriad of self-propelled mines, you may be able to bomb your way through the first gates to the second level — the Draconis level.

Then you have to pick up and rescue eight men on this and each succeeding level before you can proceed to the next gate, aglow with laser chambers, and sometimes hyper-barriers that can shift you without warning.

This was where I faced my own Rubicon, for the inexorable shifting of the Rotating Field Envelopes (energy blocks that can smash your copter into oblivion) had me sweating as I tried to make out the timing without flying into the lasers or hitting the ever-present walls. Things like that make beginners want to pack it in, but I persevered and made it.

The Crystalline Caves signal a colour change, a chance to refuel, and more, longer journeys through Rotating Field Envelopes. The caves are longer than

the first Draconis level, equipped with lasers, tight turns, massive tunnelling jobs needed to free your men and, of course, the ever-present tanks, cruising mines and instantly appearing robo-copters.

Somewhere in there is *Fort Apocalypse*, but I wonder if I'll ever see it. As I rest, feeling my damp shirt stick to my back, working the cramps out of hands that have kept a death grip on the joystick, I remember that to complete the mission I not only have to destroy the fort with a "well-aimed shot" but I also have to get out, through the three levels, intact.

I haven't got a chance. But I think I'll try it again. *TPUG*

Addendum: Just so you don't think I'm a complete klutz, I did finally find the fort and blow it up (on Novice setting) but I'm still trying to get out of the caves. And I still have to conquer Pro and Expert, both of which unleash incredible amounts of faster robo-copters and mines, plus more rapidly-firing lasers and energy blocks. Only our poor copter remains the same.

Oh well. A true addict can't quit; but at least I have the satisfaction of knowing that I won't have to buy any other games for some time to come!

MR. DRACULA



---

---

# DECODING WORDPROCESSOR FILES

---

David Williams  
Toronto, Ont

In the Editorial in the first issue of *TPUG Magazine*, I mentioned that we prefer authors to submit articles to us in the form of wordprocessor files on disks. This prompted a flurry of letters from would-be writers asking if files produced by particular wordprocessors would be acceptable. Our answer to such questions is always "yes". We have not encountered any type of wordprocessor disk file which we have been unable to convert to the format which we need. This is not, of course, intended to be a challenge! Undoubtedly, it would be possible to encrypt some text into a file which we would not be able (or be prepared to attempt) to decipher. But the wordprocessing programs which run on Commodore computers are not intended to write undecipherable files. They all use reasonably simple formats, variants of only two basic types, which are easy to read, even without the help of the original wordprocessors.

Before explaining how we go about reading the files, I should give you an outline of some of the processes by which *TPUG Magazine* is produced. The typesetting is done by a machine at the Carswell Printing Company. This machine is fed with text which is recorded on eight-inch floppy disks. The text contains embedded commands to perform such operations as changing typefaces, so that the typesetting process can take place with very little human intervention.

However, the typesetting machine and its disk format are utterly different from anything that we have in the *TPUG Magazine* office. Here, we use Commodore computers and disk drives (mainly 8032's and 8050's). In order to convert the text from our format to Carswell's, we simply change it to standard ASCII (American Standard Code for Information Interchange), and send it to the printers' over the telephone lines, using a modem! At our end, an 8032 runs a program which reads an 8050 disk file, converts the text from Commodore ASCII (often known as

"PETSCII") into true ASCII, and feeds it into the modem. At Carswell's end, the text is received and recorded on the eight-inch floppy, ready for the typesetter. The details of the process at Carswell's end are unimportant to us. The point is that their system and ours can communicate by using ASCII. It really is a standard code. The process is quite fast. At 1200 baud, we can send over a hundred characters per second, so a normal printed page of the magazine takes only about a minute. The typesetter also works fast. If we send some text in the early morning, we can usually receive proofs of the typeset copy on the afternoon of the same day!

The file manipulations which we have to do in our office therefore amount to converting whatever files are given to us by authors into sequential PETSCII files containing the embedded typesetting commands. These commands, unfortunately, are quite different from the formatting commands which are used by many wordprocessing programs, so we have to manually remove any formatting commands which an author has left in his text, and then add the Carswell commands.

Our aim is thus to get the files into sequential PETSCII form. The method we use to do this varies according to the wordprocessor which the author has used. Some wordprocessors are capable of writing sequential PETSCII files directly. (They usually refer to these as "ASCII files", which is unfortunately misleading.) If an author has provided his text in this form, we usually need to do very little work on it. It may be necessary for us to take care of a few details. For example, the public-domain "Story Writer" wordprocessor for the PET writes sequential PETSCII files. However, it places a carriage-return at the end of each line. In order for the typesetting machine to work properly, we have to remove these carriage-returns (except at the ends of paragraphs) and replace them with spaces. Doing this operation is very easy. We use a little BASIC program which reads the "Story Writer" file and writes a second disk file in

which the carriage returns have been replaced.

Many wordprocessors do not use PETSCII. Instead, they record the text as a sequence of "screen-POKE" numbers. These are the numbers which would be found by PEEKing screen memory while the text is on the screen. Thus a lower-case letter "z", for example, which has a PETSCII number of 90 (and a true ASCII number of 122) is recorded as the number 26. Wordprocessors which do this usually also record the text in the form of program (PRG) disk files, instead of SEQUENTIAL ones. They tend to work by placing an extended screen image into the computer's memory. When this image is to be recorded, it is done in very much the same way as a program is saved from memory. A PRG file is used, and two bytes are written at the start of the recording to indicate the address of the start of the "program". Often, but not always, the recordings are quite wasteful of disk space. Spaces to the right of carriage-returns are often recorded. Carriage-returns themselves, of course, do not have a screen-POKE number. They must be represented by some other character, usually a left-arrow.

When we receive an article in the form of a PRG disk file, the first thing we do is to try to load it into one of the wordprocessors which we have in the office which use this format. Often we are successful, even if the file was originally written on a different wordprocessor. Of course, the formatting commands may not work, but this is of no concern to us since we have to remove them anyway. If we succeed in loading a file this way, we smile, do our work on it, and save it as a sequential PETSCII file ready to be transmitted by modem to Carswell.

But sometimes we find that we cannot load a file properly. This may be because the screen width of the original computer was different from ours, or because the original wordprocessor saved disk space by not recording any-

*continued on next page*

thing to the right of a carriage-return, or because the "starting address" is unacceptable to our wordprocessor, or because the file contains illegal formatting commands, or for various other reasons. When this happens we do not smile, but we do not frown too much either. It just means that someone (usually myself) will have to do some extra work on it.

What I normally do is to write a BASIC program which will read the file and write a sequential PETSCII one. Once it is in PETSCII form, I know we will be able to load it into a wordprocessor and continue working on it from there.

Reading a PRG file of screen-POKE numbers in BASIC is really not difficult. The OPEN command works just as it does for reading a sequential file, except that ",P" should be appended to the filename. Two characters should then be read, with GET# commands, and discarded. These contain the starting address, which is irrelevant to our needs. Subsequent GET# commands get characters of which the PETSCII values equal the screen-POKE numbers of the characters they represent. Thus, for example, if a CHR\$(13) is received from a GET# command, it does not represent a carriage-return. It does represent the character which appears if a screen address is POKEd with the number 13 — a lower-case letter "m"! One accidental exception is the "@" sign, which has a screen-POKE number of zero. Because of the way the GET# command works, this appears not as a CHR\$(0) but as a null string. If this character might appear in text, coding must be put into the file-reading program to deal with it.

In order to write a second disk file, a sequential PETSCII one, it is neces-

sary to have a formula which converts the screen-POKE numbers of characters to their PETSCII values. If S is the screen POKE number and P the PETSCII number, here is the formula:

$$P=(S \text{ AND } 63) \text{ OR } (2*((S \text{ AND } 64) \text{ OR } (32 \text{ AND NOT } S)))$$

This highly Boolean formula reflects the fact that the operation of converting the numbers is essentially one of "bit-twiddling". The bit-patterns of the numbers are related far more closely than might be imagined by looking at them in the normal arithmetic sense.

The operation of converting characters from a wordprocessor screen-POKE file into PETSCII characters thus consists of the following steps:

- (1) GET# a character from the PRG file. If it is a null string, replace it with CHR\$(0).
- (2) Use the ASC operator to find the PETSCII value of this character.
- (3) Feed the resulting number, as S, into the above formula.
- (4) CHR\$(P) is the wanted character, which can be written out to a sequential file.

In practical cases of converting files, a few other operations may be needed. For example, left-arrows may have to be changed to carriage-returns, and it may be necessary to discard sequences of spaces which follow them.

By the above methods, and fair amounts of trial and error, we have been able to read all the disk files which authors have submitted to us. Although the process may look like a lot of work, the "difficult" cases have been rare. Even in these cases, the amounts of work required have been much less than

would have been needed to re-type the articles without using the disk files.

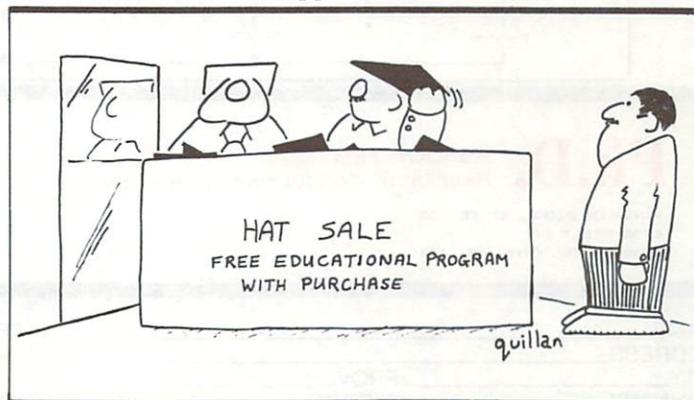
Tape files, however, have posed additional problems. We cannot claim to have been able to read all of those we have received. This has not been because of any logical difficulty. It has proved to be an unfortunate characteristic of Commodore tape decks that tapes which have been written on one deck may not be readable with another. We have received tapes which we have been completely unable to read, despite having tried several tape decks. In one such case, we were able to type in the article from a printed copy the author had provided. Others are still awaiting a hypothetical time when we may be able to work for long periods on them.

Assuming that a tape is readable, an additional problem can arise if it carries text in the form of a program file which we cannot load directly into a wordprocessor. The difficulty is that tape program files cannot simply be OPENed and read as can disk files. The solution to this problem has been for me to LOAD the files into a PET's memory, then to use its machine language monitor to save the affected area of memory onto disk, thus creating a disk PRG file containing the text.

After reading about all these problems, you may be wondering if it is really true that *TPUG Magazine* welcomes articles in any machine-readable form. Certainly it is! But if you have an easy choice of formats in which you can submit material to us, the closer you can get to a sequential PETSCII disk file, containing no embedded formatting commands, and no carriage-returns except at the ends of paragraphs, the happier we will be! *TPUG*

## Super-Postscript...

P.S. Since I wrote the above article, we have received some disk files which were written with SuperPET wordprocessors. These have turned out to be sequential files in true ASCII, not PETSCII. No problem! Changing text from ASCII to PETSCII is easy. I just used a table of ASCII numbers which I found in a book, and used it to generate a look-up array to do the conversion. Readers who use SuperPET's will, I am sure, easily be able to do the same if they wish.





# VM101: A MOTHERBOARD FOR THE VIC 20

John McEwen  
Mississauga, Ont.

*Motherboard from PCS: a review*

## HARDWARE PROFILE:

*Name: Personal Computer Specialties model VM101*

*Type: Buffered, six-slot, expansion board for the VIC 20*

*Features: Reset switch, roughed-in connection for auxiliary power supply*

*Manufacturer: Personal Computer Specialties.*

*System: VIC 20*

*Summary: A good quality motherboard with most of the features found on such products.*

*Price: N/A*

*Manufacturer: Personal Computer Specialties.*

*Available from: Personal Computer Specialties, P.O. Box 23, Fleming, P.A. 16835. Phone (814) 355-0205*

When we brought home our VIC 20, the slogan on the side of the box read: "The one to grow on". Five kilobytes of memory is enough to get started on but the enthusiast soon thinks of extra memory, utilities, wordprocessing, and of course, games.

If more than one of these cartridges is to be used at the same time you will need an expansion board. A number of these boards are available today. They range from bare boards with one or two expansion slots to complex products with six or more slots; buffering, switches and provision for external power supply. Some of these products come with RAM on board — as much as 64k.

The VM101 by Personal Computer Specialties is an expansion board which probably fits somewhere in the middle of the range described above.

When I was given the unit to review, it came in a clear plastic bag which also contained a two-page document entitled: "Operating Instructions". The board itself consisted of six cartridge slots mounted on a sturdy epoxy board. Five plastic feet support the board, eliminating any strain on the VIC 20 cartridge port. An assortment of chips and capacitors testify that the expansion

slots are buffered (isolated from the computer). A large four-position rotary switch at the top right hand corner of the board allows the user to turn on either one of slots 1, 2, 3, or all of slots 4, 5, 6. Slots 1 to 3 are read only and are intended for game and other ROM cartridges. Slots 4-6 are bi-directional and are intended for RAM expansion.

Beside the switch is a reset button. This can be used to restart a cartridge game like Jupiter Lander, a game which automatically starts itself when the VIC 20 is turned on. It can also be used to recover from a system hang-up. The instructions include a small machine language routine which assists in the recovery of your program in such an eventuality.

The voltage regulator circuit for an auxiliary power supply completes the board.

The board gives an overall impression of solid quality. The switches have a positive feel and seem durable.

The VM 101 fits snugly into the VIC 20's cartridge slot. The board works pretty much as described in the documentation. We had great fun switching between Gorf and Omega Race without having to turn the machine off etc. Each time, when pressed, the reset switch would start (or re-start) the game.

Two points about the operation of the board: first, slot #6, which is the one nearest the VIC 20, is so close that the cartridge is firmly wedged against the computer. Besides making insertion difficult it also minimizes air flow. This is, to me, an important consideration, as I have one of the original hot VIC 20's. The second point is that the settings on the slot selection switch are the reverse of what one expects, due to the relative position of the slots and the switch. Both the slots and the switch positions are clearly labelled. Even so, I found myself getting slot #6 when I wanted slot #1 several times.

## The Documentation

The two pages of operating instructions were obviously written for the experienced user. It is too short and it

assumes too much of the reader. In contrast, the much simpler expansion board I was using came with a thirty-page manual which was much more readable and contained all sorts of information, utility programs etc. It is clear to me that a lot of care and attention went into the design and construction of this product. Some of that effort should have gone into the instructions.

## Summary

The VM101 is a quality product with good switches and a solid construction. It should be considered by those who wish to buy a full-featured multiple slot expansion board for the VIC 20.

Unfortunately for the manufacturer, that group of customers may not be too large. Those of us with unexpanded VIC 20's have the option of buying a C-64 instead — and becoming a two-computer household. With the price of C-64's at around the \$200 mark (U.S.), that sum probably represents an upper limit for an expenditure on expansion board and 32k of memory. No price was available on the VM101, but I suspect it would be in the \$90 to \$100 (U.S.) range, judging by the prices of similar products. The cost of memory must then be added. For me — and I suspect many others who are basically interested in gaining extra memory — an expansion unit with 32k or more of RAM and one or two expansion slots is a preferred option. What's more, the price is in about the same range. TPUG



I CALL THE LITTLE CHIPPER "M"  
BECAUSE WHEN I ASKED HIM FOR  
HIS NAME, HE SAID "I BE M."

---

---

# THE BEGINNER & THE DISK -- Part 1

---

David A. Hook  
*Barrie, Ont.*

OK, you have bought that 1541 disk drive and brought it home. You have read the Instruction Manual (part no. 320970) from cover-to-cover (or at least to page ten, where the going gets rough). By the bottom of Page 8, it's starting to make less and less sense. A few mistakes in the book have already reared their ugly heads, and it's time to call that friend who has fought this battle already.

If you recognize yourself, or are tired of hearing from the guy above, then read on. This is the first of a series of articles that will try to talk in plain English. We'll try to give you the straight goods, and try not to use jargon. The vernacular will slip in, but with some explanation.

## Assumptions

We have to start somewhere, so I will presume you've got it out of the box, all the pieces are there, and you can follow the connection diagrams in the manual. The Computer should be turned on last, if several devices are involved.

The green "power-on" light should remain lit, so long as the hydro is coursing through its little circuit boards.

The picture in the manual shows you which way is up for the diskette. Make sure the notch is facing your left as you face the 1541, before you insert it. Among the sillier things I ever did was to insert the diskette sideways. Needless to say, it didn't work out very well.

Before we get under way, let's correct a glaring error in the second-last paragraph of Page 8. It warns you to "never remove the diskette when the green drive light is on." This is absurd, and totally wrong, if you believe the previous sentence in the manual (which you should). It's the red "error light" or "activity light" that should be respected. Don't remove a diskette when the red light is on, since it means one of two things:

1. A disk error has occurred. You should fetch the error status before proceeding. We'll have lots more to say on this subject later.
2. Some "file" is "open", and activity needs to be completed. If you remove the disk now, you run the risk of losing some data that hasn't been written yet, and leaving a nasty "unclosed file" on your disk. Ye olde ticking time bomb, that will sooner or later blow up in your face. We'll have more on this too.

## Care of Diskettes

Not enough can be said in this area. However, it's like spitting into the wind, because few people listen until they have a disaster. Sure, diskettes are cheap and quite replaceable. Ask yourself about the value of your time and effort, and you may revise your value estimate. In many cases, it's only sloppy handling that causes you to lose a diskette—"Why did it have to be **that** disk, it had my only copy of Ratafratz?" is a familiar bleat. With the advent of disk-protection schemes that make it impossible to copy a commercial program, these guidelines should become your commandments.

1. Never lay your disk down on any surface, without first putting it back into its protective sleeve. Many people don't know that the recording surface is on the bottom of the disk, not the side with the label. Maybe you've heard that a speck of dust is a thousand times bigger than a bit of data. Smoke particles, room dust and cookie crumbs may not be magnetic, but they will gravitate to the exposed surface, as if by magic.
2. Never try to "economize" by using both sides of a disk to record on. There are two very good reasons for this: there is a little roller, with a pad on it, which presses on the top surface as the recording head contacts the underside. This pressure pad is rubbing directly on the disk surface. If you flip your disk, guess what is rubbing on your precious data? Second, the stiff jacket around the disk has an absorbent lining which picks up and holds the crud which is dislodged from the disk surface. When you flip it, the disk is now rotating in the opposite direction, which can allow this crud to be loosened. A third possible negative to this practice is that only one side of the disk has been certified. If the first surface fails, guess which side gets the label? Also, what do you suppose happens to the disks that fail the test for double-sided capability? The back side of the disk is a bad risk. Using certified double-sided disks, which cost more, is no solution (see reasons one and two.)
3. Keep your disks away from magnetic fields, such as resting them on top of your TV, audio speaker, power pack, disk drive or cassette drive. Did you know that a ringing telephone also sets up a strong magnetic field? Two people I know found out the hard way. When passing through the airport X-ray scanners, it won't hurt to get your disks or tapes inspected by hand.
4. If you must have a coffee or other beverage close at hand, don't guarantee a spill by laying a stack of disks next to it. Yes, I've seen this happen.

*continued on next page*

---

---

5. Never write on the disk label after it's on the disk. Think ahead and write it before you peel off the backing. A felt pen or soft pencil lead can still leave a permanent impression on the disk surface.

6. Never touch an area on the diskette that is exposed through the jacket (the shiny parts.) Fingerprints contain enough moisture and body oil to guarantee a disk failure.

7. Disks wear out, as well as suffer from abuse. There is never a reason for losing your only copy of a valuable program or data file. When you first acquire a valuable program, immediately make a copy of it. Store the original in a clean, dry place and never use it. Let the backup be your "use" disk, not the other way around.

8. With commercial programs, rely on your dealer or the warranty to assure your backup availability. The economies of buying far afield become rather illusory when your only copy gets chewed up. (Were you really planning another weekend in N.Y. to exchange your disk?)

9. With data files, work on the grandfather system (or great-grandfather system). Start with three (or four) copies of your original file. Make your first update over top of one of the originals. The next day, write over top of another (etc. . .). At the end of the first cycle, continue the process, only write over the oldest data. Now you'll have a series that will withstand the next disaster, and only the last day's work is vulnerable. In business, three generations of data are the absolute minimum. Your stuff is at least as valuable, don't you think?

10. Never save a program or data file onto a disk that was prepared on a disk drive of unspecified type. See elsewhere in this issue for some description of incompatibilities amongst Commodore's disk drives. With the exception of the 2040 (more than three years old) and the 8050/8250 (different capacity entirely), Commodore disk drives produce diskettes that can be "read" interchangeably on the other machines: 4040, 2031, 1540, 1541, 1542 (coming soon).

If you get a diskette from someplace, and you do not know on which machine it was prepared, don't take a chance. You must not save or write anything on this disk, or you will have another ticking bomb on your hands.

Copy sessions at club meetings and copies from most club libraries are produced on 4040 dual disk drives, since it takes only two minutes and fifteen seconds to duplicate a diskette. Unless you have a 4040-type, don't risk it!

This is where a "COPY-ALL" utility program, or single-disk copy program is a necessity. The former requires two disk drives be connected, while the latter stores the original programs/files in the computer's memory and requires you to keep switching between the original (or source) and the newly-prepared copy (or destination) disk. Jim Butterfield's "UNICOPY" has just been released, and will undoubtedly become the standard utility just as the "COPY-ALL" series has been.

Getting familiar with these is an essential step in your education. Commandment Number 10 is one of the most important!

### Formatting a Disk

"There's something wrong with this disk drive you sold me. It worked fine when I loaded in programs from the TEST/DEMO disk. I even saved a short program to check it out. But it won't work with this brand new diskette that I just took out of the box—I can't even save the same program I tried before. Did I buy the wrong type of disks, or is the disk drive bad?"

Probably neither is at fault, but you have made some faulty assumptions:

The purpose of formatting a disk is to prepare that disk for use by the disk drive. When you buy a diskette, it is nothing more than a hunk of plastic with a coating of magnetic particles on it. There are as many types of recording standards as there are types of computers, so this raw diskette has no way of knowing that you want to use the "Commodore format" to store the information.

Before anything valuable gets dumped on its surface, the Disk Operating System (or DOS) must know how to retrieve it again. There must be markers laid down on 35 concentric circles (or tracks), and subdivisions of a track (called sectors) to identify where the information is going. Commodore's DOS puts from 17 to 21 of these sectors on a single track, taking advantage of the fact that the outer rings are bigger and therefore can hold more data.

As the disk rotates, these markers will identify each of the 683 possible addresses where the goodies reside. Also in the process, the DOS creates a map of these addresses which identifies whether the sector has been used already or not. This is called the Block Availability Map (or BAM) and of course, must be updated frequently to reflect the current status of each sector. The DOS does this for you automatically. When you format a disk, it frees up all 664 available sectors (or blocks) for you, and one sector is used for the BAM.

The third important activity of formatting is the preparation of the internal disk directory. When the disk is later accessed, the DOS comes here to look up the names of programs or data files, and then find out where (the track and sector) the start of the real information is stored on the diskette. When you format a disk, the directory is cleared. There are 18 sectors for the directory, and each one can hold the information for 8 entries. This is the reason that the disk can hold only 144 file names.

An important caution: **FORMAT is FOREVER!**

Once you do it, all the old stuff is gone, and is not recoverable. Period.

*continued overleaf*

Be careful of the terminology, as other companies may use the word "format" to mean something else. In Commodore's world, it means the process of preparing a blank disk for practical use. This can, of course, refer to a diskette that you simply wish to re-use, and you don't want to keep any of the old contents.

Another story comes to mind. At Georgian College, I met a gentleman who was taking an introductory course, using tapes for storage. About the fifth week, he confided that this course was sure expensive, what with all the tapes required. My puzzlement turned to a difficult-to-conceal chuckle when he told me that he'd been buying a new cassette for every program — and throwing out the old ones! No one had told him that they were re-usable.

### The Command Channel

Many references are made in the manual to this mysterious item, whose identity cannot be discovered on any television set's tuner. Another example of the "computerese" tone of the book.

You already know that the Commodore devices are given numbers to identify them, and "8" usually means the disk drive. When the PET/CBM line was introduced, Commodore chose the IEEE 488 standard as a means of connecting its disks and printers. This standard refers to the "channels" that have persisted through to the serial bus connections found on the VIC 20 and C-64.

Different channel numbers give a way of modifying the way these devices respond. "Secondary Address" is a term that we apply to tapes and printers to read or write data, leave an "end-of-tape" mark, print in graphics or in lower-case mode, turn paging on or off with the printer and other good things. Well, (channel numbers serve the same purpose with the serial bus (and RS232 ports).

OPEN 1, 8, 15

This opens file number one (known by the computer only) to device eight (the disk) with secondary address fifteen (the command channel.) Any further reference to file #1 will involve sending a command to the disk drive. We do not use the command channel when we want to send or receive data to or from the disk. (Data is stuff like names and addresses that would be stored in a "file" of data).

Commands to the disk are like commands in BASIC. LIST and NEW operate ON programs, they are not part of them. Similarly, disk commands make the disk drive perform some function, not fetch or send your mother-in-law's birthday. Here are examples of the disk commands, used after the above OPEN statement, without detailed descriptions:

Format a Disk:	PRINT#1, "N0:TITLE,ID"
Initialize a Disk:	PRINT#1, "I0"
Validate a Disk:	PRINT#1, "V0"

Scratch a File:	PRINT#1, "S0:STARS"
Rename a File:	PRINT#1, "R0:NEW FN=OLD FN"
Copy a File:	PRINT#1, "C0:NAME-B.U.=0: NAME"
Duplicate a Disk: (Dual Drives Only)	PRINT#1, "D1=0" (Drive #0 to Drive #1)

If you have a PET/CBM with BASIC 4.0, or a VIC 20 or C-64 that has a Bus-Card, V-LINK or some other "extended BASIC", you will not have to use the above sequence of opening the command channel, and printing to it. There are new BASIC "keywords", such as HEADER, COLLECT, SCRATCH, RENAME, COPY and BACKUP to substitute for this process. (The Initialize function has not been included.) These commands, with their own syntax, will open the command channel for you, perform the function, and then close the command channel.

The various "DOS Wedge" programs serve this purpose, in an intermediate way. You can't use full words, but the "greater-than" symbol and the "at-sign", when put in the first column of a line, denote that a disk command is coming. After the symbol, you just enter what's between the quotes of the PRINT# statement. The Wedge program opens the command channel, delivers the command and closes the channel. Without the above extensions, you are crazy not to load and run the Wedge program every time you turn the computer on!

If you are performing the above functions, you should close the command channel when you're done:

CLOSE 1

Some companies refer to "initializing" when they mean what Commodore calls "formatting." It is always correct, and sometimes essential, to initialize a disk when it is first inserted into the drive.

Using the syntax above (after opening the command channel), this will cause the DOS to read in the new disk's BAM into the disk drive's internal memory. This forces the disk drive to recognize that a different disk is now present.

I have found that a disk that burps a lot when trying to load its programs, or its directory, will often behave better if you issue this command first.

When you format a disk, you give it a two-character ID, which should be different for each disk in your library. Initializing is done automatically by the DOS whenever a disk with a different two-character ID is recognized. So, if you swap disks in the middle of a session, the first access to the new disk should cause this to take place.

If the same ID is on this other disk, the DOS says "this is the same disk, I won't bother re-reading the BAM". This represents the potential for the third ticking-bomb. By not updating the BAM, the disk will use the OTHER disk's availability map to determine where to put any new stuff.

*continued on next page*

An example might help to underline the problem. The first disk has an ID of "00" and has 550 blocks free for storage. The second disk also has "00" for an ID but it's nearly full—only 40 blocks free. You have loaded in a program called "OOPS" from the first disk, made some changes, and now grab disk #2 to save the updated copy. After you have issued the SAVE command, the DOS looks at the BAM in its memory, sees 550 blocks free and then starts to write the new program in the "first available sector". A long time ago, our disk #2 had information stored in the same spot—when it was as empty as disk #1. Since the BAM for the nearly-empty disk is being used, the new copy of "OOPS" clobbers an earlier program on disk #2. No error will be reported, since the new one will be stored perfectly. A few months later, you come back to disk #2, only to find that "DODO" is garbage when you try to use it, and you will blame everyone and everything for destroying your disk. The ticking bomb has just blown up in your face!

Motto: It never hurts to initialize when you place a different disk in the disk drive.

As a further note, many clubs use the same ID number on all disks in a current month. TPUG uses the letter "T" plus a cycling letter (now up to "M") to denote the PET, VIC 20 and C-64 releases. If you ignore Commandment #10, as you review and amend several of these, you could be next.

Next issue, we'll continue the series with a look at the directory and error handling aspects of working with the disk drive. Readers' comments and questions may help to keep us on track and looking at the high priority things first. Future parts will likely be one-third the size of this monster, but the ground I've covered was impossible to fragment.

## FAST SAVE FOR THE C-64

Elizabeth Deal  
Malvern, PA

This is useful for inserting into programs such as Paul Higginbottom's Multicolor Sprite Editor (Transactor V4 #4), Zamara's Sprite Rotate (Transactor V5 #1), Kizia's Sprite Editor and Character Generator; any program that needs to save screen and color memory or bit-mapped screen and colors etc. etc.

Please, replace 2 stop commands by whatever code fits your main program, and if you save screen, drop the message in line 9927.

```

9900:
9901 REM -----
9902 REM 64 SAVE ANY MEMORY AS PRG FILE
9903 REM          ::::::::::ELIZABETH DEAL
9904 REM USE IF YOU CAN'T USE SUPERMON
9905 REM -----
9906 F$="FILENAME"
9907 SA=*****:REM SAVE FROM SA ADDRESS
9908 EA=*****:REM SAVE TO. .EA ADDRESS
9909 ::::::::::REM DON'T FORGET EA+1 !!
9910 D=8:DR$="0":REM DEVICE,DRIVE
9911 DEFFNXX(V)=PEEK(V)+256*PEEK(V+1)
9912 F$=DR$+"."+F$
9913 CLOSE15:OPEN15,D,15
9914 PRINT#15,"I"+DR$:GOSUB9932

```

```

9915 IFETHENSTOP
9916 REM—SAVE USING O.S.ROUTINE(*)
9917 REM SEE BUTTERFIELD MEMORY MAPS
9918 POKE157,0:POKE 186,D:::REM FLG,DEV
9919 POKE 183,LEN(F$):::REM FNMLEN
9920 POKE 139,PEEK(71):POKE140,PEEK (72)
9921 AD=FNXX(139)+1:AD=FNXX(AD)
9922 V=AD:MA=187:GOSUB9929:REM FNM PTR
9923 V=SA:MA=193:GOSUB9929:REM SA
9924 V=EA:MA=174:GOSUB9929:REM EA
9925 SYS(FNXX(818)):::REM SAVE(*)
9926 GOSUB9932:IFETHENSTOP
9927 PRINT"SAVE OK":END
9929 V%=V/256:POKEMA,V-256*V%:REM STUFF
9930 POKEMA+1,V%:RETURN:::REM IT
9932 INPUT#15,E,E$,E2,E3:REM FLOPPY ST
9933 IFETHENPRINT"****"E;E$E2;E3:CLOSE15
9934 RETURN
9935 REM -----
9936 IT'S VITAL THAT THE 5 LINES AFTER
9937 BASIC LINE 'REM—SAVE. . .' DO NOT
9938 GET SEPARATED, AS VARIABLE F$ IS
9939 BEING TRACKED DOWN. OTHERWISE YOU
9940 WILL HAVE AN UNPARDONABLE MESS.
9941 REM -----

```

**PHOENIX SOFTWARE PRESENTS:**

**GEMINI-64**

**C-64 Smart Terminal**

- Single 100% M.L. program
- UP/DOWN load M.L. or BASIC
- Menu driven • User friendly
- Supports 1650 AUTOMODEM
- Redials up to 9 tel.#'s
- Supports all drive commands
- 41K Buffer • Buffer editing
- Pre-write transmission text
- UP load hi-res graphic files
- UP load word processor files
- Supports VIC 1520 Plotter
- Serial port access #4-#11

**\$29.95 (U.S.)** plus postage  
**PHOENIX SOFTWARE** (415) 528-3381  
 2490 CHANNING WAY Suite 503  
 BERKLEY, CALIFORNIA 94704

**Dealer Inquiries invited**

**INFODISK** The truly professional  
 Data-base system for Commodore 64

- up to 180 fields per record
  - up to 2400 characters per record
  - 19 calculation functions
  - links to word processors
  - very easy to use
  - 6 applications included
- ONLY \$59.95

**INFOTAPE**—An interpretive tape system for virtually ANY data storage application. . . . . \$29.95

**UTILITY 64**—All BASIC 4.0 DOS commands for BACK-UPS etc. on one disk . . . . . \$19.95

**DAMS-IEEE** interface cartridge—enables you to use ANY Commodore disk drive or printer . . . . . \$84.95

MD residents add 5% tax  
 Dealer inquiry invited

**Beaver Software Systems**  
 PO Box 88  
 Cabin John, MD 20818  
 (301) 229-4082

**COMSPEC**

866 Wilson Ave., Downsview  
 633-5605

- HARDWARE
- SOFTWARE
- SERVICE
- BOOKS
- ACCESSORIES

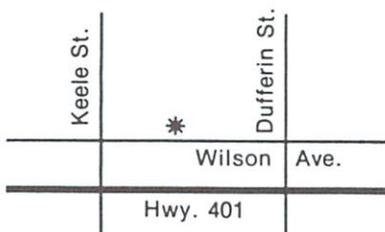
**commodore**  
 Off the Shelf Delivery  
 Trade-Ins Accepted

C-64 COMPUTER	348.88
WICO 'BOSS'	19.95
WICO '3-WAY'	32.95
WICO 'BAT HANDLE'	29.95
EASY SCRIPT	49.00
COMMODORE VIC CARTRIDGES	13.95
COMMODORE C-64 CARTRIDGES	22.95
BOX OF 10 DISKS WITH THIS AD	19.95

**10% Discount to  
 TPUG Members**

ON SOFTWARE, BOOKS AND ACCESSORIES.  
 (NOT INCLUDING SALE ITEMS)

**TPUG Library  
 Available For Copy**



---

# SuperPET 6809 Assembler -- Part 1

---

**Brad Bjorndahl**  
*Bramalea, Ont.*

The languages available on the SuperPET are its best known features and there is a great deal that can be said about them. However, since I want to explore the most interesting features of the SuperPET, I will concentrate on its most powerful language, the Waterloo 6809 microAssembler.

I have decided that the best way to proceed is to complete a project which will utilize all the main components of assembly language such as addressing modes, 16 bit operations and the subroutine library. However, this will take 4 articles, of which this one; and the next will be used for project description and design and so will not deal with the assembler at all. In compensation, readers will have a workable project design which they can alter, improve and implement in any other language. In fact, I am hoping that readers will do all of these things, especially with a 6502 assembler.

I have given the project that I have in mind the diffident title of 'PITS'. It is a modification of a game for 1 player which was called *Zombies* and which was written in Fortran on a minicomputer.

The game is set on an island which is strewn with deadly pits. If, as you move around on the island, you fall into a pit, you lose. If you do not move around the island one of the zombies, which also occupy the island, will get you and you lose again. The object of the game is to move in such a way that the zombies, which always chase you, will fall into the pits. When (or if) all the zombies fall into pits then you win. You have two disadvantages: 1) there may be many, many zombies and 2) some pits may fill up with zombies and suddenly provide a bridge for the others. You have two advantages: 1) the zombies cannot see the pits and 2)

the zombies can only move horizontally and vertically while you can also move diagonally. In effect, you can move faster and more carefully than the zombies which outnumber you.

This game is a good project to implement in assembly language, especially since there is no I/O except from the keyboard and to the screen. During program design, I will try to keep the structure and module descriptions as general as possible to allow for future changes and additions to the program. Normally a project would include all the extras, bells and whistles at the design step but, because of space limitations and the fact that this project is for illustration, there will be much room left for additions. The bells and whistles that I had in mind are such things as placing various impassible objects on the island, introducing 'breeding' zombies, zombies which can move diagonally, etc. These are not necessary for the project but it is possible to provide enough latitude that they can be added later without a lot of extra work.

Let us proceed through a game to establish a minimum set of design requirements. The player first calls up the game. There is no capacity to save games, allow multiple players and so on, so we go directly to the island. The boundaries of the island are indicated by asterisks in columns 1 and 80 and in rows 1 and 23. The bottom two rows are to display commands. Inside the bounds are scattered numerous zombies and pits indicated by 'Z' and 'O' resp., and somewhere among them is you, the player, indicated by 'Y'. The original version of the game that I played distributed the pits and zombies at random but this version will accept a series of commands to place objects in a pseudo-random manner. In this way there is variety but a game can be repeated by entering the same commands.

Now the stage is set for some action. This is done by entering a direction for the Y to move (within the island). After the move it is necessary to see if the Y jumped into a pit or hit a zombie. If so, then the game ends. If not, then the zombies move in whatever direction will bring them closer to the player. If a zombie lands on the player the game ends but if a zombie lands on a pit then it disappears, unless the pit is full. If there are any zombies left, the player chooses a direction again and the cycle repeats.

The remainder of this article will provide an outline of the structure which will be used for coding and put some questions which must be answered before the design is completed in the next article.

There are many ways of illustrating program structure, from decision tables to hierarchy charts. What you see below is the start of a 'pseudo-program' which uses the structured coding techniques of the Waterloo languages. This approach seemed most appropriate and in fact I found that it was quite effective in helping me organize the structure and content of each module. The structure will be developed in the next article.

Some of the questions which must be answered are:

- 1) How should the player's initial position be specified?
- 2) What is the algorithm to be used to decide the direction of zombie movements? Since the zombies follow the player who is not allowed to cross the island boundaries, does it necessarily follow that the zombies cannot cross the boundaries?
- 3) What should be done in case a zombie is bounded by other zombies and cannot move?

*continued overleaf*

4) Each pit can hold a finite number of zombies. How should 'zombie depth' be determined to ensure that all the zombies can be eliminated?

5) When a pit is full, should it be shown as a stationary zombie, a regular pit or disappear entirely? Can the player cross a full pit?

6) What is the maximum number of zombies and pits that should be allowed at island creation time?

7) Should we do anything to ensure that zombies do not land on each other?

Initial structure of the PITS program.

#### Mainline

Initialize I/O etc.

Loop

    Create island

    Set game\_end flag to false

    Loop

Move Y and Z

    Until game\_end is true

    Display end\_of\_game messages

Until final game is played

Stop

#### Move Y and Z

Move Y

If game\_end is true then return

Move Z (i.e. all Z)

If no Z's remain then set game\_end to true

Return *TPUG*

---

## FORECASTING WITH THE 8032 — Part II

---

John Shepherd  
Islington, Ontario

Part I of this series (*TPUG Magazine*, Mar/Apr issue) provided an overview of time series analysis and defined some of the terminology. The *TPUG* February 1984 PET disk, (P)T6, contains four programs which can be used to project historical data into the future. These articles supplement the documentation on the disk and explain how to use the programs in practical forecasting applications in the most effective way.

Before we can use one of the forecasting models, we must first input some data in the form of a time series. If we suspect that the data has any seasonality, then we will need at least two, and preferably three or more years of data to calculate seasonality factors. The data can be weekly, monthly, quarterly or even yearly. The program "forcast data.8" accepts this data as a sequential file. The program also permits additions, replacements and corrections to be made. The data can be displayed graphically and is used by the other three programs which do the actual forecasting.

The disk has a sample file of data called "forcast demo.d". This happens to be an actual set of 60 monthly sales figures from a brewer, in thousands of cases of beer. Table I is a print-out of this data as it would appear on the 8032 screen. Periods 1, 13, 25, 37, etc., are for January of each year. We will use this in our examples to demonstrate how to use the various forecasting models.

The program "forcast data.8" has the following options:

**(1) Create a new data file:**

We can input any number of data points, up to 100. The initial data must be entered in sequential order, the

oldest first, without missing any of the time periods. Store the data on the disk by file name.

**(2) Display and correct an existing data file:**

The data points are numbered in the order that they were entered.

Any data point can be corrected.

To display the data graphically you must first set the ordinate (data) scale for the graph. Table I shows that monthly sales have ranged from 15 to 38 thousand cases. We could therefore set the range of ordinates for the graph at 0 to 50, or 10 to 50. In some cases, with widely fluctuating data such as this, it is easier to see a trend line by using a wider range of ordinates, such as 0 to 100. The program automatically sets the abscissa (time) scale. If there are up to 50 data points, the scale is 0 to 50, otherwise it is 0 to 100.

A graph of the data is plotted in "double density" format.

**(3) Display and add data to an existing file:**

Data can be added at the end of a series, either to extend the series or with an equal number of data points dropped from the beginning of the series.

**(4) Print a data file:**

The data file must already have been created or called into the program through one of the above options.

The file can be printed as it is displayed on the screen, in columns of twenty.

The program then asks whether we wish to have seasonality factors printed, and if so, what is the period of seasonality. As we would expect for a brewery, our data file "forcast demo.d" shows a high degree of seasonality. Table II is a

*continued on next page*

listing of the seasonality factors for this data, based on the five years of history. Note that during the months of June through August (6 to 8), sales are 20% to 26% above an "average" month. The months of March, April, May and September (3,4,5 and 9) are close to average, and the months of October through to February (10 to 2) range from 7% to 21% below those of an "average" month. This pattern in the data is not surprising.

Note also that the seasonality factors total exactly the period of seasonality, which in this case is 12. If none of the months had any seasonality, then each seasonality factor would be 1.00. In some of our forecasting models, the program first

divides the actual data by these seasonality factors to produce "seasonally adjusted data". This adjusted data is then projected mathematically into the future and then multiplied by these same seasonality factors to produce the forecast. The forecasting models that we will look at in the next article, however, use a different technique to handle seasonality.

In the next article we will look at the first of these programs, "forcst glm.8". The "glm" stands for "general linear model". This program has 12 linear, quadratic or trigonometric models frequently used for medium or long-range forecasts.

**Table I**  
Beer sales – monthly (thousands of cases)

1	18.7	21	23.5	41	28.6
2	15.6	22	21.6	42	33.3
3	18.3	23	21.6	43	34.3
4	19.6	24	19.8	44	29.0
5	21.4	25	19.6	45	26.4
6	28.9	26	18.6	46	25.1
7	24.5	27	23.2	47	22.3
8	24.5	28	24.5	48	20.3
9	21.9	29	27.7	49	24.6
10	20.1	30	30.0	50	22.8
11	17.9	31	28.7	51	28.4
12	17.9	32	33.8	52	27.2
13	18.3	33	25.1	53	28.6
14	17.6	34	22.1	54	29.3
15	24.1	35	21.8	55	38.3
16	21.8	36	20.9	56	32.0
17	23.3	37	23.3	57	24.9
18	28.7	38	20.1	58	27.7
19	30.0	39	28.1	59	22.2
20	29.1	40	26.6	60	21.5

**Table II**  
Seasonality factors

1	.8796
2	.7910
3	1.0115
4	.9888
5	1.0654
6	1.2379
7	1.2626
8	1.2034
9	.9844
10	.9327
11	.8445
12	.7982





# ULTRA COPY 64

**DISK DUPLICATION SYSTEM FOR COMMODORE 64**

- Analyze disk tracks for data & errors
  - Skip empty tracks to speed copying
  - Copy everything
  - Fast, reliable copying with 1 or 2 drives
- \$39.95 plus \$3 shipping. Mastercard and Visa

## C-64 ULTRA RESET SWITCH

- Built into new 6 foot disk drive cable
  - Nothing to solder - no connections
  - Eliminate voltage spikes & switch wear
- \$16.95 plus \$3 shipping. Mastercard and Visa

ULTRABYTE Call (313) 562-9855

23400 Michigan, Suite 502, Dearborn, MI 48124  
Satisfaction guaranteed, 10 day return privilege  
DEALER INQUIRIES INVITED

# BSC-SCOREKEEPER(C)

DESIGNED EXCLUSIVELY FOR THE COMMODORE 64®

KEEP YOUR BRIDGE CLUB'S SCORES BY SESSION FOR A COMPLETE SEASON



MAXIMUM OF 96 PLAYERS  
 MAXIMUM OF 99 SESSIONS  
 STANDINGS AUTOMATICALLY COMPUTED  
 HARD-COPY REPORTS MAY BE PRINTED  
 A RANDOM-SCORER PROGRAM TO USE AS GAME OF CHANCE

**KNOW THE SCORE**  
LET YOUR COMPUTER DO THE WORK

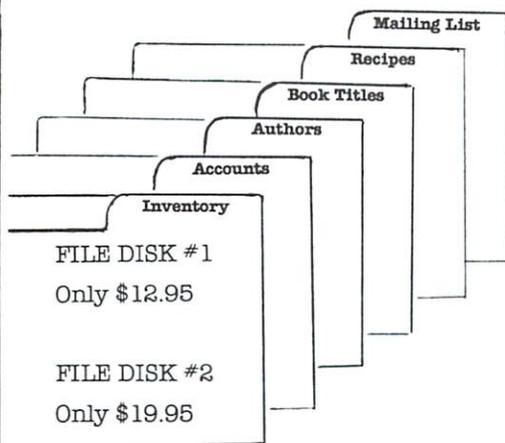
ALL ON ONE DISK - \$ 20  
(U.S. FUNDS)  
CHECK OR MONEY ORDER TO-

(c)BUSINESS  
SYSTEMS & CONVERSIONS  
P.O. BOX 50505  
INDIANAPOLIS, IN. 46230

# FILES

## EASY TO USE FILES FOR NEW USERS

Don't wait to start using the power of your 64. . . Start using **FILES.**



FILE DISK #3  
(Both #1 & #2)  
\$29.95

(Ontario residents add 7% PST)  
(Cheque or Money Order only, please)

Whatever you have in mind . . . Mailing Lists, Recipes, Book Titles & Authors, Personnel, Accounts, Inventory, etc., etc., **YOU NEED FILES!!**

FILE DISK #1 Creates, Opens and Closes sequential files for you. It will let you write to a new file, or add (append) to an existing file . . . and enable you to read your files to the computer screen or your printer.

FILE DISK #2 Lets you create RELATIVE files . . . FAST . . . EASY!! Almost INSTANT ACCESS to any record - Hundreds of records in one file - Up to 20 fields in each record - Access records by # or by 'key' field - Create - Write - Find - Read - Change - Delete or Print any record. Set your own file size and field names. Your own data base . . . EASY . . . FRIENDLY!!

FILE DISK programs are all written in BASIC that you can list and study. As your own programs improve, you can copy routines that error check, sound alarms, etc. FILE DISK programs are Menu Driven . . . and include TUTOR routines to help you. Also includes complete printed instructions.

FRIENDLY SOFTWARE  
55 Ellerslie Ave., Suite 1117  
Willowdale, Ont., M2N 1X9

---

---

# MONITOR MEANDERINGS

---

John Easton  
Toronto, Ont

Recently the Toronto PET User's Group was introduced to a painless tour of PET's machine language monitor at the Westside Meeting. The following is an overview of those sessions, rather simple little exercises if you are already familiar with the functions of the monitor, but a painless means of introduction to this mysterious world for the novice.

## To Take Your First PEEK

To take a simple look at the M/L monitor (note we didn't once hear those terrifying words "machine language"), we first carefully clear all memory (Enter NEW). Then, typing a simple SYS 1024 will get you into this mysterious world of IRQ's, Registers, and Stack Pointers. But not to worry: we'll just poke around in memory for a look at what might be there.

Since we've carefully cleared all memory, of course there isn't much there, not at the Start of BASIC anyway, where we first look by entering .M 0400 0440 where the cursor seemed to be asking for something. Why those particular commands? The 'M' is a request for 'Memory' and the numbers are specific memory locations in base sixteen notation or HEX, from location 0400(hex) to 0440(hex) (equivalent to 1024 and 1088 in decimal). Hex notation is commonly indicated by the prefix '\$', so from now on we'll refer to the start of BASIC as \$0400. Anyhow, quick as a wink, the screen fills with 00 00 00 and a whole bunch of AA's—45 of them, complete with an associated address for every 8th number—thoughtfully placed there for those of us who can't count. Like I said, magic.

Why the 3 sets of zeros? That's BASIC's way of noting the END OF BASIC, and since BASIC RAM on a CBM machine starts at 1024, where we looked, with the request for Memory from 0400 (1024 in hex notation =  $0*4096 + 4*256 + 0*16 + 0*1$ ), and since we hadn't yet entered anything, that's where the END OF BASIC was noted. Why the AA's? That's a perceptive question! AA in Binary (a number in base two—the primary language of the computer) is 10101010. By filling memory with this pattern, memory tests are a snap—something akin to the computer running its fingers along a picket fence, checking for irregularities.

## Everyone Knows What BASIC Looks Like, Right?

Let's put something into memory with a short one-liner. But WAIT! First we must leave the MONITOR mode by entering our next M/L magic word, .X (for eXit) at the waiting cursor position (and one doesn't really enter the '.'—that's there already) and there we are, back in BASIC mode.

Let's try something simple, like 10 A=15.

Can't get much simpler than that now, can we? Now, take a quick jump to the monitor and ask to see memory locations \$0400 to \$0410, and we're looking at a Real Live Line of BASIC Code in funny numbers!!

```
.M 0400 0410;
.: 0400 00 0A 04 0A 00 41 B2 31
.: 0408 35 00 00 00 AA AA AA AA
.: 0410 AA AA AA AA AA AA AA AA
etc.
```

So let's examine this a little closer. Remember that each pair of numbers on a line stands for one of eight locations in memory, starting with the location indicated by the 4-digit number listed on the left. We may then study these lines of 'code' as follows:

```
.: 0400 00—normally 0 value at this location
.: 0401 0A
.: 0402 04—these two locations point to the start of the
NEXT LINE of BASIC and are written in REVERSE
Notation, Lo/Hi value (translate to decimal as 040A or
1034)
.: 0403 0A
.: 0404 00—these two locations take care of the line number
10 (reverse order value again)
.: 0405 41—this location indicates our first variable name,
'A' or 41 ??? A clue to notation of Alpha Characters is
indicated by the preface 4, well, starting at 4 1 for A and
progressing upwards into 5 something. I suppose that 4 is
really indicative of a decimal value of 64—from which one
would conclude that the value of hex 41 is decimal 65—which
just happens to be the ASCII value of the letter A—and I
thought it was magic.
```

```
.: 0406 B2—now there's a funny one, but every time I
indicate an = sign that's what the machine thinks I've told
it. There must be tables of these values all over the place,
but what better way than to ask the machine itself!
```

```
.: 0407 31
.: 0408 35—well, what have we left from our BASIC line but
the number 15—and using our quick clues to NUMERIC
notation, one will always find a plain number prefaced by a
3 (not to be confused with funny things like floating point
etc. etc.). Anyhow, because hex 31 happens to translate to
decimal 49 which is ASCII for the number 1, it's plain as day
that those two figures represent our number 15 from BASIC.
```

```
.: 0409 00
.: 040A 00
.: 040B 00—again our END OF BASIC flag.
Should we care to add another line to our BASIC Code, it
would begin at 040A (as the notations at 0401 and 0402 have
already told us), leaving a single 00 marking the END OF
the first LINE at 0409.
```

*continued overleaf*

Got it so far? Didn't hurt a bit, did it? OK, now that we're so facile in accessing the monitor, let's look at the start of SCREEN MEMORY which starts at hex 8000. Access these Memory locations with .M 8000 8XXX (XXX being anything else up to FFF—which would give you all 4096 locations—a wee bit too much for any one screen at a time). The locations you might want to see are only the first 1000, or in the case of an 80-column machine, the first 2000. What about the rest? How should I know; but I do seem to recall something about a duplicate image—why not look around yourself and see?—Anyhow, let's just access a workable chunk similar to the last time with our upper limit set somewhere around 8040. Unless your screen is absolutely clear at the top, you're about to see a bunch of various numbers, corresponding with whatever character or symbol is at present sitting in that position on the screen—starting in the upper left corner at hex 8000. Incidentally, blanks are represented not by 00 or AA as our previous explorations would lead us to believe, but a 20 (which is hex for ASCII 32 or space).

Now, why not work backwards, change the monitor—and see what happens on the screen. Change the contents of location \$8000, for instance, by directing your cursor to its location, changing the contents, and hitting return (just like BASIC, isn't it?). Immediately you should see something appear in the 'home' position of your screen. By something, I mean that if you had been paying attention in the previous paragraphs, you'd naturally be lead to believe that an A might logically be designated by the value 41. Not so—and here we run into another set of tables. Commodore machines have a special set of code to address the screen—you've seen it listed in tables perhaps as SCREEN POKE values. Limited in number by the two-character limit on individual memory locations to a value not greater than 255 (hex FF), Commodore has scrunched the code tables to allow inclusion of all their fancy graphics and reverse within this FF limitation. So, thus armed, play around and see what happens (A, incidentally is 01, while reverse A is 81).

### String Variables

OK—now we're going to set a string variable, and then watch to see how the PET keeps track of it. Turn your machine off and on again to wipe everything clean; then in direct mode, type in some string information. You could write a one-liner if you wish, but then we'd have to chase more code than necessary, and besides you've already done that in the previous exercise. So here we go with an obvious string -

```
A$="A STRING"
```

Break to the monitor with a SYS 4 (usually a safe shortcut for SYS 1024—actually a SYS to any location containing a 00 value will break to the monitor) and check memory at Start of BASIC:

```
.M 0400 040F
.: 0400 00 00 00 41 80 08 F6 7F
.: 0408 00 00 AA AA AA AA AA AA
```

While you're in monitor mode, check also the Top of BASIC, just under the Screen location of \$8000.

```
.M 7FF0 7FFF
.: 7FF0 AA AA AA AA AA AA 41 20
.: 7FF8 53 54 52 49 4E 47 05 04
```

Well, what have we here? Let's break it down.

```
.: 0400 00
.: 0401 00
.: 0402 00—normal indication for END OF BASIC Program,
and since we haven't yet typed in a BASIC Program, it's
right where we should expect it—at Start of BASIC.
```

```
.: 0403 41—Since variables start right after BASIC, here's
where we should find our first variable, the A$ we typed in
previously. Of course, because you've been paying attention,
you know this is hex for 64, which is ASCII for A.
```

```
.: 0404 80—now, here's a new one!
```

Actually, as EVERYONE knows, BASIC reserves two characters for any string. Well, this is the second character, and because we didn't have a second character, it is designated 00. *But* you say, there's an 80 in that spot! Right! To signify a string variable, hex 80 is added to the second character. If we had indicated the variable, for instance, as AA\$, this spot would have contained the value C1 (\$41+\$80).

```
.: 0405 08—this indicates the STRING LENGTH—8 characters
(including the space).
```

```
.: 0406 F6
```

```
.: 0407 7F—these two locations point to the actual string in
hi-memory, written in reverse order—so if we look at location
7FF6, we should find the start of this string
```

```
.: 0408 00
```

```
.: 0409 00—Extra spaces reserved in case this had been
another kind of variable that uses more room.
```

Anyhow, now that we know where this string is actually stored, let's look at the top of memory to see *how* it's stored.

```
.: 7FF6 41—looks like an A
```

```
.: 7FF7 20—obviously a space (hex for ASCII 32)
```

```
.: 7FF8 53—hex for ASCII 83 or S
```

```
.: 7FF9 54—ditto 84 or T
```

```
.: 7FFA 52—ditto 82 or R
```

```
.: 7FFB 49—ditto 73 or I
```

```
.: 7FFC 4E—ditto 78 or N
```

```
.: 7FFD 47—ditto 71 or G
```

```
.: 7FFE 05
```

```
.: 7FFF 04—this is the BACK POINTER, and indicates the
location of the appropriate Variable back in the Variable
Table, which in this case (reverse order again) is 0405.
Actually, it doesn't spot the starting location, but rather
drops in to the spot where this information is actually
needed. In this case, we go to the location that tells us to
pick up 8 characters for the variable A$—and we've just done
that with our look at 7FF6 thru 7FFD. Simple, huh?
```

*continued on next page*

## What Happens In Garbage Collection?

So—what about the infamous ‘Garbage Collection’ that sometimes can send old ROM.2 sets (and VIC 20 and C-64) out to lunch for indefinite periods? Well, they don’t have this Back Pointer built in, so have nowhere to conveniently indicate to the operating system what’s new and what isn’t. And how does BASIC.4 indicate this? Why not ask it?

Let’s .Xit the MONITOR and write another value into A\$. Something simple like A\$=“B STRING”. Drop back into the monitor and take a peek.

```
.M 0400 040F
.: 0400 00 00 00 41 80 08 EC 7F
.: 0408 00 00 AA AA AA AA AA AA

.M 7FE8 7FFF
.: 7FE8 AA AA AA AA 42 20 53 54
.: 7FF0 52 49 4E 47 05 04 41 20
.: 7FF8 53 54 52 49 4E 47 08 FF
```

Well, the only change at the low end is the value of 0406, which changes from F6 to EC — ahah! a new storage location in Hi-mem. Sure enough, the new string has been chunked up there starting at 7FEC, just as we thought. Looks the same as the previous one except for the substitution of value 42 for 41 (or B for A). But look at the old one; our Back Pointer now has values of 08 and FF. On a garbage collection, all the machine needs to do is look for the ABANDON STRING marker (FF), check for the number of characters to abandon (08), and zing — it’s done! No more running back and forward-checking addresses. Well, that’s the theory anyhow; and don’t you feel the better for it?

## Some Useful Pointers

While still in monitor mode, why not take a look ‘way down near the bottom of Zero Page from \$0028 on — you’ll probably see something similar to the following.

```
.M 0028 0035
.: 0028 01 04 03 04 0A 04 0A 04
.: 0030 EC 7F EC 7F 00 80 01 FF
```

These few locations are your normal Program POINTERS. Perhaps you’re more familiar with the same information you may obtain thru PEEKs to the same location. For instance, I’ve often checked for the END OF BASIC with PEEK(42) AND PEEK(43). Well, now that you recognize Hex so easily, you can see that locations \$002A and \$002B are the same old familiar END OF BASIC pointer, but let’s check them all out.

```
.: 0028 01
.: 0029 04 — Start of BASIC Text (note all these are in Lo/Hi order)
.: 002A 03
.: 002B 04 — Start of Variables (or conversely, End of BASIC)
.: 002C 0A
.: 002D 04 — Start of Array Table (or conversely, End of Variables)
```

```
.: 002E 0A
.: 002F 04 — Pointer to end of Arrays (start of actual FREE memory)
.: 0030 EC
.: 0031 7F — Start of actual Strings.
Note: actual free memory space is the space between the previous two locations.
.: 0032 EC
.: 0033 7F — Utility String Pointer (not very interesting to us)
.: 0034 00
.: 0035 80 — Top of Memory accessible to BASIC (conversely, Start of Screen Memory).
```

## Say It Again, Sam. . .

Well, I don’t know about YOU, but if one is told this stuff enough times, it slowly begins to make sense. If it was confusing to you at first reading, don’t worry. Read it again and run through the exercises yourself. When the dust settles, all this mysterious talk of Machine Language begins to look a bit less formidable. And if we’ve whetted your appetite for more, your own machine can probably give you better instruction on its own inner workings than many textbooks — just learn how to ask it — which is hopefully what we have just illustrated. TPUG



# MICRO-FAX

54 FLERIMAC ROAD, WEST HILL, ONTARIO M1E 4A9 CANADA  
TELEPHONE: (416) 282-1532

## THE 64 SOFTWARE HOUSE

### ENTERTAINMENT

A.E.	"BRODERBUND"	D.	39.95
SPARE CHANGE	" "	D	39.95
OPERATION WHIRLWIND	" "	D	40.95
ZAXXON	"SYNAPSE"	T/D	44.95
QUASIMOTO	" "	T/D	39.95
SHAMUS CASE II	" "	T/D	39.95
SORCERER	(INFOCOM)	D	59.95
FLIGHT SIMULATOR	(SUBLOG)	T/D	59.95
SAMMY LIGHTFOOT	(SIERRA)	D	33.95
PAINT BRUSH	(HES)	C	23.95
BRUCE LEE	(DATA SOFT)	C/D	39.95
CASTLE WOLFENSTEIN	(MUSE)	D	33.95

### BUSINESS

HOME ACCOUNTANT	(CONT)	D	76.95
VIP TERMINAL		D	65.95
ELECTRONIC CHECKBOOK	(TIMWORKS)	T/D	27.95
BANK STREETWRITER		D,	72.95

### SPECIALS

KOALA PAD AND PAINTER & SLICK STICK (JOYSTICK)			109.95
WHIZ KIDS INTRO TO BASIC		D	29.95
STRIP POKER		D	37.95
STAR MAZE		D	38.95
INTRODUCING THE RITEMAN PRINTER			
120 CPS 1 YR. WARRANTY			499.00

ONTARIO RESIDENTS ADD 7% SALES TAX.  
ORDERING & TERMS: SEND CASHIER CHECK, MONEY ORDER, OR CERTIFIED CHECK.  
VISA/MASTERCARD PLEASE INCLUDE CARD NUMBER & EXPIRY DATE AND SIGNATURE.  
ADD \$2.50 FOR SHIPPING AND HANDLING.  
ALL ITEMS SUBJECT TO AVAILABILITY. PRICES SUBJECT TO CHANGE WITHOUT NOTICE.  
FOR CATALOG SEND \$1.50 REDEEMABLE.

## CAPTAIN COMAL STRIKES BACK

### THE CAPTAIN RECOMMENDS:

- **COMMODORE 64™ COMAL 0.14 System Disk:** \$19.95
- **PET/CBM COMAL 0.14 System Disk:** \$14.95
- **COMAL TODAY NEWSLETTER**  
Sample Copy: \$2  
Subscription (6 issues): \$14.95
- **COMAL TODAY DISKS**  
Individual Disk: \$14.95  
Subscription (6 disks): \$59.90

### BOOKS:

- **COMAL HANDBOOK**  
Reference Book, 334 pages: \$18.95  
Book and Disk with programs from book: \$39.90
- **FOUNDATIONS IN COMPUTER STUDIES WITH COMAL**  
Tutorial Text, 313 pages: \$19.95  
Book and Disk with programs from book: \$39.90
- **STRUCTURED PROGRAMMING WITH COMAL**  
Tutorial Disk, 266 pages: \$24.95  
Book and Disk with programs from book: \$39.90
- **BEGINNING COMAL**  
Tutorial Text, 333 pages: \$19.95  
Book and Disk with programs from book: \$39.90
- **CAPTAIN COMAL GETS ORGANIZED**  
Applications Tutorial, 102 pages  
Book and Disk package: \$19.95  
Includes complete Disk Management System

All items stocked for quick delivery. All Disks are Commodore 1514/4040 format. Add \$10 per disk for Commodore 8050/8250 format. Send check or Money Order in US Dollars plus \$2 shipping/handling per book to: COMAL Users Group, U.S.A., Limited, 5501 Groveland Ter, Madison, WI 53716 phone: 608-222-4432.

TRADEMARKS: Commodore 64 and CBM of Commodore Electronics Ltd.; PET of Commodore Business Machines, Inc. Captain COMAL of COMAL Users Group, U.S.A., Ltd.

# BENT COMPUTER ASSOCIATES

\*

### Software

<b>SG01 Pro-Pick Basketball</b>	Not a Game! Picks pro or amateur teams when odds are in your favor. Use data from newspaper and generator in program.	<b>19.95*</b>
<b>SG02 Pro-Pick Baseball</b>		
<b>SG03 Pro-Pick Football</b>	Similar to SG01	<b>19.95*</b>
<b>SG04 Pro-Pick Hockey</b>	Not a Game! Similar to SG01 but uses different algorithms and data.	<b>19.95*</b>
	Similar to SG03	<b>19.95*</b>

### Hardware

<b>HGR01 Video Plug</b>	Improves C64 output so your B/W TV can be used as a monitor.	<b>6.95*</b>
<b>HGR02 Speaker Plug</b>	External speaker for C64 or Vic20 when your monitor doesn't have one.	<b>12.95*</b>
<b>HGR03 Combo Plug</b>	Combines features of both of the above units.	<b>18.95*</b>
<b>HGR04 Reset Button</b>	Unlocks C64 or Vic20 following system crash without losing your program.	<b>19.95*</b>
<b>HGR05 RS232 Interface</b>	Enables C64 or Vic20 access to printers, modems, etc thru the user port. Cable not included.	<b>29.95*</b>

\* Easily attaches to rear unit. Contains complete instructions.

## BENT Computer Associates

1542 Front Street  
Slidell, Louisiana 70460



Check, Money Order, VISA, Master Card, No C.O.D.  
Add 1% Shipping, Louisiana Residents add 6% Sales Tax  
VIC 20™ and COMMODORE 64™ are trademarks of Commodore Business Machines, Inc.

# WANTED

Commodore **CBM** Model 4040 dual drive floppy disk

**4040 DISK DRIVES**

Commodore **CBM** HARD DISK

**9090 HARD DISK**

for TBUG membership office

call **Chris Bennett,**  
Business Manager

for further information.

**(416) 782-9252**

---

---

# INFODISK 64 FILE SYSTEM

---

John David  
Etobicoke, Ont.

INFODISK is a 'friendly', menu-driven, data-base management program designed for use with the C-64, but it seems friendlier to those with single, rather than dual, disk drives. The program is loaded with the LOAD<sup>\*\*\*</sup>,8 command (LOAD<sup>1:\*</sup>,8 for those using drive No. 1). The INFODISK menu offers seven choices: three programs for the INFODISK file system — CREATE RECORD DESIGN, INFODISK PROGRAM and SORT FILE; three disk manager programs — INFOCOPY, UTILITY64 and DIRECTORY; and a FINISH command. With these seven interrelated programs, the user can manage a substantial data-base.

The three disk manager programs are utilities designed for conventional manipulation of disks. From the main INFODISK menu, the DISK DIRECTORY command produces a directory for drive 0 only. To see a directory for drive 1 on a dual drive, the user needs to use the UTILITY64 file from the program disk. Aside from providing a complete directory on both drives, this utility program allows you to initialize, scratch, copy, backup, rename new and validate disk files.

The third of the utility programs is INFOCOPY64, used to make backup records of INFODISK files. Instructions, written in lower case (without capital letters despite punctuation marks) appear on the screen. Below, on a control line (line 22), specific screen prompts indicate clearly where to place the source and destination disks. In each case, the program asks for confirmation before proceeding. The program manual recommends the use of backups, especially of important files. With DIRECTORY, UTILITY64 and INFOCOPY64, the user can manage any conventional disk file chores.

Aside from the disk manager capabilities, the 'main menu' controls the three principal functions of the INFODISK system: setting up the screen display, writing and changing records on the disk and generating reports, and sorting the reports in the desired order.

CREATE RECORD DESIGN enables you to setup or change the display format of the records. INFODISK is capable of producing nine pages of twenty-one lines each for a record display, with a maximum of eighty fields or data items in a record! Since pages can be dumped to a printer, it's possible to create invoices, payslips or to fit pre-printed stationery. Therefore, the setup is perhaps the most difficult, but most important part of this or any data-base management system. It requires careful consideration and thought.

The screen formatter has seven functions to help format a screen: you can header, store, display, value and delete items, repeat lines, change pages, home the cursor or exit the program. The first five capabilities are used to format screens which are then saved; the others manipulate the cursor. At each step of screen creation, a prompt appears on the control line (line 22) to guide you through this important process. These screens are then used with the INFODISK program.

The INFODISK PROGRAM, choice 2 on the main INFODISK menu, is the heart of this data-base manager. This section of the program provides a sub-menu that offers the seven following choices: select data file, file maintenance, reports generator, select calcs file, printer, batch processing disk directory and exit. The user starts by selecting a data file for maintenance, reporting, or calculation. MAINTENANCE allows you to insert, delete or amend records. To view the records, REPORTS GENERATOR is used to display your records on the screen or printer, but it is somewhat frustrating. A request to LIST reports shows the number and range of records. It then asks for FIELDS OR RECORD. If you ask for a record from the middle of your file — e.g. Murphy on your phone numbers file — the control line quickly flashes a disturbing message on the control line— *Murphy not field*. The message seems to be a minor bug, for you can say 'yes' to the *continue?* message, and the requested record will appear. From that point, you can step through

your records using the cursor control keys.

Another major feature of INFODISK is its capacity to perform as many as fifty calculations in each file. For example:

qty = qty — issues + receipts (the spaces are unnecessary)

Using arithmetic, relational, and logical operators as well as the functions (INT, ABS, LOG etc.) it is possible to calculate suitable parts of files. *TPUG Magazine* could calculate the profit from selling X number of magazines at a certain cost per issue, and then keep track of the figures from month to month. Working hand in hand with the CALCS part of the program is the BATCH PROCESSING section which will perform the calculations on all records within a given file. The two sections — CALCS FILE AND BATCH PROCESSING used in combination would be an excellent means of managing a reasonably sized data-base in the home, or in a small business.

As of now INFODISK is formatted for use with a 1525 printer. On a daisywriter it produced one record per page printed in upper case. This quirk meant that my telephone book became very thick, very fast. But, it came as no surprise since the manual warned of such a likelihood. However, there are features in INFODISK which permit the formatting of a page on the 1525 different from the conventional 80 columns and 66 lines. Working with the screen formatting section, the user has complete control over the final appearance of his data-base printout.

Overall, INFODISK is a pleasure to use. The user can start with border and screen colours which please and then begin to build a data-base. The program package offers a variety of demo data files to help the novice build a screen format, the prompt lines give clear instructions as to keyboard inputs, and although error messages are not readily clear, the manual provides step by step guidance through the many features of INFODISK. *TPUG*

# dealer's MARKETPLACE

This space  
could be  
advertising  
**YOUR**  
product

## 20 & 64 computer **Game Rentals**

by the week

3 LOCATIONS

**COMPURENT**  
416-823-2368

**Bradley Brothers**

**Bulletin Board System**

c/o Richard and David Bradley  
147 Roe Avenue  
Toronto, Ontario  
M5M 2H8  
ONLY \$10.00 per year

(All cheques should be payable to  
David Bradley) or call **B.B.B.B.S.**  
(416) 487-5833

as seen on The Journal

## **Electronics 2001**

5529 Yonge St, Toronto, Ontario  
M2N 5S3 (416) 223-8400

**Syntax offer for C-64**

Cyclons — \$ 9.95  
Bubbles — \$ 9.95  
Scribbler — \$14.95

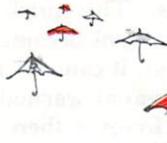
**Ridiculously low prices!!!**

Watch this space for monthly specials

## **COMMODORE SOFTWARE AFICIONADOS**

You'd like free software, we'd like reviews. The Book Company seeks additional reviewers for The Book of Commodore Software. For details, write and send a sample review to: **The Book Company**, 11223 S. Hindry Ave., Los Angeles, CA 90045

# MARKET PLACE



Do you  
know the  
Commodore 64  
inside out and backwards?  
Do you have a thorough mastery of  
BASIC? How about assembler?

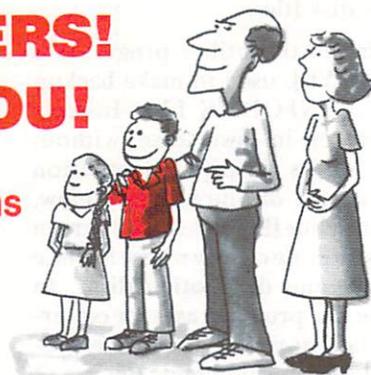
Umbrella Software needs people like you. Programmers to help us create dynamic software. Software that is alive with graphics. Software that sings. Software that is beneficial.

As well as working on our products, you may have a program you've already developed. We can publish it for you.

USI is one of the largest Canadian software publishers. With over 50 products now on the

## **PROGRAMMERS! WE WANT YOU!**

To write programs  
for **Umbrella  
Software  
Inc.**



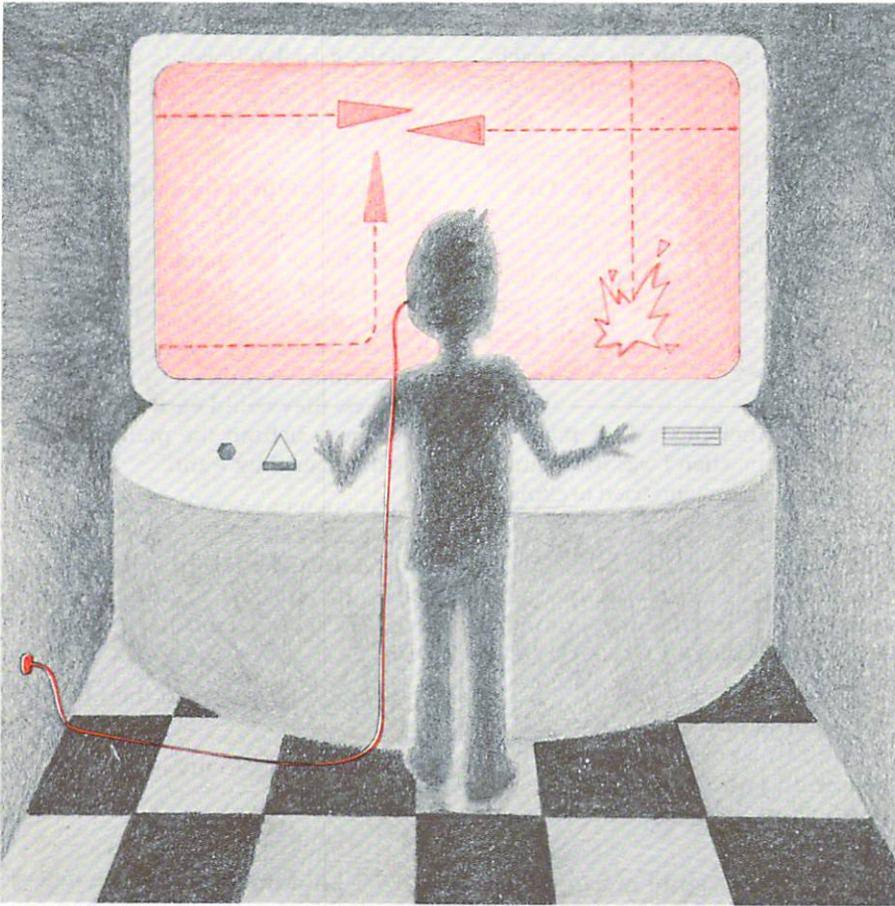
market, we're solidly established and still growing.

If you are interested in becoming part of the USI team, call or drop us a note outlining your knowledge and experience. And don't feel restricted to the Commodore 64. If you're familiar with other machines too, we'd like to know.



Product Development Dept.  
**Umbrella Software Inc.**  
60 Bullock Drive, #5,  
Markham, Ontario  
L3P 3P2 (416) 471-4311

# ARCADE CHALLENGE



Paul Hyckie  
Toronto, Ont

I found Davy in Philadelphia, but that doesn't mean anything. I've found others in Toronto, San Francisco, New York and even places like Stanton's Corners and Overhill Junction. He came from a family that maintained the new national average; two children, parents divorced, but with enough money to get by.

Davy was younger than most arcaders but after his first game of Asteroids, he was hooked. He began saving his allowance and running errands for the quarters that became his passports to the games. He was likeable. The older kids didn't make life too tough for him, and once he discovered that the dinner hours gave him most of the place to himself, he was set.

In those days when I was still moving undercover, ostensibly as a coin collector on the east side, the manager of Davy's arcade, a greasy little Italian guy with the belligerent aura of a failed construction worker, pointed out Davy to me. The manager didn't know much, but he knew that the word was out that we were interested in which kids played the longest, the best and the most frequently. There was enough of the street wisdom of Little Italy in him to keep him from asking why.

I watched Davy and I liked what I saw. He had it all, not just the usual.

They all had that blacked-out look of concentration. The coin-feeding, button-punching, lever-pulling motions of his hands could be seen in any arcade, anytime. The differences were small things.

For instance, he never got angry. Of course, nobody got smoking-swearing angry in those places; it's not that kind of challenge. If it is, they don't come back. Kids are too conscious of looking ridiculous among their peers. A lot of kids hid the frustration but Davy was truly cool. I watched his score mount and if he made a mistake—a rarity—he didn't let it fluster him and the numbers rolled on. He didn't get blown away. His concentration was complete and it was effective.

I knew they'd want to take him.

★ ★ ★

Do you remember those questions kids ask each other when they start to explore the frontiers of philosophical morality? Stuff like: "If the Indians had captured your mother and sister and they'd only let one go and you had to pick, who would you choose?" The questions were deliciously thrilling then. They made you aware of how much you thought of and loved those people, the potential victims. Besides, choice never really *did* have to be made.

Colonel Mannerling had called me into his office last month and given me just such a choice. I had some organizational qualifications to recommend me but I think he picked me because I was a nice young man. Children would like me.

When I got to the arcade, Davy was there, craning his neck to see the screen, firing the controls more from feel than anything else. I stuck a coin in the machine behind him and hit the buttons at random while I watched him play, fascinated. I wasn't any good and never would be. I was too old to develop the skills the Colonel needed but the scoreboard of Davy's Asteroids machine was thirty thousand and still going as he won another ship.

I memorized his baggy blue cords, beat-up runners and grey nylon jacket and left the arcade, bullying my way through the knot of teens playing punch

*continued overleaf*

me-love me games outside. I felt the unfairness of the world envelop me: that good, talented kids like Davy would have to pay the freight while others lived in brainless oblivion and grew up normally. . . I stopped myself. Life had always been unfair. It was just that now I had a prominent role to play in perpetuating the system.

I took the car down the street and got ready. I tried not to think about the anguish Davy's mother and brother were going to feel when he didn't come home that night.

★ ★ ★

When we first saw them coming it was unbelievable. A tight flotilla of ships swinging in behind the bright beauty of the sun. On the brink of nuclear destruction, wisdom from the skies had arrived. The president was ready to give them the landing co-ordinates for the White House lawn.

But, not for the first time in history, the few true xenophobes in high advisory positions fulfilled their most important function and spoke out in the closed-door meetings: how could we know their purposes with such unshakeable faith that we would throw open our one planet without so much as a simple "let's look 'em over" border check?

A few of the right people hesitated and finally one old tube, busy rusting at Canaveral, was hauled to the pad. Carrying a three man crew, it was quietly thrown aloft.

Our savior ships blew them away.

★ ★ ★

It turned out that most of the hardware necessary to build and arm a functioning space station was already in existence, carefully squirrelled away by officious quarter-master types on military and secret project bases all over the southwest. There were missiles and bombs aplenty and rockets moldering in silos across the land that were hastily jury rigged to toss equipment into orbit for assembly. It was amazing what could be accomplished by round-the-clock work when there was absolutely no alternative.

The space stations took shape in close orbit and were boosted out towards the aliens as little more than huge, tacked-together armouries with fire control computers and dedicated crews of vengeful astronaut volunteers to man them. As the jerry-built monstrosities came into contact with the approaching horde, the first hopeful reports filtered in.

Fighting in space is a dog fight. No direction is theoretically safe. Given enough speed and manoeuvrability, anybody can be outflanked. Space stations hanging in the middle of nowhere shouldn't have kept the aliens from earth, anymore than TV aerials keep birds from flying south. But we got our first hits.

Colonel Mannerling called me into the ready room when I was still young, not yet a kidnapper, and tried to explain alien behaviour.

"They're just playing with us, Jake," he said gleefully. "By God, for some reason they're just fooling around." Mannerling's voice didn't sound right to me.

"You seem happy about that, sir." I said carefully. I could smell something in the wind and I wanted, like most subordinates, to weigh the pros and cons of the news.

"You're damned right I'm happy," he howled at me, then he caught himself and lowered his voice. "Damned right. For some reason they want to make this thing a challenge. They're not manoeuvring! They're turning what should be a walkover for them into a hard-fought campaign."

"Why would they do that, sir?"

"How the hell should I know, Jake. . . they're aliens! Maybe they've got some crazy kind of macho civilization, some kind of half-assed gunfighter's code, bushido gone wild, who knows; at this point, who cares." He strode towards me, medals flashing. "You know, it's as if they're handicapping us, trying to make it interesting."

"But *they're* dying out there, too. . ." Mannerling could only shrug. I felt a chill crawl up my back as we watched the video display with its tiny, computer-generated figures dancing about

on the blue-grey background.

"It looks like a video game," I muttered. The unwitting prophet. Mannerling squinted at me, then flicked a switch. The screen changed to black with a hazy blaze at one side.

"That's a real telescopic visual from the station *Counter Punch* but without computer differentiation, it's tough to tell."

"Can we beat them then, sir, as long as they fight head on?"

"Not a chance as it stands," Mannerling said. "The men can't stand the strain of knowing that whatever it is coming at them out there, be it robot ships, four-armed samurai, or suicidal maniacs, they could easily execute an end run in behind the planet and hit us whenever they want."

"Three men have cracked already. . . I expect more. It all seems so damn cat-and-mouse. The future of the earth, a cheap game at the idiotic control of faceless aliens. It's unreal. It's humiliating!"

"Yes sir," I agreed. And then he told me.

"That brings me to my idea."

★ ★ ★

Davy sat at the console in the new *X* class destroyer *Double Dog!*, happily munching a crunchy peanut butter sandwich. He was scheduled to start his shift in ten minutes and I stood chain-smoking beside him, carefully blowing the smoke towards the ventilators so as not to disturb him.

My concern was needless. I knew nothing could disturb Davy once the console brightened up with "ready" lights.

I wanted another drink but I was duty officer for the next four hours and I had to watch the five kids — four boys and one girl, all around Davy's age — to make sure they were happy. If anything happened, like they had to go to the bathroom, I had to help them plug into the *in situ* apparatus; or if for any reason, God forbid, one of them tried to leave the consoles, somehow I had to cover for him. That idea had me in

*continued on next page*

a cold sweat. I knew how bad I was on a console. I'd be better off with strong words and a bullwhip. Luckily, it had never happened. Yet.

The previous supervisor had gone off his rocker a little ahead of projected schedule and I was off capture duty to fill in. I felt like I had aged ten years in the week I had been at the station.

Davy took his time, making sure each finger was clean. I had the urge to scream at him to get ready, to watch out, that his turn was coming up and death was right there if he made a mistake, but I held it in and felt another few years slide away. Davy smiled at me as the tiny red ships came into focus on the screen. His hands flew over the buttons, and one that had just barely begun to move into range detonated in a flame of brilliant yellow. He hadn't properly seen that one, but the new computer 'hunch' circuits, tied to his brain by a thin line running to his ear, had collaborated with him and caught it.

"Are you all right, Jake?" he asked me. I nodded. "Okay," he said, turning his full attention to the boards. "See you later."

And he went into the absolute concentration of the addict, effectively blocking everything but the moving lights before him.

★ ★ ★

There was no greater challenge in any video arcade anywhere; and he knew it. The score counter flicked over, more slowly here because of the real distances, but just as steadily as the one on his Asteroid machine back home. The best in computer graphics presented themselves while unfathomable creatures tested themselves against him for unknowable reasons. The sound effects Mannerling insisted we keep mocked the soundlessness of space, booming and rattling counterpoint to the real vibrations of the warheads launching beneath our feet.

Davy was happy. We'd promised him (if he survived) he would soon see his mother and brother again. He didn't know the odds, but he knew we needed his help and like the nice little fellow he was, he was happy to give it. Colonel Mannerling's hunch had proven right. The aliens were real to children but not so real that the idea of invasion paralysed them. After all, they had fought aliens with computers for years.

And as a true arcade addict he had a dream come true. Hours and hours of tough play, with great equipment, absolutely free.

★ ★ ★

Less than a month after we first contacted the aliens, the video craze on earth continued, now as a gigantic farm system to train our only viable fighters; first in importance as a national security industry. People protested that it contributed to juvenile delinquency while it saved their world. Subtle political pressures assured that their protests got nowhere. Kids disappeared, picked up by the hunters, lost in the missing persons statistics that are a part of city living everywhere.

The scientists worked feverishly to develop faster-than-light drives and in-system drives that would give us more than just game capability against the aliens. Stalemate wasn't good enough, for in the backs of our minds ran the question, "What if they tire of the game?"

I watched as Davy and the others played with endless childlike attention. I smoked and waited. Davy was happy, but I could feel madness nibbling at the edges of my mind. I waited for the one I wouldn't hear; the big one that would crack the station wide open to the coldness of space and end the game for me for good.

Mannerling's station got it last night. I almost wish we could run out of quarters and put an end to it.

Luckily, kids never did. TPUG



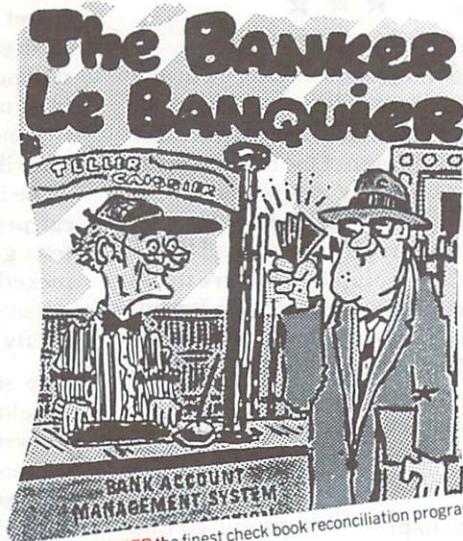
Take advantage of Canadian \$\$\$\$ prices.



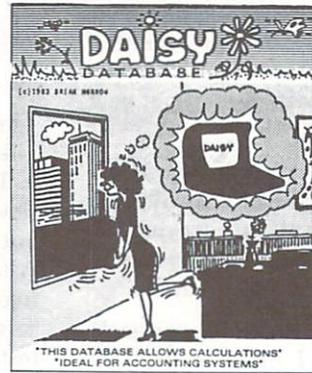
**ASTRO POSITIONS**

- display and print the position of the sun and stars (one arc second accuracy) and the position of the moon and the planets (one arc minute accuracy except for Pluto) for any date in history.
- includes *User's Guide, Introduction to Positional Astronomy and Introduction to Classical Astrology.*

\$43.95



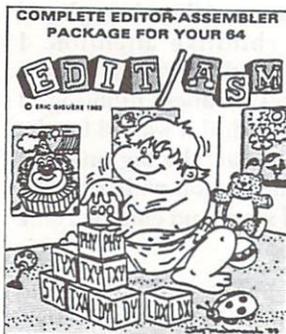
**NEW! THE BANKER** the finest check book reconciliation program on the market \$38.95



**DAISY**

- Database Information System
- one of the comprehensive DATA-BASE SYSTEMS for the 64
  - fully bilingual on screen
  - calculates; compute the contents of numeric fields - add, subtract, multiply, or divide against the defined field, using either constant value of the contents of any other field in the record.

\$39.95

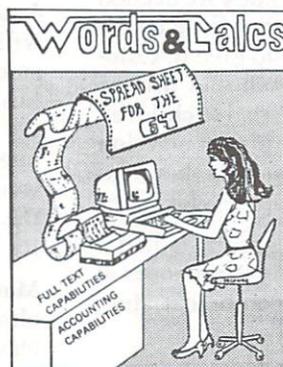


**EDIT/ASM II**

- DESIGNED TO HELP YOU CREATE AND MODIFY 6502 Assembly Language Programs on the Commodore 64 Computer.

ON SCREEN HELP SYSTEM to assist you in using all commands available... add, assemble, calculate, delete, directory, disk, edit, find, help, insert, list load, merge, new, plist, quit, and save.

\$36.95



**WORDS & CALC**

- Powerful household finance - Business system
- eliminate inconvenient files, confusing tables and tedious calculations.
  - store all your data on WORDS & CALCS spreadsheet
  - WORDS & CALCS will do your work for you in organizing, displaying, storing, printing and performing calculations

\$42.95 disk

**LOOK AT THE LANGUAGES WE HAVE**

- YES! We have PASCAL \$52.95
- ULTRABASIC with turtle graphics and sound \$42.95
- TINY BASIC COMPILER \$22.95
- TINY FORTH Fig Forth implementation \$22.95

**Yes! You CAN get quality software at reasonable prices - order today**

- money order
- cheque
- visa or master charge

Dealer Inquiries invited.

Write for our FREE Catalogue.



Suite 210, 5950 Côte des Neiges,  
Montreal, Quebec H3S 1Z6

The SMART 64 Terminal designed with Quality-Bred features, Affordable Pricing... And Service. **\$42.95**  
 So why not travel the communications highways the SMART way!  
 Accessories included: Selective Storage of Received Data. Sends/Receives Programs and Files of ANY SIZE.  
 Disk Wedge Built-In! Review, Rearrange, Print Files.  
 Alarm Timer. Screen Print.  
 Formatted Lines.

Why not cash in on the good programs that you have written? We are actively seeking SOFTWARE AUTHORS. We are paying above average royalties for all programs that we accept. Submit your copy on tape or disc, for VIC-20 or C-64 with detailed operating instructions. If you wish program returned, please enclose sufficient return postage.

# MICROCOMPUTING PERIODICALS

John Easton  
Toronto, Ont

*Microcomputing Periodicals*  
*An Annotated Bibliography.*  
9th Edition, October, 1983  
by George Shirinian  
ISBN 0-9691556-0-3

How does one keep up with the avalanche of current publications in the field of micro-computers? Well, that depends on what you're interested in 'keeping up with'! Textbooks, Hardcover, Magazines, Newsletters — and on it goes. Hardcover books and textbooks seem well supported by the publishing industry and their associated librarian-oriented networks. Magazines to a lesser degree are covered in a similar way — that is, if you're big enough, or brash enough, to be considered worthy of consideration in the 'major' or 'top ten' or 'business' areas of periodical proliferation.

And the rest of us — those just interested in what's happening, what's being published for which computer, or whatever happened to *Recreational Computing* — apart from subscribing to a truckload of newspapers, newsletters and magazines per month; where do we look? Well now, I think I've just stumbled over the best directory of microcomputer-related magazines and newsletters since our Whole Earth Catalogue finally gave up its dog-eared life as the mainstay of our outhouse library!

George Shirinian, a Toronto area librarian, while working on his degree and researching his favourite field,

quickly discovered the above-mentioned dilemma. Now the rest of us had long given up on the problem, but not George — besides it was a term paper! George produced his first edition (photocopied on demand for fellow librarians in dot-matrix print) of this Annotated Bibliography in June of 1982.

Since the first edition, George has constantly researched and revised his references, and indeed, today is still adding approximately one new publication PER DAY to this bibliography.

The current edition (#9) is a type-set, small-volume printing run (125), bibliographica of over 670 currently active publications. George prefers these small volume runs to ensure current accuracy and timeliness.

Periodicals are concisely described as follows:

Title

Address for ordering

Frequency (W=weekly M=monthly B=bi-monthly Q=quarterly)

Year of first publication.

Cost (annual and in the currency of the country of origin, unless otherwise stated).

Brief notes to provide some idea of the periodical's contents, purpose, scope and audience.

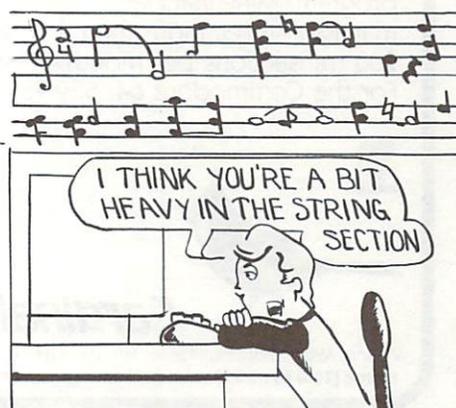
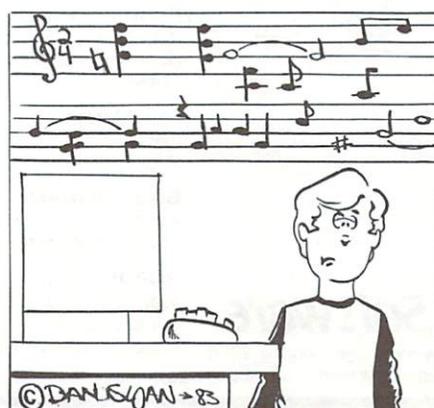
This bibliography is divided into three sections. The first details publications which provide subject indexing to the various periodicals. The second, and

major, section provides a list of periodicals related to the field of microcomputing that are currently in print. The third section gives information on those periodicals that have ceased publication or changed their name, and should prove not only interesting for students of bibliography, but also useful to enthusiasts in tracking down a particular publication or in avoiding subscribing to one that is defunct.

Two cross-referencing indexes are also included with this bibliography. The first is a selective index by general subject content (did you know there are 56 current publications relating to Commodore products?). The second is a geographical index (generally) by country of origin for countries other than the USA.

And I suppose you all wonder what this opus costs? I knew someone would ask. First, the bad news — the 9th Edition has just sold out. The good news is that George plans a new publication run in April, containing over 800 listings, though he regrets that it might now cost something like \$20.00. My goodness, with the cost of even your average 'Introduction to the Basics of Basic' close to that figure nowadays, 'Microcomputing Periodicals: An Annotated Bibliography. 10th Edition' might just be the best buy of any research budget.

Let's see, the TPUG Conference is late May; by then perhaps we can all pick up our own autographed copies from George — I see he's listed as one of our resource speakers in the Conference Guide! TPUG



## For Recreation In Education . . .

Games designed by teachers and  
classroom tested

### VIC 20

**MULTIPLY** - ranges within 2 x 2 to 9 x 9.

**ADDITION** - Uses same range and format as  
MULTIPLY.

**TIC-TAC-FRAC** - game to reduce fractions.

**STATES** - drills youngsters through graphic display of  
states.

**RULER** - teaches use of ruler in fractions of inches.

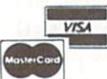
**\$14.95** each on cassette. **\$39.95** all five on single disk.

### COMMODORE 64™

**MULTIPLY** - ranges from 2 x 2 to multidigit numbers.

Disc only **\$39.95**

MasterCard and Visa accepted; give card  
number and expiration date. Schools may  
send purchase orders.



™TRADEMARK OF COMMODORE ELECTRONICS LTD



© 1983

## ELECTRONIC SCHOOLHOUSE

THE ABNEL COMPANY

P.O. Box 397, Grand Junction, CO 81502

303/245-3997

FOR  
ORDERS In Colorado call **1-800-874-3426**  
ONLY: U.S. and Can. call **1-800-874-5280**

## COMMODORE USERS

Join the largest, active Commodore users group.  
Benefit from:

- Access to hundreds of public domain  
programs on tape and disk for your  
**Commodore 64, VIC 20 and PET/CBM.**
- Informative monthly club magazine

Send \$1.00 for Program Information Catalogue.  
(Free with membership).

Membership	Canada	—	\$20 Can.
Fees for	U.S.A.	—	\$20 U.S.
12 Months	Overseas	—	\$30 U.S.

## TPUG Inc.

DEPARTMENT "A"

1912A Avenue Road, Suite 1  
Toronto, Ontario, Canada M5M 4A1

\* LET US KNOW WHICH MACHINE YOU USE \*

Keep detailed  
records of all tax  
deductions, bank  
payments, monthly  
charges, individual  
item expenses, and  
check transactions with

## Home Finance Manager

A user-friendly budget  
program. Mini-financial  
manager stores more than  
200 transactions per month.  
For the Commodore 64. \$39.95



**Cardinal Software™**

Virginia Micro Systems, 13646 Jeff Davis Hwy., Woodbridge, Virginia 22191  
Phone (703) 491-6502 Hours: 10 a.m.-4 p.m. Mon-Sat Ask for our free catalog

### FOR THE COMMODORE 64:

**The Banner Machine™** For the **Commodore 64** (3 extra fonts available). • For the **VIC-20** with 24K memory (2 extra fonts available). • Use on any Gemini or Epson MX with Graftrax or the FX and RX printers. Also Commodore 1525E and Banana with the C-64. • Menu-driven program operates like a word processor. • Makes signs up to 13" tall by any length. • Makes borders of widths up to 3/4". • 8 sizes of letters from 3/4" to 8" high. • Proportional spacing; Automatic centering; Right and left justifying. • \$49.95 Tape or Disk (Specify computer equipment)

**File Organizer** Creates Data Base storage system. For mailing lists, club rosters, check books, etc. \$29.95

**CTRL-64** Permits listing of C-64 programs on non-Commodore printers. Lists control symbols in readable form. Tape or disk \$24.95

**Microbroker** Exciting, realistic and educational stock market simulation. \$34.95 Tape or Disk

**Preschool Educational Programs** ABC Fun; 123 Fun; and Ginger the Cat with: Addition and Subtraction, Number Hunt, and Letter Hunt. All 5 programs have bright color, music, and action. **Each** \$14.95

**Formulator** A scientific calculator for tasks which require repetitive arithmetic computations. Save formulas and numeric expressions. \$39.95

**Grade Organizer** Teachers—store grades for 6 classes, up to 40 students each, 680 grades per student. Print interim and final reports, class rosters, and more! Disk \$39.95

**MUPOS** Create a file of up to 9 basic programs from keyboard/tape/disk and run each program selectively. Programs can be appended together into one. Renumber BASIC lines. Note pad, and more. Tape or disk \$22.95

Commodore 64 and VIC-20 are registered trademarks of Commodore Electronics Ltd.

---

---

# WORD PROCESSING

## - It's Not Writing, It's Magic!

---

Ian Wright  
Toronto, Ont.

To many children (and adults too!) writing is a drag! Whether the subject is a sales report, a geography assignment, or a piece of creative writing for the English teacher, the process of writing anything is sheer drudgery.

The answer may lie in the magic of word processing. The word processor will transform the physical process involved in writing, and this in turn will alter how you perceive the task of writing.

Word processors used to be thought of as large desk-sized modules with disk drives, printers, keyboards, and screens, all of which cost thousands of dollars and were only found in major offices. My word processor is on a flat disk 5¼ inches in diameter and it cost under \$100.00. Admittedly I need the computer, the drive, and the printer (hardware)—but when I'm not using this hardware for writing, my son can play games, and my daughter can compose music on the same machinery.

Words that are typed into a computer exist only as on/off electronic signals, and even after they are stored on disk or tape they are still only electromagnetic patterns. Meanwhile, on the word processor screen, words can be changed, modified, replaced, revamped almost infinitely. Not just words, but sentences, paragraphs and even entire pages can be moved around at will. Yes I know you can do this with paper and scissors—but I defy you to produce a finished copy without re-writing ALL the material. Good word processors like PaperClip, or WordPro 4+ will show you how the finished pages will look before you print the material and this means that not only do you correct the written material, but also its format. The word processor allows you to manipulate your written work until it is your best—without re-writing the parts you consider to be acceptable.

A small change in spelling can be made without re-writing the whole piece. If the word 'receive' is spelled wrongly 15 times, let the machine do a 'find and replace' function and it will correct the errors. Some word processors even come with spelling checkers such as The Script 64, SpellPro 64, or Spellmaster that can help you to build your own dictionary of consistent spelling mistakes. This goes on as the spelling program locates your errors. Both of these work simultaneously while checking through your written material.

We have only scratched the surface of the word processor's advantages to anyone who deals extensively in written material. The development of correct format for pagination, columns and charts, tabs and margins, along with the old bugbear of footnotes can all be taught much more easily with a word processor.

Some people seem to think that you must be able to type before a word processor is of use. Not so. I am using two fingers to produce this piece and the machine doesn't care how long I take to complete it. Also I can correct any typos, either as I go or later on, because the medium is not permanent and the changes will wait until I am ready to make them.

Some may worry that our children will become dependent on the technology of the word processor. This is nonsense—how many adults today can make their own paper, pens or ink? The modern roller-pen is just as "high-tech" as a word processor.

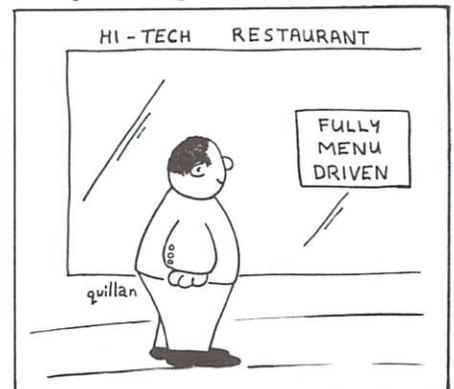
Let us examine one area of wordprocessing that goes beyond the "correctable typewriter" concept. I will use examples from the education field, but these may be equally applicable to staff training in an office, or to the concerned parent working with an exceptional child.

Once a student has completed an assignment to the best of his/her ability, the

word processor opens up new avenues of learning. Each student can be introduced to the advanced skills of editing without adding further drudgery. The original draft can be double or triple spaced which leaves lots of room for comments such as "explain this relationship", "provide a specific example", "relate this to the material below". These comments have always been written on the student's work to help explain their mark, and we teachers have assumed that these suggestions will be followed in the next assignment. Why not hand the work back to be re-written and corrected for a supplementary grade? With the word processor, editing can be fun. As words appear, the text opens up to accommodate them. Space can be inserted between the draft copy lines to be filled with new information.

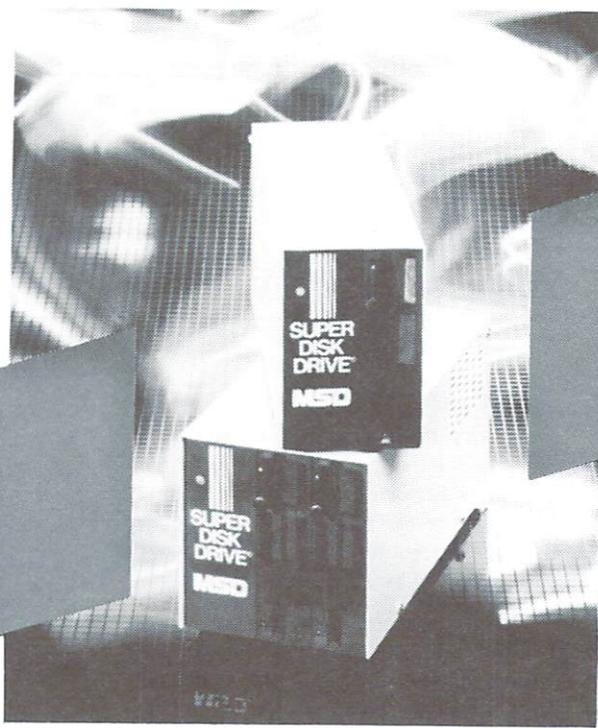
Teachers who have worked with students on wordprocessors are excited about the new avenues of instruction that are possible now. Parents who worry about their children's communication skills should consider a word-processing system as a family utility. Bosses whose office staff are less adept than they would like, should consider a wordprocessing system to reduce the drudgery of form letters and bulk mailing.

Drafting and editing—the word processor illuminates the concept that writing is an on-going process of polishing and perfecting. *TPUG*



IT STARTED IN '81 when our president,  
the designer of the VIC-20, left  
Commodore to open his own company.  
His goal was to build an American  
tradition ... THE BETTER WAY.

**MSD SYSTEMS, INC. ...  
WE BUILD IT BETTER!**



Our **RS-232 Serial Interfaces** allow you to connect printers, modems, plotters, and other input/output devices to your 64 or VIC-20.

Commodore produced good computers that were economical for families. Our president wanted to provide Commodore owners with better peripheral products.



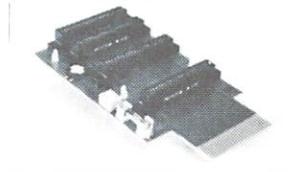
A parallel interface allows direct access between a centronics printer and your software program, saving you loading and waiting time. Our **CPI** is compatible with most software written for the 64 and VIC-20.

In less than two years, MSD was shipping interfaces that expanded the Commodore 64, VIC-20, and PET computers into business and developmental applications ... THE SERIOUS WORLD OF COMPUTING.



For professional-quality video and audio output, our **Monitor Link Cables** can connect your 64 or VIC-20 to a high-resolution black/white or color monitor, or a CRT terminal, and to a stereo system.

Next, determined to BUILD IT BETTER, MSD developed SUPER DISK I and II ... exceptionally fast and durable disk drives that NEVER OVERHEAT.



The **CEX-4** Expandoport gives you four additional ports for interfaces and peripherals.

MSD's dual drive formats, copies, and verifies in less than two minutes ... compared to 30 or 40 minutes with TWO Commodore 1541s. This unparalleled speed has made SUPER DISK II the hottest product introduced for the Commodore line of computers!



Save time and hassle with the greater speed of an **IEEE Interface**. The unit is 'transparent' to your computer's expansion port, allowing hookup to any peripheral without interference. With this interface, your 64 or VIC-20 can gain CBM/PET-type control over the IEEE-488 bus.

Add the six month warranty, and you can see why our dealers and their customers believe in us. MSD SYSTEMS, INC. ... Call us today for your nearest local dealer.

**Dealer and distributor inquiries invited.**

**MSD** SYSTEMS, INC.

10031 Monroe Dr. • Suite 206 • Dallas, Texas 75229  
214-357-4434 • Outside Texas 800-527-5285

## BSC-BOOKKEEPER(C)

DESIGNED EXCLUSIVELY FOR THE  
COMMODORE 64

COMPLETE RECORD KEEPING SYSTEM  
DEVELOPED BY A C P A



1. ALL CHECK BOOK RECORDS (INSTANT BANK BALANCE)
2. RECORDS ALWAYS IN BALANCE
3. CASH JOURNAL, NON-CASH ENTRIES, ACCOUNT BALANCES AND DETAIL LISTINGS FOR ANY REQUIRED TIME PERIOD
4. AUTOMATIC YR-END CLOSING

**MENU CONTROLLED**  
NO ACCOUNTING TRAINING NEEDED

ALL ON ONE DISK - \$ 49  
(U.S. FUNDS)  
CHECK OR MONEY ORDER TO-

(C) BUSINESS  
SYSTEMS & CONVERSIONS  
P.O. BOX 50505  
INDIANAPOLIS, IN. 46230

## compu-simple simon

COMPARE our LOW PRICES to  
others advertised in this issue!

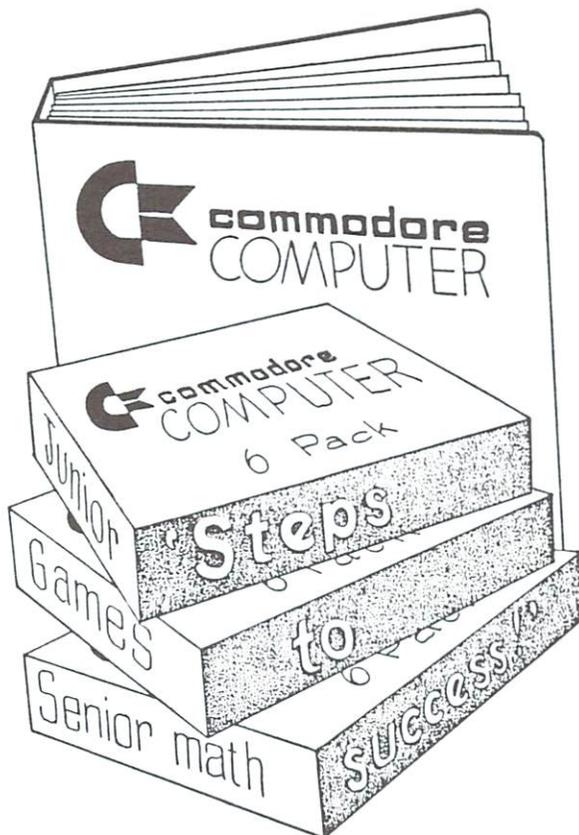
FLIGHT SIMULATOR II (SubLOGIC)	\$51.99
BLUE MAX (Synapse)	35.99
NECROMANCER (Synapse)	35.99
GOTHMAG'S LAIR (PPS)	41.99
ZORK, I, II, & III (Infocom)	99.99
PAPER CLIP (Batteries)	94.99
CHESS 7.0 (Odesta)	74.99
ARCHON (Electronic Arts)	48.99
CASTLE WOLFENSTEIN (Muse)	29.99
BEACH HEAD (Access)	33.99
LODE RUNNER Broderbund)	39.99
SAMMY LIGHTFOOT (Sierra)	31.99
KMMM PASCAL	149.99
WICO Power Grip Joystick	34.99

Bank Street Writer, Paper Clip, Word Pro 3 Plus and other word processing packages all at low prices. Write for details. We carry a complete line of software and peripherals for business and home use. Catalogues are 50¢ or free with any order.

To order send certified cheque or money order along with \$3.25 to cover postage and handling (\$8.25 for courier service) to Compu-Simple Simon, P.O. Box 583, Snowdon, Montréal, Québec H3X 3T7. Québec residents add 9% sales tax.

DEALER INQUIRIES WELCOME

## "Educational Software For Today's Child!"



Approved and evaluated by educators

# AURORA

SOFTWARE INC.

P.O. Box 1394  
Haileybury, Ontario P0J 1K0  
(705) 672-5517

Exclusive Distributor Of:

- \*The Commodore Educational Software Package
- \*The Ontario Software Educational Project
- \*Aurora's Own "Six Pack"

A Canadian Company Distributing  
Canadian Produced Software

---

---

# C-64 MEETING - March 1984

---

Ian Wright  
Toronto, Ont.

Almost a third of the people attending the March C-64 meeting were newcomers to computing and to TPUG and I think that they left after three hours with a great deal of useful information — I know I certainly did.

Louise Redgers, the chairperson, introduced Jim Butterfield who first showed us "UNICOPY". This program is a single drive version of Jim's Copy-All program which has been enshrined in "The Best of TPUG'S Utilities" since B.C. (before chickens). Jim explained that there are many programs that are available on disk that cannot be loaded and saved directly to disk or tape because they are not BASIC programs but are files or are written in machine language. UNICOPY is designed to allow 'selective' copying of programs and files (except relative and user files) from one disk to another without doing a backup.

Backup or duplicate produces a new disk that is an exact copy of the original and this means that it has the same ID. Two disks that have the same ID can cause problems if the backup is used to read/write along with the original. A backup disk has exactly the same programs (all of them), and it can even have the same errors as the original disk. Backup is not useful if you want to copy only the latest and best (i.e. working!) version of your sort routine for your friends.

UNICOPY will work to tape as well as to disk which is a boon to those who need to produce tape versions of programs. Now you can take a disk of programs and quickly separate them on to ten minute cassettes for storage. You can select specific programs by matching characters at the "pattern?" prompt — for example: STA\* will load "STAR WARS", "STAR FIGHTER", AND "STADIUM" but not "STORAGE". If you hold down the "Y"-key as the programs are displayed, each of those programs displayed will be copied, while the "N"-key will let you skip over unwanted programs. If you have made your selections, then pressing "N" and "RETURN" will flip quickly

through to the copying and skip the remaining programs on the source disk.

Jim's next trick was to turn a C-64 into an SX-64 by loading into RAM all the ROM logic from the portable machine. About the only major visible differences were the opening screen and the fact that pressing RUN/STOP would load and run a disk since the SX has no tape drives. Because of the pattern of overlaying RAM in the C-64, it can easily be re-configured so that you can re-write BASIC, and all sorts of interesting things become possible as we were to find out later in the evening.

A review of the memory map of the C-64 was necessary in order to show how this re-configuration was possible. 'Way back in 1982 Jim produced memory addresses and a memory map diagram for the C-64, and at a meeting later that year, he illustrated this map via a neat graphics program which has been resurrected and is available on disk (C)T8.

Using this re-design capability of the C-64, Jim then copied the BASIC ROM into RAM. This ROM is the BASIC language interpreter and if it is not present the machine doesn't understand words like "RUN" and "LOAD" ... in fact the C-64 goes away to contemplate its buffer!

```
FOR J = 40960 TO 49151:POKE J, PEEK(J):NEXT J
```

This line will move the ROM into the underlying RAM and then we must make the machine think that the ROM has been removed so that it will look through to the BASIC in the RAM underneath.

```
POKE 1,54 (location 1 holds the chip I/O)
```

We can now modify basic. For example, the keyword "READY" is at 41848 in a table of keywords. We can alter these words by pokes — as long as the total number of characters doesn't change.

```
POKE 41848,66:POKE 41849,65:POKE 41850,78:POKE 41851,65:POKE 41852,78:POKE 41853,65
```

When we press RETURN, the machine says "BANANA"! We have poked the PÉTSCII code for each letter of banana

in place of the keyword ready.

Try these:

```
POKE 41211,85 (POKE = PUKE)  
POKE 41230,85 (LIST = LUST)
```

Jim explained that these changes will be in effect until the machine is re-set so you cannot LIST a program — you can only LUST it.

The club bulletins and messages included reminders of the May conference and of the 10-line program contest. Just prior to break the Bradley brothers showed some of the programs from the monthly disk (C)T8 and from the new "More monthly" disks. According to the librarians there are too many programs to fit on the regular monthly disk, thus these additional disks are necessary.

After break Louise introduced Keith Faulkner who showed us the many features of the "Koala Paint" program from Audio Light Inc. and Koala Technologies Co. This is one of the most exciting programs for the C-64 since it allows you to control the machine as a tool using a stylus on a touch-sensitive pad. No longer do you have to spend years learning art techniques like drawing accurate circles — the machine will do this for you. High resolution (individual pixel) drawing is easy, even for children. The "Oops" and "Erase" function let you draw exactly what you want and then you can save it to disk for later retrieval or use in other programs. If you want to check details there is a "zoom" feature that allows you to illuminate any pair of pixels in colour. There are seventeen commands, eight types of brushes, sixteen solid colours, sixteen patterned colours and the disk also contains ten pre-drawn scenes and characters that you can copy on to one of two work spaces or palettes. My nine-year old son and my 70+ year old father have both used this program and I recommend it highly because, like word processors and spreadsheets, the Koala program allows the user to manipulate information quickly and easily.

The evening ended with an introduction to BASIC programming by Brian Hinz. I will not describe this to you — you had to be there! TPUG

---

# COMMUNICATIONS MEETING

## - April 4, 1984

---

Ian Wright  
Toronto, Ont.

The "Story-Time Room" at the York Central Library was almost filled during the April Communications meeting. The co-chairpersons had invited Bill Bennett from the National Research Council to speak to us on communications with the disabled. We were presented with an overview of the devices and techniques that might help to electronically assist in communicating with those less fortunate than ourselves. Bill explained that the "disabled" is a term that can range from someone with a learning-disorder or someone in a wheelchair, all the way to those who have blinking or head movements as their only method of communicating yes/no responses.

Some disabled have brain defects caused by disease or genetics that make reading/writing very difficult — one example is dyslexia. There are those who are spastic who have great muscle strength — but no control over it. There are those who have control but no strength — such as arthritics. The ideal would be to have each article of communications technology custom-built — but that is not economically feasible. The result is that each device must be designed to cover a wide range of anticipated responses so that it can be useful to many.

Bill explained that there is still a reticence among the therapists and their patients to accept the micro-computer. The field is so new that there is an almost unlimited need for skilled people who can design, prototype, test and cost-out a new device.

The first operating barrier to many disabled is the need to turn on the machine! The manipulative skills required to locate and flick on switches for the keyboard, drive(s), monitor, to plug in the joystick, etc. . . all these are beyond their personal skills and the disabled become dependent on an assistant. Bill showed us a 9" square micro switch which could be turned

on by pushing with any muscle. This switch could also be used as a selection device for many of the other devices described below.

1. A giant keyboard complete with all ASCII keys about 3' x 2'. Each key has a low-actuation force micro switch and built-in debouncing so that a head or mouth-piece could be used instead of body pointers. The keyboard was designed with large letters/numbers and varied colours for control characters so that it is visually easy to use.

2. An oversize game paddle using an arcuate lever rather than a round knob. This device would fit into any Atari/CBM-type of joystick port and is read the same way as any other paddle device. The cost — about \$120.00!

3. The oversize push-button micro switch described above which also has a low actuation force and a loud "click".

4. A large joystick with four micro switches that allow actuation with very slight muscle movement. The handle is of flexible rubber to account for exuberance!

5. A keyboard cover that separates the various parts of the keyboard from each other for easier use by those with muscle dysfunctions. This useful device is made by a shelter-group of disabled persons as a non-profit industry.

6. A screen keyboard originally designed about three years ago using the low-cost VIC 20 as a keyboard device for any other micro. The VIC 20 produces a screen keyboard and six menu items such as 'scan' or 'transmit', all of which are selected by joystick as the cursor alternately lights up one letter/command after another. The VIC 20 is customized to have extra memory sufficient for 14 "pages" of battery backed-up RAM.

7. A voice box using Votrax speech synthesis for those who cannot communicate verbally which has two large switch surfaces — one for 'yes' and the other for 'no'. Bill described his experience with a little girl who had never

spoken. She soon learned how to use the "voice-box" and was able to say "No-no-no-no!" to affirm the negative! There are starting to be some improvements in this area since voices can be altered so that pretty young ladies don't sound like C3PO, but this is also a new field and the yes/no box costs \$350.00.

In summary, Bill explained that one area of concern is the interfacing of the device to a variety of machines. Most of the initial research and development has been done with Apples, there is a need for new equipment and devices that can be easily adapted to the Commodore line. The costs of these devices are extremely high. At present, the government pays 75% of the price of any prescribed device for children. That means that the device must be on the approved list (e.g. printers, votrax, personal computers) prescribed by a therapy specialist, and the patient under the age of 18. If you are over 18 the expense is yours.

This kind of communications work with the blind and hearing-disabled has only just started. For a young person who is thinking of a computer-related job, the area of communication with the disabled is one that deserves serious consideration.

Thank you, Bill, for a most illuminating presentation. TPUG

**Important message  
to all bbs users.**

**The TPUG BBS has a new  
telephone number and  
new hours.**

**The new number is. . .**

**(416) 429-6044.**

**The new operating hours are. . .**

**24 hours per day.**

**7 days per week.**

**The new password is. . .**

**shevlin**



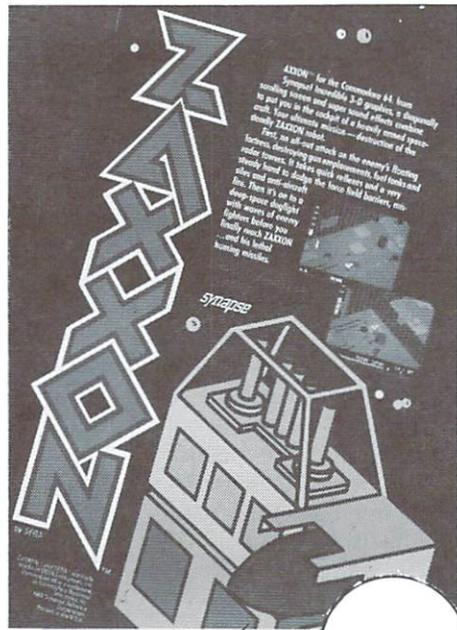
for the  
Commodore 64<sup>+</sup>  
Computer

# Flight Simulator II

Put yourself in the pilot's seat of a Piper 181 Cherokee Archer and head for the skies! High-speed color 3D graphics provide a spectacular panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation gets you airborne quickly even if you've never flown before. And when you think you're ready, you can test your flying skills with the "World War I Ace" aerial battle game. Flight Simulator II features include ■ over 80 airports in four scenery areas: New York, Chicago, Seattle, and Los Angeles, with additional scenery areas available separately ■ day, dusk, and night flying modes ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ full flight instrumentation ■ VOR, ILS, ADF, and DME avionics ■ navigation facilities and course plotting ■ flight handbook and information manual. Joystick optional.

**\$69.95**

Commodore 64 is a trademark of Commodore Electronics, Ltd.



ADDON<sup>™</sup> for the Commodore 64 from Synapse<sup>™</sup> makes an incredible 3-D picture, a display to put you in the cockpit of a heavily armed space ship. You choose your mission— destruction of the base, an all-out attack on the enemy's flying units, or a rescue mission. It's a fast-paced, exciting, and challenging game. You'll find it's not a simple matter to destroy the base. You'll need a very deep understanding of the enemy's tactics. You'll need a very deep understanding of the enemy's tactics. You'll need a very deep understanding of the enemy's tactics.

**\$49.95**

## VIC-20 SOFTWARE

Miner 2049er (K)	\$44.95
Lode Runner (K)	<b>\$49.95</b>
IFR (Flight Simulator) (K)	\$49.95
MD001 Snakman	\$19.95
CS013 Astroblitz (K)	\$49.95
CS016 Apple Panic (K)	\$49.95
CS017 Choplifter (K)	\$49.95
CS018 Black Hole (K)	\$49.95
ORM004 Crossfire	\$29.95
HESC307 Shamus (K)	\$49.95
Introduction to Basic I	\$49.95
Introduction to Basic II	\$49.95
Frantic	\$19.95
Wacky Waiters	\$19.95

\* Requires 3K exp. (K) Cartridge

## COMMODORE 64 SOFTWARE

Triad (Disk & Tape)	\$19.95
Quazar (Disk & Tape)	\$19.95
Music Machine (cart)	\$32.95
Music Composer (cart)	\$32.95
Sysres 64	\$79.95
Superbase 64 (Database)	\$129.95
Power 64	\$69.95
Pal 64	\$69.95
Beachead (disk)	\$39.95
Neutral Zone (disk)	\$39.95
Blue Max (disk)	\$42.95
Grand Master Chess (disk & tape)	\$39.95
Fort Apocalypse (disk)	\$42.95
Survivor (disk)	\$42.95
Jumpman (disk)	\$49.95
Jumpman Junior (cart.)	\$54.95
Shamus (disk)	\$42.95
Lode Runner (disk)	\$49.95
Personality Analyzer (disk)	\$29.95

## BOOKS

Anatomy of the Commodore 64	\$24.95
Commodore 64 Exposed	\$19.95
Sprite Graphics for C-64	<b>\$20.95</b>
Machine Language for Beginners	\$18.95
64 Sound & Graphics	\$18.95
PET Basic	\$19.95
VIC 20 Prog. Reference Guide	\$29.95
Elementary Commodore 64	\$18.95
C64 Prog. Reference Guide	\$27.95
VIC Revealed	\$18.95
VIC Graphics	\$18.95
VIC Games	\$18.95
Compute's first book of PET/CBM	\$19.95
Compute's first book of Commodore 64	\$18.95

## COMPUTER SUPPLIES

C10 Cassette Tapes	\$1.00 ea.
C20 Cassette Tapes	\$1.25 ea.
Cassette Boxes	.25 ea.
Verbatim Disks M0525-01	\$44.00/10
Memorex Disks 013481	\$33.90/10
Nashua Disks SS/DD	\$29.90/10
K10 Disk Storage Box	\$5.95
Flip Sort Storage Box	\$39.95

## PET/CBM SOFTWARE

Sargon II Chess (Tape)	\$42.95
POWER	\$119.95
8040—80 col 4.0 sys	
4040—40 col 4.0 sys	

## JOYSTICKS

Kraft Joystick	\$27.95
WICO Power Grip	\$39.95
WICO Track Ball	\$69.95
WICO Red Ball	\$44.95
Commodore Joystick	<b>\$9.95</b>

\*All Joysticks will fit VIC 20 or Commodore 64 computers

## MISCELLANEOUS

### RAMAX

### VIC-20 Memory Expansion Board

To equal the total memory of RAMAX<sup>™</sup> you would have to buy a 16k Memory Expansion, PLUS an 8k Expansion, PLUS 3k Expansion, THEN you would need a "mother board". With RAMAX<sup>™</sup> you buy just ONE piece... at ABOUT HALF THE PRICE!

\*Adds up to a full 27k bytes of additional RAM to the standard VIC-20's internal RAM of 5k.

**NOW ONLY**

**\$175.00**

## ORDERING INFORMATION

Cheque, Money Order, VISA, Master Card accepted. Ontario residents add 7% sales tax. Add 5% for shipping (minimum charge \$1.00).

NOTE: All Prices in Canadian Funds.



# ELECTRONICS 2001 LTD.

5529 Yonge Street, Willowdale, Ontario M2N 5S3  
Tel: (416) 223-8400

# New Additions To The TPUG Library

(Access to library available to TPUG members only)

NOTE: Each List-Me File includes the following notation:  
 "Copyright ©1983 by Toronto PET Users Group Inc."  
 "OK to copy but is not to be sold or published for profit"

The **LIBRARY** to which a disk/tape belongs is indicated by the library code in brackets. This code appears as the first character in the three-character identification code:

(C) Commodore 64      (P) PET/CBM      (V) VIC 20      (S) SuperPET

If you wish to order disks or tapes from our library, please make sure that the programs you order are compatible with the computer you have.

## (V)T8      april 1984

LIST-ME(V)T8.L      LIST this file for description of programs on (V)T8.

QUEENS PLATE.V      A horse-race game where you bet and watch the race.

VIC AID 10.V      Has auto line numbering, colour adjustments, internal information and hexadecimal conversion. Good utility.

VICQUEST BOOT.V      LOAD and RUN this program, then LOAD the program "VICQUEST MAIN.V"

VICQUEST MAIN.V      A keyboard action game with five different survival phases to test your skill. Custom characters.

LAWNMOWER.V      Use keys to cut the grass as fast as you can!

ICARUS BOOT.V      LOAD and RUN this program, then LOAD "ICARUS MAIN.V"

ICARUS MAIN.V      Help Icarus by getting his feathers back.

TOWERS O HANOL.V      Use your brains to get the disks from one side to the other. They must be in order from smallest to largest.

PROBABILIT.      Simulates a rack where marbles fall randomly. It shows a graph and keeps track of everything.

QUIZ DOC.V      This is the documentation for Quiz Maker and all of the quiz programs.

TURNIP BOOT.V      First LOAD and RUN this program and meet Cyril, then LOAD and run "TURNIP MAIN.V"

TURNIP MAIN.V      Guide Cyril the Caterpillar to eat bananas & cherries, but watch out for the vege-

JUDICIAL BRCH.V

SENATE QUIZ.V  
HOUSE.V

ARTICLE 4.V  
AMMENDS 11-17.V  
BINARY COMPS.V  
POLYATOMIC ION.V

FR QUIZ MAKER.V

SP QUIZ MAKER.V

SP SAMPLE QUIZ.V

MAILIST INST.1.V

MAILIST INST.2.V

MAILIST INST.3.V  
MAILIST PROG.V

- +8K REQ'D-.D

TAX FORM 83 8K.V

} These seven programs are educational quiz programs. They ask multiple choice questions on the topic. Scores are given and incorrect questions are retried later. This basic program can be adapted to any subject area by changing the data statements. The programs are easily changeable to suit your needs. Each is a completely separate program.

} This is the body for a French quiz. You supply the questions and answers.

} This is the body for a Spanish quiz. As above.

} This is the above program with a set of language translating questions. Gives a choice of Spanish-English, English-Spanish or mixed.

} All of these programs are the instructions for the "MAILIST PROG.V". All require an 8K expander. Simply LOAD and RUN each program in MAILIST INST.4.V order.

} A powerful mail list program. Full documentation can be found in the programs above.

} Do not LOAD. This is not a program. This is to remind you that the mail list and tax programs require an additional 8K of memory.

} This program will help prepare your Ontario Tax return. 8K memory expander required.

## (P)T7      march 1984

LIST-ME(P)T7.L      LIST this file for description of programs on (P)T7.

DISKSPEEDTESTB.Z      Utility-revised version-check your disk speed-runs on ALL Commodore drives.

FIND TYPE.Z      Utility-a handy little program that checks which machine the program is running on.

SUPER STORE.8      Business-updated multi-rec II program

FLYING CHARGES.8      uses Star Printer Business Data Filing system.

UNICOPY INST.P      Business-calculate the cost per unit or time for flying.

UNICOPYV4.P      Utility-instructions for "UNICOPYV4.P".

SAVINGS ACCNT.8      Utility-copy single disk to disk or to tape-Butterfield.

LOAN PAYMENT.8      Business-compare savings accounts.

THE EVALUATOR.P      Business-loan calculations and payments.

Education-evaluate student marks, class

FILE CREATE.P	marks, averages. Education-creates a file for "THE EVALUATOR.P".	DATA ANALYSIS.P	Education-chemistry-analyze student data and display results.
DISP/AVG/LIST.P	Education-programs called by "THE EVALUATOR.P".	CONSUMER LOAN.8	Business-calculate the true interest rate on loans.
NOMENCLATURE.P	Education-chemistry-exercise in naming chemical compounds.	AUTO LOAN.8	Business-calculate the true costs of various auto loans.
ORGANIC NAMES.P	Education-chemistry-exercise in naming organic compounds.	RETIREMENT.8	Business-calculate the present payments to get a defined monthly benefit in the future (annuity).
RUTHERFORD.P	Education-chemistry-alpha particle scattering experiment.	SPHERES.8	Math-calculate the numbers relating to spheres.
DENSITY CAL.P	Education-chemistry-density of solution exercises.	PAYLOAD.8	Business-calculate the flying time and payload capacity of your airplane.
SPD ORBITALS.P	Education-chemistry-electron shell energy level exercises.	BAR GRAPHIC.8	Business-run bar graphs on the 8032 and Star Printers.
SCALE READING.P	Education-chemistry-practice reading scales.	ROCK TRIVIA.8	Game-8032-trivia questions on Rock 1966 to 1983.

## (P)T8 april 1984

(1 disk/tape)

LIST-ME(P)T8.L	Documentation for disk (P)T8.	CURVE FIT.P	Business-fit data to one of log, exp, lin, or power.
STAR-FORT.P	Game-An invaders type game.	PET PLAN.P	Business-a simple electronic spreadsheet.
BASIC DISKBOOT.P	Utility-a handy program to LOAD any program from disk.	RPN CALCULATOR.P	Utility-turn your PET into an RPN calculator.
TAX83 VISICALC.D	Business-A visicalc data-file for 1983 income tax.	ED-DEMO.Z	Utility-documentation-You must load "ED-UTILITY 20.P" or "ED-UTILITY 41.P" first. This then documents the extra features available to a BASIC programmer.
INTERMOD STUDY.Z	Science-radio intermodulation interference calculation program for radio engineers & technicians. Computes the 3rd, 5th, 7th, 9th order two frequency intermod products and compares them to any number of receiver window frequency limits.	ED-INS/DEL DEMO.Z	Utility-demonstration-You must LOAD "ED-UTILITY 20.P" or "ED-UTILITY 41.P" first. This demo program contains 6 routines that manipulate arrays. 3 of them demonstrate the sequential method of adding, deleting and searching an element in the array. The other 3 routines show a binary search and how to add or delete an array element using a call to a machine language routine.
OPAMP DESIGN.Z	Science-electronics-linear opamp design. Use POKE 59468,12 for graphics on CBM keyboards.	ED-UTILITY 20.P	Utility-editor used in BENNETT MAIL LIST-BASIC 2. LOAD "ED-DEMO.Z" and LIST to get the documentation.
CONVERT PENCIL.P	Business-update to PENCIL word processor Dec 84 (P)T4.	ED-UTILITY 41.P	Utility-editor used in BENNETT MAIL LIST-BASIC 4. LOAD "ED-DEMO.Z" and LIST to get the documentation. The following routines are available from BASIC- 1. Input routine 2. Insert/delete array element 3. Disk input up to 150 bytes 4. Disable STOP key 5. Convert string data to ASCII.
CNVT TO PENCIL.P	Business-update to PENCIL word processor Dec 84 (P)T4.	PLOT INSTR.P	Utility-instructions for " PLOT.4" and " PLOT.8".
BAID4F40A-16K.F	Utility-Basic Aid for FAT 40-16K machines.	PLOT DEMO1.P	Utility-demo 1 for " PLOT.4" and " PLOT.8".
BASICAID INS.Z	Utility-Basic Aid instructions for ASCII printers.	PLOT DEMO2.P	Utility-demo 2 for " PLOT.4" and " PLOT.8".
PENCIL FORMAT.P	Business-update to PENCIL word processor Dec 84 (P)T4.	PLOT DEMO3.P	Utility-demo 3 for " PLOT.4" and " PLOT.8".
MYSTERY SPELL.P	Education-game-guess the mystery letters with graphics.	PLOT PIK2.P	Utility-file used in " PLOT.4" and " PLOT.8".
NAME IT.Z	Utility-program identifies the machine and features.	PLOT.4	Utility-plot program for 40 column PET.
PET COPY 2031.P	Utility-a copy program for use on your 2031 disk.	PLOT.8	Utility-plot program for 80 column PET (not fully tested). <i>TPUG</i>
PET GOBLIN.P	Game-simple game-avoid the walls and collect points.		
PET-MAN 4000.P	Game-a nice version of Pacman on the 40 column screen.		
TURTLE PILOT.P	Language-Turtle Pilot.		
T PILOT DEMO.D	Language-TURTLE PILOT demo.		
T PILOT INST-A.Z	Language-TURTLE PILOT instructions.		
BAR CHART.P	Business-plot data on screen or printer.		
BAR PLOT.P	Business-plot yearly (monthly) data on screen or printer.		

# (S)TD - march 1984

## TPUG Toronto — SuperPET Distribution Disk for March 1984

describe.mar/84	This describe file		
retrieve.asm	The source for a routine to return you to the editor or language (other than DEVELOPMENT) you have left, without losing the contents of the files. Allows recovery from inadvertent exit from function. Will not recover from switch to 6502 and back to 6809.	xmodem.for.VAX	A fortran program for a 'VAX' host to facilitate the sending and receiving of files from any 'modem?' program.
retrieve.cmd	Linker command file.	xmodem.doc.VAX	Documentation describing 'xmodem' on the VAX.
retrieve.mod	Load module for retrieve, should be placed on the language disk	xmodem.hlp.VAX	Documentation on using 'xmodem' with the SuperPET.
reset0.b	Basic program to create a module which provides rapid return to the language or function in bank0. Can be used after return to 6809 from 6502, instead of reloading language.	watlib.exp+	The export file for use in linking the modem+ program.
reset0.mod	The generated load module, should be placed on the language disk.	qio.dck.VAX	A file included by 'xmodem.for.VAX'.
save.my.text.mod	The load module of a program which recovers the text file from an accidental exit from the microEditor or DEVELOPMENT facility. File is written to disk. Prompt driven.	modem+1.0.doc	The documentation for using the the modem+ program.
save.my.text.asm	The source code for this utility.	DESCRIBE.ED	Describes the use of the following programs from the 'EDA' and 'ANSCOMBE' Statistical packages.
save.my.text.doc	Documentation on the use of this utility.	prepare.aws	APL function — start here. readstring: modified readseq — handles character data. parse: converts 2 dimensional character matrix to numerical vector. plot: as issued on earlier disk. ss: screen save: use with print: ex. ss 1 15 saves screen lines 1 to 15. writeseq: writes ascii sequential file. write: writes APL sequential file. read: reads APL sequential file. print: prints to 8300 printer with APL daisy wheel. Can be used with ss to print screen image. ex. print ss 1 15 prints screenlines 1 to 15. file: function used in writeseq and read string.
save.my.text.cmd	Linker command file.	compare.aws	APL function — bare bones version of the 'EDA' function.
utility.aws	Utility APL function date: displays the system date intelligently. listfns: lists all the functions in the workspace. if/then: two keywords to provide the if—then function in APL. histo: an interactive function to build a histogram. dblsp: will double space a character matrix 'm'. blank: deletes leading blanks from character string 'd'. aso: generates a list of numbers for putting the rows of a matrix 'm' in ascending alpha order. ex. m <= 6 3rho 'dsdsdrdrsadsds-rasd' aso m	summarize.aws	APL function — bare bones version of the 'ANSCOMBE' function.
modem+1.0.cmd	Linker command file for 'modem+1.0' which provides a communication facility for the SuperPET similar to the cp/m programs called 'modem?'. This routine will work standalone or automatically connects to 'petcom1.2'.	stemleaf.aws	APL function — bare bones version of the 'EDA' function.
menu+1.0.asm	Source code for the menu routine, a part of 'modem+1.0'.	households	APL sequential file — numerical vector.
modem+1.0.asm	Source code for the utility.	licences	" " " " "
modem+1.0.mod	The load module, currently compiled for bank 13, if loaded by monitor then go to 9008. You should move this program to your communication disk and rename to 'modem+1.0'.	operating	" " " " "
		signal1	" " " " "
		signal2	" " " " "
		signal3	" " " " "
		signal4	" " " " "
		cable	" " " " "
		b/cast	" " " " "
		multi	" " " " "
		data	APL sequential file — character matrix of 167 rows by 20 cols.

This disk was assembled by Bill Dutfield and Gerry Gold, March 5/1984 TPUG

**TORONTO PET USERS GROUP**

1912A Avenue Rd., Ste. 1  
 Toronto, Ontario  
 M5M 4A1

416-782-9252

416-782-8900

**ORDER FORM**

Name .....

Membership # .....

Street Address .....

Telephone .....

City/Town/P.O. ....

Province/State .....

Postal/ZIP Code .....

The prices indicated include postage and handling as well as Ontario Provincial Sales Tax (if applicable).  
 Make cheque or money order payable to: TPUG.

**DISKS**

To order club disks by mail, send \$10.00 for each 4040/2031/1540/1541 disk (4040 format), and \$12.00 for each 8050/8250 disk (8050 format). We do honour purchase orders from school boards.

If you wish to order the total library to date for a specific computer (PET, SuperPET, VIC 20 or Commodore 64), contact the club office to find out how many disks there are currently. The cost is \$8.00 per disk (4040 format) and \$10.00 per disk (8050 format).

These disks are for use with a \_\_\_\_\_ computer and a \_\_\_\_\_ disk drive.

Please send me the following:

3 Letter/No. Code	Description	4040 or 8050 Format	Price
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
		Total	.00

**TAPES**

To order VIC 20 or Commodore 64 library tapes, send \$6.00 for each tape. If you wish to order the total library to date for the VIC 20 or Commodore 64, contact the club office to find out how many tapes there are currently. The cost is \$5.00 per tape.

To order PET/CBM or Commodore Educational Software tapes, send \$10.00 for each tape.

These tapes are for use with a \_\_\_\_\_ computer and a datasette.

If for a PET computer – what model \_\_\_\_\_ – Basic – 1.0 ( ), 2.0 ( ), 4.0 ( )?

3 Letter/No. Code	Description	Price
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
		.00

# (C)M1



By David Bradley  
C-64 Librarian

The following are slightly abridged versions of the documentation that was available at the TPUG Commodore 64 meeting. The only items which have been excluded are the start and finish addresses in both hexadecimal and decimal. If you need these, they are included in the complete versions from the TPUG office for \$1.00 each.

Programs with a \* following their name on (C)M1, (C)M2, (C)M3 and (C)M4 will not work on tape. Therefore they are not included on the tape versions of these disks.

## ABBREVIATIONS USED IN THIS LIST-ME

BL — Block Length  
PL — Program Length  
FT — File Type  
CL — Classification

## LIST-ME (C)M1.L

Load as follows: *LOAD "LIST-ME (C)M1.L";8*  
FT: PRG, CL: LIST-ME

This file contains one-line documentation for the programs on (C)M1.

## MASH.C

LOAD as follows: *LOAD "MASH.C";8*  
BL: 31, FT: PRG, CL: GAME

You are a chopper pilot in the Korean conflict. Your job is to find injured soldiers, pick them up, take them to the 4077 M\*A\*S\*H and land. You have 60 seconds worth of fuel so be as fast as you can without taking unnecessary chances. Control your chopper with a joystick plugged into CONTROL PORT 2.

## ELEC SRVC CALC.C

LOAD as follows: *LOAD "ELEC SRVC CALC.C";8*

BL: 33, FT: PRG, CL: EDUCATION

This program is designed to design electrical services according to the electrical codes. The calculations and data are based on the Electrical Safety Code Book. Any modifications can be done by changing the data statements at the end of the program. More instructions are provided within the program.

## MAG INDEX.C

LOAD as follows: *LOAD "MAG INDEX.C";8*  
BL: 34, FT: PRG, CL: HOME APPLICATION

This program allows a user to store information relating to magazine articles in DATA statements within the program. Each article can have up to 3 cross-references. The cross-referenced titles are stored at the beginning of the program and can be easily modified to suit the user.

## DONKEY DONG.C

LOAD as follows: *LOAD "DONKEY DONG.C";8*

BL: 67, FT: PRG, CL: GAME

This game is similar in theme to Donkey Kong. 4 moves you left, 6 moves your right, f1 moves you up, f7 moves you down, the space bar makes you jump, and any other key makes you stop. Good luck...

## CLUB MAIL LIST.C

LOAD as follows: *LOAD "CLUB MAIL LIST.C";8*

BL: 40, FT: PRG, CL: BUSINESS HOME APPLICATION

A versatile DISK-ORIENTED mail list program designed to be 'User Friendly'. Requires a 64, 1 OR 2 1541 disk drives, and a printer.

## MOMO BOOT.C \*

LOAD as follows: *LOAD "MOMO BOOT.C";8*

BL: 2, FT: PRG, CL: DEMO

This program LOADs and uses the following files to create a picture of a girl singing: MOMO PICTURE.D, MOMO SET.D, and MOMO PRINT.D.

## MOMO PICTURE.D \*

Do NOT attempt to LOAD this file.

BL: 33, FT: PRG, CL: DATA FILE

Part of the MOMO demo.

## MOMO SET.D \*

Do NOT attempt to LOAD this file.

BL: 7, FT: PRG, CL: DATA FILE

Part of the MOMO demo.

## MOMO PRINT.D \*

Do NOT attempt to LOAD this file.

BL: 11, FT: PRG, CL: DATA FILE

Part of the MOMO demo.

## MATH.C

LOAD as follows: *LOAD "MATH.C";8*

BL: 18, FT: PRG, CL: EDUCATION

This program will test your ability to do addition, subtraction, division, and multiplication according to your GRADE LEVEL.

## BOOT VALLEY V2.C \*

LOAD as follows: *LOAD "BOOT VALLEY V2.C";8*

BL: 1, FT: PRG, CL: GAME

Search for treasures and battle monsters in the valley. As your character gains experience, he becomes stronger and more capable.

Similar to Dungeons and Dragons. USE KEYS 1 THROUGH 9 TO MOVE. Beware...

## CHARSET VALLEY.D \*

Do NOT attempt to LOAD this file.

BL: 9, FT: PRG, CL: DATA FILE

This file is LOADED and used by VALLEY BOOT V2.C.

## VALLEY BASIC.D \*

Do NOT attempt to LOAD this file.

BL: 72, FT: PRG, CL: DATA FILE

This file is LOADED and used by VALLEY BOOT V2.C.

## BRADLEY.D \*

Do NOT attempt to LOAD this file.

BL: 1, PL: 56 BYTES, FT: SEQ, CL: DATA FILE

This is a sample character that you can load off disk when you are playing THE VALLEY. To LOAD this character, answer 'Yes' when you are asked if you want to load a character from disk and then type in BRADLEY. In case you are interested, Bradley is a THINKER.

## SHEVLIN.D \*

Do NOT attempt to LOAD this file.

BL: 1, PL: 54 BYTES, FT: SEQ, CL: DATA FILE

This is a sample character that you can load off disk when you are playing THE VALLEY. To LOAD this character, answer 'Yes' when you are asked if you want to load a character from disk and then type in SHEVLIN. In case you are interested, Shevlin is a BARBARIAN.

## DOW.D \*

Do NOT attempt to LOAD this file.

BL: 1, PL: 54 BYTES, FT: SEQ, CL: DATA FILE

This is a sample character that you can load off disk when you are playing THE VALLEY. To LOAD this character, answer 'Yes' when you are asked if you want to load a character from disk and then type in DOW. In case you are interested, Dow is a CLERIC.

## KARNAK.D \*

Do NOT attempt to LOAD this file.

BL: 1, PL: 63 BYTES, FT: SEQ, CL: DATA FILE

This is a sample character that you can load off disk when you are playing THE VALLEY. To LOAD this character, answer 'Yes' when you are asked if you want to load a character from disk and then type in KARNAK. In case you are interested, Karnak is a WIZARD.

## IDEAL MASS.Z

LOAD as follows: LOAD "IDEAL MASS.Z";8

BL: 34, FT: PRG, CL: MISC

This program tells you what your mass should be based on your sex, height, weight, and body frame size.

## STARS BAS PR.Z

LOAD as follows: LOAD "STARS BAS PR.Z";8

BL: 38, FT: PRG, CL: MISC

This program checks through a master table containing stars and other interesting objects in the night sky and determines which ones are visible at a specific time and date. It then calculates the com-

pass bearing and altitude about the horizon for that time. The table includes name, magnitude, right ascension, declination, bearing, and altitude. The output can be directed to a printer, if you like.

## FRENCH VERBS.Z

LOAD as follows: LOAD "FRENCH VERBS.Z";8

BL: 97, FT: PRG, CL: EDUCATION

This program is designed to help you understand the conjugations of many types of verbs.

## BASIC AID INST.C

LOAD as follows: LOAD "BASIC AID INST.C";8

BL: 47, FT: PRG, CL: INSTRUCTIONS

This program will tell you all about the many features of BASIC AID.C and how to use them. The output can be directed to your monitor or your printer.

## BASIC AID.C

LOAD as follows: LOAD "BASIC AID.C";8

BL: 21, FT: PRG, CL: UTILITY

This utility will add the following commands to BASIC: HELP, AUTO, MLM,

DUMP, CHANGE, DELETE, READ, FIND, KILL, FLIST, NUMBER, SCROLL, OFF, TRACE, START, SIZE, HEX, PACK, UN-NEW, SCREEN, MERGE, and all of the standard WEDGE commands.

## FILE COPY.C \*

LOAD as follows: LOAD "FILE COPY.C";8

BL: 19, FT: PRG, CL: UTILITY

This program will show you the directory of the disk you have in your 1541 and then allow you to pick one program that you want to copy. It will LOAD the file that you want to copy and request that you put the destination disk in your drive. After you have put the disk in the drive and pressed the appropriate key, the program will be copied onto the destination disk.

## SD COPY/ALL.C \*

LOAD as follows: LOAD "SD COPY ALL.C";8

BL: 14, FT: PRG, CL: UTILITY

This program will copy ANY or ALL of one diskette to another using one 1541 disk drive.

# (C)M2

## LIST-ME (C)M2.L

LOAD as follows: LOAD "LIST-ME (C)M2.L";8  
FT: PRG, CL: LIST-ME

This file contains one-line documentation for the programs on (C)M2.

## BASEBALL INST.C \*

LOAD as follows: LOAD "BASEBALL INST.C";8

BL: 12, FT: PRG, CL: INSTRUCTIONS

This file contains all the information that you will need to play BASEBALL.C. Be sure and look at this file before you attempt to play the game. Good luck, slugger. . .

## BASEBALL.C \*

LOAD as follows: LOAD "BASEBALL.C";8

BL: 44, FT: PRG, CL: GAME

Play baseball on your Commodore 64 against another person. Requires 2 joysticks and 2 players. Have fun. . .

## BASEBALL DATA.D \*

Do NOT attempt to LOAD this file.

BL: 4, FT: PRG, CL: DATA FILE

This file contains DATA that is LOADED and used by BASEBALL.C.

## DISK DOCTOR.C \*

LOAD as follows: LOAD "DISK DOCTOR.C";8

BL: 24, FT: PRG, CL: UTILITY

This program will allow you to load any block of information from your disk and view it on your monitor. Once it is on your monitor you can change it and save it back to the disk where it came from.

## PIC LOADER.C \*

LOAD as follows: LOAD "PIC LOADER.C";8

BL: 8, FT: PRG, CL: DEMO

This program LOADs and displays the following colour pictures: MARS.D, BIPLANE.D, SHIP.D, LANDSCAPE.D, AUTO.D, TITLE.D, and GIRL.D. It also LOADs and uses COLOURS.D.

## COLOURS.D \*

Do NOT attempt to LOAD this file.

BL: 28, FT: PRG, CL: DATA FILE

This program provides the colour data for LOADER.C.

## TITLE.D \*

Do NOT attempt to LOAD this file.

BL: 32, FT: PRG, CL: DATA FILE

This picture is the title page for the pictures by John Cooper on this disk.

## MARS.D \*

Do NOT attempt to LOAD this file.

BL: 32, FT: PRG, CL: DATA FILE

This is a picture of a spaceman walking around on Mars.

## BIPLANE.D \*

Do NOT attempt to LOAD this file. BL: 32, FT:

PRG, CL: DATA FILE

This is a picture of a biplane.

## SHIP.D \*

Do NOT attempt to LOAD this file.

BL: 32, FT: PRG, CL: DATA FILE

This is a picture of an old sailing ship.

## LANDSCAPE.D \*

Do NOT attempt to LOAD this file.

BL: 32, FT: PRG, CL: DATA FILE

This is a picture of a scenic mountain view.

## AUTO.D \*

Do NOT attempt to LOAD this file.

BL: 32, FT: PRG, CL: DATA FILE

This is a picture of an antique car.

## GIRL.D \*

Do NOT attempt to LOAD this file.

BL: 32, FT: PRG, CL: DATA FILE

This is a picture of a girl in a bathing suit.:dbl

## LIST-ME INVADE.L

LOAD as follows: LOAD "LIST-ME INVADE.L";8

BL: 4, FT: PRG, CL: LIST-ME

This file contains a list of POKEs that you can enter before RUNning INVADERS.C to alter the game. For example, if you wanted the mystery ship to come out more often you might POKE 5867,9.

## INVADERS.C

LOAD as follows: LOAD "INVADERS.C";8

BL: 25, FT: PRG, CL: GAME

Play SPACE INVADERS on your Commodore 64! Good luck. . .

## HORSE RACING.C

LOAD as follows: LOAD "HORSE RACING.C";8

BL: 32, FT: PRG, CL: GAME

Bet on the horses and then watch the race on your monitor. Good luck. . .

## DODGE CARS.C

LOAD as follows: LOAD "DODGE CARS.C";8

BL: 28, FT: PRG, CL: GAME

You are the driver of the yellow car. Your job is to collect all of the dots while avoid-

ing the evil computer-controlled blue car. To accelerate, use the A key. To decelerate, use the D key. J will move you to next inner lane and K will move you to the next outer lane. Good luck. . .

### SHOOTOUT RULES.C

*LOAD as follows: LOAD "SHOOTOUT RULES.C";8*

*BL: 7, FT: PRG, CL: INSTRUCTIONS*

This program gives you all the rules and instructions you should need to play SHOOTOUT.C.

### SHOOTOUT.C

*LOAD as follows: LOAD "SHOOTOUT.C";8*

*BL: 22, FT: PRG, CL: GAME*

In this game you have to line yourself up

with your opponent and shoot him before he shoots you. Five hits kill. Each player needs to use a joystick plugged into either control port #1 or #2.

### R2DIVISION.C

*LOAD as follows: LOAD "R2DIVISION.C";8*

*BL: 101, FT: PRG, CL: EDUCATION*

In this program R2D2 will teach you how to divide. May the FORCE be with you. . .

### COUNT 1-8.C

*LOAD as follows: LOAD "COUNT 1-8.C";8*

*BL: 32, FT: PRG, CL: EDUCATION*

This program will display anywhere from 1 to 8 shapes. It is up to you to tell the computer how many shapes it is showing you.

*4.C";8*

*BL: 61, FT: PRG, CL: DEMO*

Watch the 3 cubes go round and round. . .

### HOLYHALTER 5.C

*LOAD as follows: LOAD "HOLYHALTER 5.C";8*

*BL: 61, FT: PRG, CL: DEMO*

Watch the cylinders go round and round and come at you.

### CENTRIPOD.C

*LOAD as follows: LOAD "CENTRIPOD.C";8*

*BL: 44, FT: PRG, CL: GAME*

This is a game similiar to the arcade game CENTIPEDE. Basically you have to avoid anything that moves. Control your person with a joystick plugged into control port #2.

### DISCAT.C \*

*LOAD as follows: LOAD "DISCAT.C";8*

*BL: 32; FT: PRG, CL: UTILITY*

This program will help you keep track of where your programs are. It supports five main commands, Catalog, Display, Search, \$dir, and Print. They are all documented in the program so, if you get into trouble, just type H for help.

### DCATMLP.D \*

*Do NOT attempt to LOAD this file.*

*BL: 6, FT: PRG, CL: DATA FILE*

This file contains a machine language program that is LOAded and used by DISCAT. C.

### PRGLIST.D \*

*Do NOT attempt to LOAD this file.*

*PL: 2 BYTES, BL: 1, FT: SEQ, CL: DATA FILE*

This file is used and updated as needed by DISKCAT.C.

### HDRLIST.D \*

*Do NOT attempt to LOAD this file.*

*PL: 2 BYTES, BL: 1, FT: SEQ, CL: DATA FILE*

This file is used and updated as needed by DISKCAT.C.

### ZERODEMFILES.C \*

*LOAD as follows: LOAD "ZERODEM-*

*C-64 DT.C*

*LOAD as follows: LOAD "C-64 DT.C";8*

*BL: 10, FT: PRG, CL: UTILITY*

Copy programs from your 1541 to your datasette or vice versa.

### DISKALC.C

*LOAD as follows: LOAD "DISKALC.C";8*

*BL: 27, FT: PRG, CL: BUSINESS*

This program will act as a Visicalc-type program. It is basically the same as COLUMN CALC except it LOADs and SAVEs from DISK instead of tape.

*FILES.C";8*

*BL: 1, FT: PRG, CL: UTILITY*

This program will clear PRGLIST.D and HDRLIST.D so, if you want, you can start over from scratch.

### DISKPRINT.C \*

*LOAD as follows: LOAD "DISKPRINT.C";8*

*BL: 7, FT: PRG, CL: UTILITY*

This program will read in the directory of a disk, and then sort and print it in alphabetical order.

### BIKE QUIZ INST.C

*LOAD as follows: LOAD "BIKE QUIZ INST. C";8*

*BL: 6, FT: PRG, CL: INSTRUCTIONS*

This program will give you all the necessary instructions on how to set up and use BIKE QUIZ MON.C and BIKE QUIZ PRNT.C.

### BIKE QUIZ MON.C

*LOAD as follows: LOAD "BIKE QUIZ MON. C";8*

*BL: 92, FT: PRG, CL: MISC*

This program will test you on how well you know the rules of operating a motorcycle. To answer, press the appropriate function key. Good luck and good riding. . .

### SERIAL PRINTER.C

*LOAD as follows: LOAD "SERIAL PRINTER. C";8*

*BL: 1, FT: PRG, CL: UTILITY*

If you have a serial printer and want to use BIKE QUIZ PRNT.C be sure to LOAD and RUN this program before you LOAD BIKE QUIZ PRNT.C.

### BIKE QUIZ PRNT.C

*LOAD as follows: LOAD "BIKE QUIZ PRNT. C";8*

*BL: 98, FT: PRG, CL: MISC*

This program will test you on how well you know the rules of operating a motorcycle. To answer, press the appropriate function key. Once you have completed the test, your results will be printed out so you can refer to them. Good luck and good riding. . .

## (C)M3

### LIST-ME (C)M3.L

*LOAD as follows: LOAD "LIST-ME(C)M3.L";8*

*FT: PRG, CL: LIST-ME*

This program contains one-line documentation for the programs on (C)M3.

### QUIK BOOT.C \*

*LOAD as follows: LOAD "QUIK BOOT.C";8*

*BL: 4, FT: PRG, CL: BUSINESS*

This program gives you instructions on how to LOAD a summary of Paper Quik instructions and then it LOADs and RUNs PAPER QUIK.C.

### PAPER QUIK.D \*

*Do NOT attempt to LOAD this file.*

*BL: 25, FT: PRG, CL: DATA FILE*

This machine language program is LOAded and used by QUIK BOOT.C.

### P. QUIK INS.D \*

*Do NOT attempt to LOAD this file.*

*PL: 1537 BYTES, BL: 7, FT: SEQ, CL: DATA FILE*

This PAPER QUIK file contains a summary of the commands that PAPER QUIK supports. It is to be LOAded from within PAPER QUIK.

### HOLYHALTER 1.C

*LOAD as follows: LOAD "HOLYHALTER 1.C";8*

*BL: 61, FT: PRG, CL: DEMO*

Watch the cubes go round and round. . .

### HOLYHALTER 2.C

*LOAD as follows: LOAD "HOLYHALTER 2.C";8*

*BL: 61, FT: PRG, CL: DEMO*

Watch the 3 cylinders go round and round. . .

### HOLYHALTER 3.C

*LOAD as follows: LOAD "HOLYHALTER 3.C";8*

*BL: 61, FT: PRG, CL: DEMO*

Watch the 2 cylinders go round and round. . .

### HOLYHALTER 4.C

*LOAD as follows: LOAD "HOLYHALTER*

# (C)M4

## LIST-ME (C)M4.L

*LOAD as follows: LOAD "LIST-ME(C)M4.L";8  
CL: LIST-ME*

This file contains one-line documentation for the programs on (C)M4.

## ET PUZZLE.C

*LOAD as follows: LOAD "ET PUZZLE.C";8  
BL: 23, FT: PRG, CL: GAME*

In this game, you are shown a picture of ET (The Extra Terrestrial). Then the picture is scrambled and it is up to you to put it back the way it started. You can move each part of him simply by typing the number of the squares you want to move. Good luck, space traveller. . .

## CAT AND MOUSE.C

*LOAD as follows: LOAD "CAT AND MOUSE.C";8*

*BL: 14, FT: PRG, CL: GAME*

The object of this game is to get the mouse out of the maze before he/she is eaten by the blood-thirsty cat.

You can pick three different kinds and sizes of maze as well as five different speeds. f1 moves the mouse UP, f3 DOWN, f5 LEFT, and f7 RIGHT.

The cat is shown as a diamond and the mouse is a circle. Good luck. . .

## CONNECT 4.C

*LOAD as follows: LOAD "CONNECT 4.C";8  
BL: 8, FT: PRG, CL: GAME*

In this game, your task is to try and get four of your 'men' to line up. While you are trying to do this, either your Commodore 64 or another person is trying to do the same.

You put a 'man' in a row by picking the number across the bottom that corresponds to that row. The playing area is six by seven. Be warned that the computer plays a ruthless game! Good luck. . .

## GOLF.C

*LOAD as follows: LOAD "GOLF.C";8  
BL: 27, FT: PRG, CL: GAME*

This is an 18-hole golf course. You are required to enter your handicap, and pick the part of your game that you are weakest in (hooking, slicing, poor distance, trap shots, and putting).

Your bag contains many different types of club. Each one is designed for a specific purpose. So note which clubs do what before you tee off!

Watch out for roughs, traps, water, and trees. Don't hit the ball too hard, it will cost you! Good luck and FORE!

## STARTREK.C

*LOAD as follows: LOAD "STARTREK.C";8  
BL: 26, FT: PRG, CL: GAME*

Search out and destroy the Klingons in the allowed time. The following is a chart of

what keys do what:

- 0 - Warp Drive
- 1 - Long Range Scanner
- 2 - Torpedo Data
- 3 - Fire a Torpedo
- 4 - Shield Control
- 5 - Access Onboard Computer

1 - Damage Report  
2 - Short Range Scanner  
3 - Time Remaining  
6 - Resign Your Command  
With device 0 and device 3 you must enter a direction as well. The following is a chart of what numbers will take you where:

- 1 - Down and to the Left
- 2 - Down
- 3 - Down and to the Right
- 4 - Left
- 6 - Right
- 7 - Up and to the Left
- 8 - Up
- 9 - Up and to the Right

If you have played other games similar to this, it should be easy to pick up. If you have not, play close attention to the charts provided. Good luck. . .

## MATH MAZE.C

*LOAD as follows: LOAD "MATH MAZE.C";8  
BL: 10, FT: PRG, CL: EDUCATIONAL*

In this game, you must travel through the maze and answer math questions at about a grade 2-4 level to pass certain points in the maze. When you are through, you are told how long you took so you'll have something to shoot for next time. Good luck. . .

## THREEDOX.C

*LOAD as follows: LOAD "THREEDOX.C";8  
BL: 22, FT: PRG, CL: GAME*

You must place your 'men' on the 4 \* 4 \* 4 3-dimensional cube in such a way that you have four in any row, column, or diagonal. You are represented as an 'X' and the computer is an 'O'. The levels are presented to you side by side, so you have to be good at imagining them on top of each other.

When it is your turn to move, you will be asked three things. First, what board you want, then what row you want, and finally what column you want.

So if I entered 4 for the board, 2 for the row and 1 for the column, one of my 'men' would appear on the fourth board in the second row in column 1.

Don't expect it to be easy, because it isn't! Good luck. . .

## PLANE LANDER.C

*LOAD as follows: LOAD "PLANE LANDER.C";8*

*BL: 26, FT: PRG, CL: GAME*

In this game you must land a plane from the ground. Your eyes are your radar screen and your instruments.

Your controls are as follows:

The '+' key increases rate of climb.

The '-' key decreases rate of climb.

The '=' key holds the rate of climb.

The 'I' key increases the engine revs.

The 'D' key decreases the engine revs.

The 'H' key holds the same engine revs.

The 'U' key operates the undercarriage.

The 'A' key operates the air brakes.

The keys '0,1,2,3,4,5,6,7' operates the flaps at five-degree intervals.

This is a hard game, but I'll give you a few hints. At touchdown, at least 15 degrees of flap should be on. You will stall at 110 MPH without flaps and 92 MPH with flaps and landing gear down. The fastest you can go is 250 MPH. The maximum landing speed is 150 MPH. The maximum air speed with flaps is 185 MPH. Good luck, Captain. . .

## BABY CARE.C

*LOAD as follows: LOAD "BABY CARE.C";8  
BL: 12, FT: PRG, CL: HOME APPLICATIONS*

The object of this game is to maximize two factors, your sanity and your time available while caring for a baby. In order to do this, you must keep your baby happy. You win when both factors reach 300. You lose if either your sanity or your time available diminish to zero.

Hit 'D' to Diaper the baby.

Hit 'F' to Feed the baby.

Hit 'N' to take a nap. (Restoring sanity)

Hit 'S' to stop any activity before you begin a new activity.

Good luck. . .

## FOREST WALK.C

*LOAD as follows: LOAD "FOREST WALK.C";8  
BL: 32, FT: PRG, CL: GAME*

You are walking through a forest. But fear not, you are armed with your trusty rifle and some bologna sandwiches. To complete your walk, you must choose the correct course of action for each animal that you encounter. You can only make three errors before your walk is terminated. Make your selections with care, good luck (you'll need it) and have a good time. . .

## AUTOBOOT.C \*

*LOAD as follows: LOAD "AUTOBOOT.C";8  
BL: 9, FT: PRG, CL: UTILITY*

This program will read the directory of the disk you have in your drive and display the contents of that disk on your monitor. Then you use the cursor keys to move around. When you are 'on' the name of the program you want to load, press f1 for a Direct Load or f3 for a Basic Load. If what you want to LOAD is not on the disk you first looked at, put another disk in the drive and press f7.

## WORD TEST.C \*

*LOAD as follows: LOAD "WORD TEST.C";8  
BL: 14, FT: PRG, CL: EDUCATIONAL*

This program lets you create files of 'pairs' of words or phrases. Then it tests you to see

how well you can match them up. Can be used to set up files such as French to English conversions.

#### **BODY PARTS.D\***

Do NOT attempt to LOAD this file.

PL: 286 BYTES, BL: 2, FT: SEQ, CL: DATA FILE

A DATA file that can be LOADED into WORDTEST.C to give you a better idea of how the program works.

#### **HEAVEN.C**

LOAD as follows: LOAD "HEAVEN.C",8

BL: 10, FT: PRG, CL: MUSIC SOUND

This program plays 'Stairway to Heaven'. It demonstrates an effective use of just one voice.

#### **DISK MASTER.C\***

LOAD as follows: LOAD "DISK MASTER.C",8

BL: 34, FT: PRG, CL: UTILITY

This program will help you keep track of what is on your disks. You put the disk to be entered into the program into your 1541 and press the key allocated to 'Update Master Directory'. The program will then read the HEADER and the ID of the chosen disk and check with you to make sure you have the right disk in the drive. If you have, press a key and then it will read in the directory of that disk.

Then take out the disk and insert your Master Disk. (The one with all of the data used by the program). Then all of the information about the disk is written into the files.

With any of the several options available, you can have the output directed to your printer. A very useful and time-saving program.

#### **MILLION.C**

LOAD as follows: LOAD "MILLION.C",8

BL: 7, FT: PRG, CL: EDUCATIONAL GAME

The object of this game is to guess a number between 1 and 10,000 as quickly as possible. The program gives you one million dollars at the beginning but each time you guess a number the program will take some of the money away. Good-luck. . .

#### **HYDRO DEMO.C**

BL: 102, FT: PRG, CL: DEMO

Go around the house (use a joystick in control port #2) and when you 'person' is on an item that uses electricity (perhaps a TV) press the fire button. Then the program will ask you about your own house and tell you how much you are spending to supply power to it.

When you have finished, get into the car. The car will drive away and then you will be presented with a chart of your appliances and how much they cost you daily, monthly, and yearly.

If you have a printer and you would like to get a print-out of the results, this can also be done at this time. Good luck and use electricity wisely!

#### **SIAMESE.C**

LOAD as follows: LOAD "SIAMESE.C",8

BL: 21, FT: PRG, CL: DEMO

This program will print out a picture of a cat on your printer. If you look at it from 10-15 feet it really looks great! Have fun. . .

#### **WARM PUPPY.C**

LOAD as follows: LOAD "WARM PUPPY.C",8

BL: 53, FT: PRG, CL: DEMO

This program will print Snoopy standing behind a table with an ad over top of it to

'Hug a Warm Puppy'. Down below it says 'The Puppy is IN'. Something completely different for your Commodore 64.

#### **THUMPER.C**

LOAD as follows: LOAD "THUMPER.C",8

BL: 16, FT: PRG, CL: DEMO

This program will print out a picture of 'Thumper' the rabbit. A great thing to put on your computer room wall!

#### **SYNTH SOUND.C**

LOAD as follows: LOAD "SYNTHSOUND.C",8

BL: 32, FT: PRG, CL: SOUND MUSIC

This program will let you play your Commodore 64 as if it were a piano. To change the waveforms press f1 for Sawtooth, f3 for Triangle, f5 for Noise, and f7 for Pulse. To change octaves hit the keys from 1 to 4.

You are provided with 4 sample instruments. Namely piano, banjo, xylophone, and woodwind. To change instruments hit the pound sign key followed by the character that corresponds to the instrument you want. To redefine an instrument press the left arrow key and then 9. You can now make your own instruments by entering the values for the Attack, Decay, Sustain, Release, the high pulse rate, and the low pulse rate. Have fun. . .

#### **TRIVIA.C**

LOAD as follows: LOAD "TRIVIA.C",8

BL: 144, FT: PRG, CL: GAME

Guess the answers to the questions. There can be one or two players. If you do not get the answer right, the correct answer is not given. Some of the questions are easy, some are hard. Your score is given half way through and at the end of the 100 questions. Good luck. . . TPUG

## (C)M5

disk only

Since there are 54 files but basically only 3 programs on this disk I did not see that it was necessary to tell you about each and every DATA file since it would serve little purpose and take many pages.

#### **ROM EMULATOR.C**

(Plus 16 DATA files that go with it.)

On this disk you will find 3 programs. The first one is called ROM EMULATOR.C. You may not know this but there have been 4 different versions of the Commodore 64 computer. They are basically the same, but each one supposedly fixes a few more bugs. Seeing that Commodore couldn't get it right the first time this is probably good. But, some programs will not run on some versions of the C-64. So, if you run into such a program all you have to do is load ROM EMULATOR.C and pick the version of

the C-64 that you want to have. Once you have chosen the number, the ROM is loaded in from your DISK DRIVE. And presto! Until you turn off your C-64 you have which ever version of the C-64 you wanted.

#### **ADVENTURE.C**

(Plus 30 DATA files that go with it.)

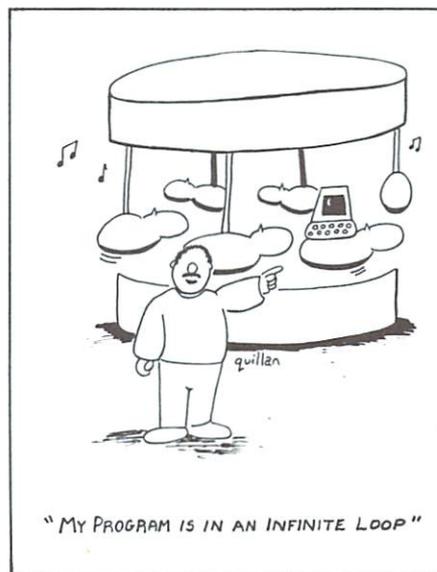
The next program on the disk is an adventure game called ADVENTURE.C. Your objective is to find Colossal Cave, go in and find as much treasure as you can and get back out again with as much as you can but most importantly your life! More detailed instructions are provided in the game. Requires a disk drive, as it LOADs and uses many SEQUential files.

#### **ART SHOW.C**

(Plus 4 DATA files that go with it.)

The last program on the disk is called ART SHOW.C. After you run this program it will LOAD a couple of files and then tell you to 'press any key to start'. Once you do this a picture of Jim Butterfield will appear

on your monitor. It will sit there and stare at you for a bit and then his signature will appear. And that's the show! TPUG



# We'll back you up!

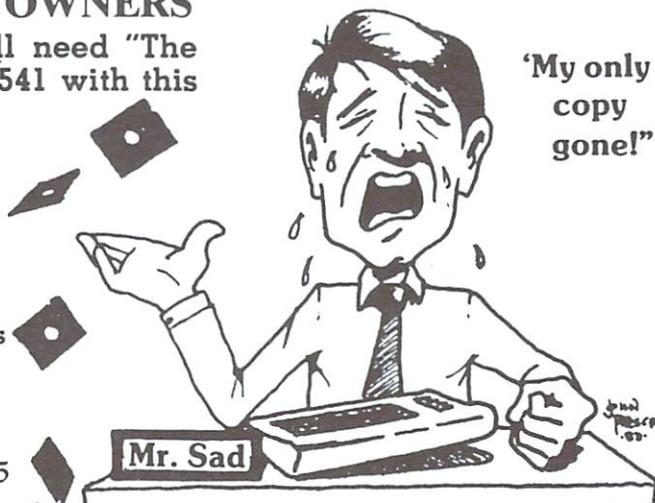


## ATTENTION COMMODORE 64 OWNERS

If you own a disk drive then you'll need "The Clone Machine". Take control of your 1541 with this package that includes:

- 1.) Complete and thorough users manual
- 2.) Copy with one or two drives
- 3.) Investigate and back-up many disks
- 4.) Copy all file types including relative types
- 5.) Edit and view track/block in Hex or ASCII
- 6.) Display full contents of directory and print
- 7.) Change program names, add, delete files with single keystroke
- 8.) Easy disk initialization
- 9.) Supports up to four drives

**Special intro \$69.95**



'My only copy gone!'

Mr. Sad

**Creative Computer Systems**  
 106 Byron St. South  
 Whitby, Ontario  
 L1N 4P5  
 (416) 666-2212



Amount enclosed \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Phone Number ( ) \_\_\_\_\_  
 MC or VISA # \_\_\_\_\_  
 Expiration date \_\_\_\_\_

Ont. res. add 7% PST

Shipping and handling add \$2.50

### Advertisers' Index

Aurora Software Inc. . . . .	49
Beaver Software Systems. . . . .	30
Bent Computer Associates . . . . .	38
Book Company (The). . . . .	40
Bradley Brothers Bulletin Board. . . . .	40
Business Systems & Conversions . . . . .	34 & 49
Captain Comal. . . . .	38
Compurent. . . . .	40
Compu-Simple Simon. . . . .	49
Compusoft Inc. . . . .	11
Comspec . . . . .	30
Creative Computer Systems . . . . .	62
Electric Software Company. . . . .	15
Electronics 2001 Ltd. . . . .	40 & 52
Electronic Schoolhouse. . . . .	46
Friendly Software. . . . .	34
Geneology Software . . . . .	63
G.R.Q. Marketing Ltd. . . . .	63
High Resolution Technologies . . . . .	11
Hunter Nichols . . . . .	2
King Microware. . . . .	44
Mannesmann Tally . . . . .	64
Micro Computer Solutions . . . . .	11
Micro Fax . . . . .	38
Micro Systems Development. . . . .	48
Milne's Computer Control Systems . . . . .	15
Nibble Notch . . . . .	7
Ph.D Associates . . . . .	24
Phoenix Software . . . . .	30
Precision Software . . . . .	IBC
Pro-Line . . . . .	IFC
Richvale Telecommunications . . . . .	OBC
Skeena Computer Services Ltd. . . . .	63

Skyles Electric Works . . . . .	1
Toronto PET Users Group. . . . .	38 & 46
Ultrabyte . . . . .	34
Umbrella Software . . . . .	40
Virginia Micro Systems. . . . .	46
Wycor Business Systems . . . . .	15

## classified

This space is limited to TPUG member wanted or for sale items only.

Space cost is 25 cents per word. NO DEALER ADS ACCEPTED

*\*I have one Silicon Office Data Base Program for the Commodore 8096 with the Commodore D9090 hard disk drive. \$900.00 US or best offer. Larry Rood, Gryphon House, P.O. Box 275 Mount Rainier, MD 20712 USA, tel. 301/779-6200*

*\*For Sale: Commodore CBM 8096 with 8050 Dual Disk Drive, 8023P tractor printer with stand. Silicon Office, Calc Result. 6 months old. Best offer over \$4,000. Days 1-433-4200, 579-7720 (ask for Dave)*

*\*For Sale: unused CBM 8032 with 8050 disk drive. \$1395.00 US for both. Also 8032 printer for \$425.00 US. R. Carnwath, P.O. Box 507, Valley Forge. PA 19460. tel. 215/935-2420*

*\*For Sale: 1 SuperPET 9000, 1 Dual Disk Drive 8050, 1 Printer 4022. Call 205/932-8837 or 689-4999 evenings.*

*\*For Sale: CBM 2001, 4040, 4022, 8010, A/D cnvtr, software and 16 PET books. \$1500.00 US! Call Dave Gailius 213/321-4350 days, 714/870-9919 evenings*

## FAMILY TREE

A software package to help you use the Commodore 64 or VIC 20 (24K) as a dynamic system to control data on your family tree.

### FEATURES

- Unlimited Genealogies
- Fully indexed
- Easy editing and updating
- Search functions
- Family Record sheets
- 4, 5, 6 Generation pedigrees
- Output to screen or printer
- Complete manual

\$49.95 CND — \$39.95 US  
(Ontario and Michigan residents add sales tax)

## GENEALOGY SOFTWARE

phone 519-344-3990

P.O. Box 1151      1046 Parkwood Ave.  
Port Huron, MI      Sarnia, Ont.  
48061                  N7V 3T9

It's here...

## DISKALIGNER

FOR YOUR 1541 DISK DRIVE!

Save repair costs and down-time -- time and time again! In less than a hour, with just a Phillips screwdriver and the DISKALIGNER Disk, you can put your 1541 back on line, perfectly re-aligned.

The software package includes diagnostic, adjustment and verification programs, supported by an illustrated, step-by-step instruction manual.

REG. \$39.95, Introductory Price:

**\$29.95**      CANADIAN

(Ontario Residents add 7%  
Provincial Sales Tax)

G.R.Q. MARKETING LTD.,

P.O. Box 197,  
Thornhill, Ontario.  
L3T 3N3

# SCS PAYROLL C-64

- Easy to use. No special training required
- SCS Payrolls have been used by Canadians since 1980
- Calculates & Prints Gross Pay, Overtime and Net Pay
- Prints Cheques or Pay Statements — User Choice
- Prints Employee Files with Cumulative Totals
- Monthly Report Gives Journal Entry and Receiver General Remittance Data
- Prints T4s at Year End
- Uses Formulas Recommended by Revenue Canada
- Complete Audit Trail
- Up to 50 Employees on 1 Data Disk

# \$139.

Dealer Inquiries Welcome

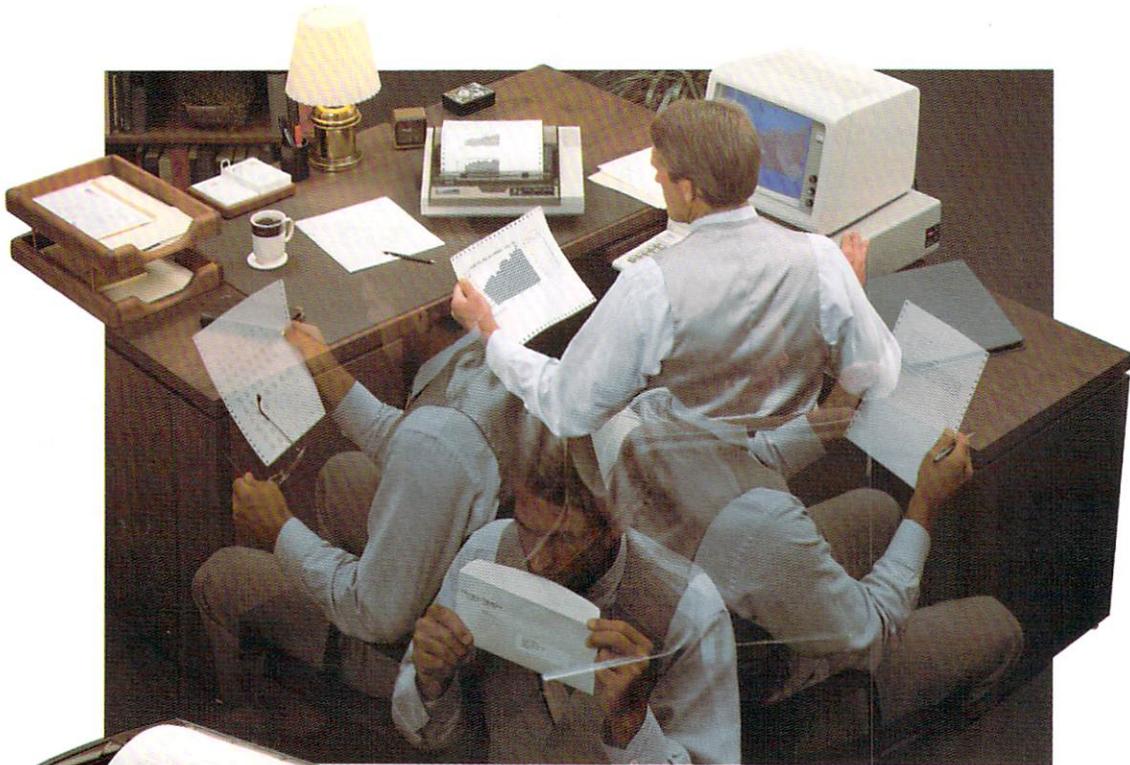
## SCS VICPAY

Calculates & Displays  
Gross Pay, Deductions  
and Net Pay  
\$24.95



Skeena Computer Services Ltd.  
Box 437 KITIMAT BC  
V8C 2R9 (604) 632-4212

# A LITTLE SPIRIT CAN GIVE YOU EXTRAORDINARY PRINTING POWER.



Spirit's the microprinter that lets you do more things yourself. And do each of them letter perfect. It prints standard, bold, expanded and condensed type faces. Even *italics*. And finely etched graphics. All because every impression has a crisp, square edge to it for unmistakable clarity.

That's the power to look perfect in print. And a power that operates almost without sound. The

Quietpak option smothers printer noise. So Spirit rushes through work with barely a whisper.

There's also the power to manage paper. Variable width tractors adjust for narrow jobs like labels. Or wider jobs like correspondence. All of which are handed to you immediately thanks to Spirit's Quick Tear edge.

When you can have your own personal microprinter that does so much for so little, aren't you powerless not to act?

For more information, and a dealer in your area contact: Mannesman Tally Corporation, 703 Petrolia Rd., Downsview, Ontario M3J 2N6 416-661-9783  
Telex: 06 522 873

**MANNESMANN**  
**TALLY**

## ***For Only \$20.00***

Join **TPUG** the World's largest Commodore users' group

- Free information-packed **Monthly Magazine**
- Access to 4000 **Public Domain Programs**
- Annual **Convention**
- Member **Bulletin Board**
- For \$30.00 (\$20.00 for students), all the above and attend the many TPUG meetings in the **Toronto Area**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State/Province \_\_\_\_\_

ZIP/Postal Code \_\_\_\_\_

Telephone \_\_\_\_\_

Age \_\_\_\_\_ Computer \_\_\_\_\_

*Please include payment*

**Mail to:**

**TPUG**

**Box 100, Station 'S'  
Toronto, Ontario, Canada  
M5M 4L6**

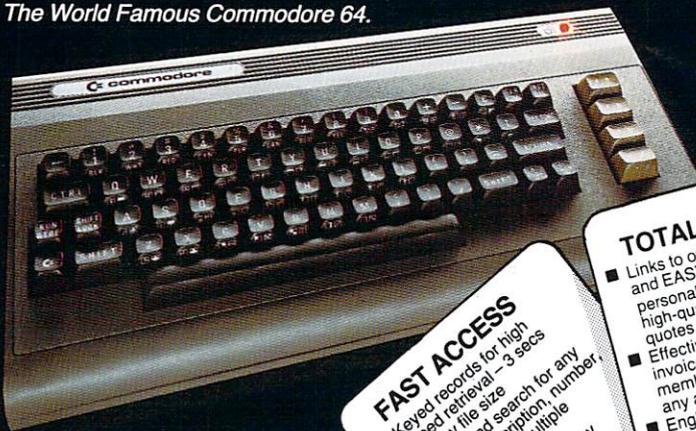
- \$20.00 Associate Membership - Magazine & Software access**
- \$30.00 Meeting Membership - Magazine & Software access and admission to Toronto meetings**
- \$20.00 Student Membership - Magazine & Software access and admission to Toronto Meetings**

# Strengthen your hand

# with Superbase 64™

The complete information control system for the Commodore 64.

The World Famous Commodore 64.



No matter what your business or interest, with Superbase 64 you have a totally flexible 'record' system, as big as you want it, as fast as you need it.

Create your own formats, enter your records, change layouts and datafields.

Superbase gives you unrivalled control in home or office, business or professional practice, with a range of features including:

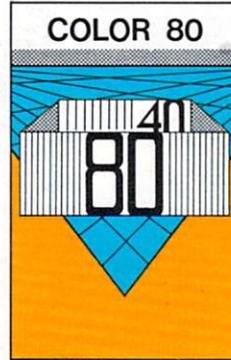
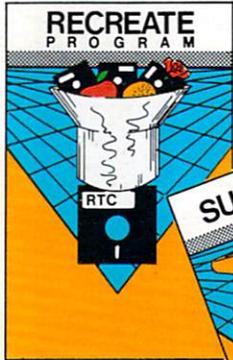
- YOUR OWN RECORDS**
  - Design your layout using text, numeric, linking and key fields.
  - Record size up to 127 characters spread over up to 127 items.
  - Number of records limited only by your equipment.
  - As many thousands of databases as you want - each with up to 15 files.
  - Learn fast through built-in HELP screens - then add your own notes.
- FAST ACCESS**
  - Keyed records for high speed retrieval - 3 secs for any file size.
  - Select and search for any name, description, date, etc. in multiple combinations.
  - Sort records into any order.
  - Display selections or generate printed reports.
  - Browse through records matching on any criteria.
- TOTAL CONTROL**
  - Links to other programs and EASY SCRIPT for personalised mailings, high-quality letters, quotes, tables, etc.
  - Effective management of invoices, addresses, stock, membership, appointments - any and every kind of record.
  - English like commands for easy conversational programming, plus built-in BASIC.
- DATABASE MANAGEMENT**
  - Easy to understand menus.
  - Add or amend fields, or alter length - no file rebuilding needed.
  - Update files with automatic batch processing option.
  - Calendar arithmetic for effective time management.
  - Display quantities, values, totals, as you enter them.
  - Formulae for on-screen result calculation.



**Superbase 64™**  
 Precision Software (USA), Inc.  
 Suite 1100  
 820 Second Avenue  
 New York  
 N.Y. 10017  
 (212) 490-1825



# Developing a mind for the Future. RTC



**SUPER BASIC \$46.95** CDN.

- Gives you 3 different versions of Commodore Basic Programming Language Version 4 PLUS!
- A Built in Machine Language Monitor!
- Disk & File Maintenance Commands
- Data Handling Commands
- Graphics Plus Basic
- Compatible with Commodore's "B" Series & Much Much More!

**RECREATE PROGRAM \$39.95** CDN.

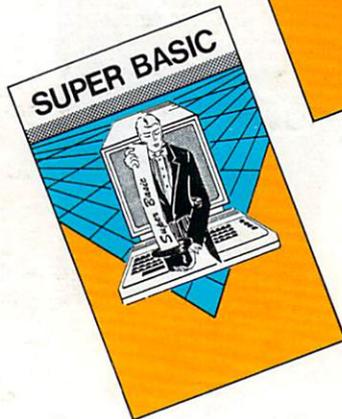
RTC's Answers to Program Recreation  
Converts Printer's File to SCRIPT 64's Files

**SUPER COPY \$39.95** CDN.

- Super Fast Disk Copies on a 1541
- Copy Entire Disk in 7 Minutes or Less
- Copy Selected Files
- Complete Pattern Matching
- Full Prompts

**BASIC AID \$49.95** CDN.

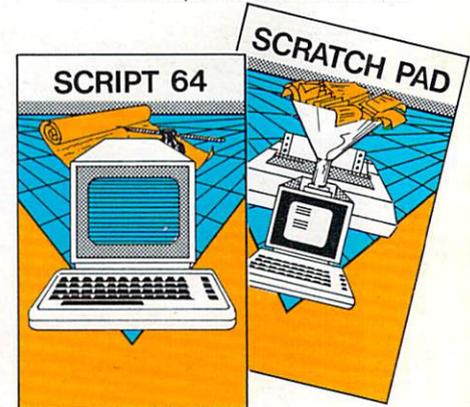
- Your Aid to Writing Programs
- Allows Scrolling Through Programs
- Adds 33 more Commands to the Basic Language
- Has Find, Change, Merge, Move Commands
- Convert Hex, Binary and Decimal Numbers and More!



NEW Combined PACKAGE

**SCRIPT 64 & SCRATCH PAD 64 \$129.00** CDN.

- Script 64:  
Word Processor in French and English  
80 Columns  
Global Search and Replace  
User Created Dictionary  
Spelling Check  
Scratch Pad 64:  
The Database/Mail List in One!  
Merges with Script 64 Word Processor  
Print out Labels, Envelopes, Mail List & More!  
Suitable with both Single and Dual Disk Drives  
Fully C64 Link Compatible

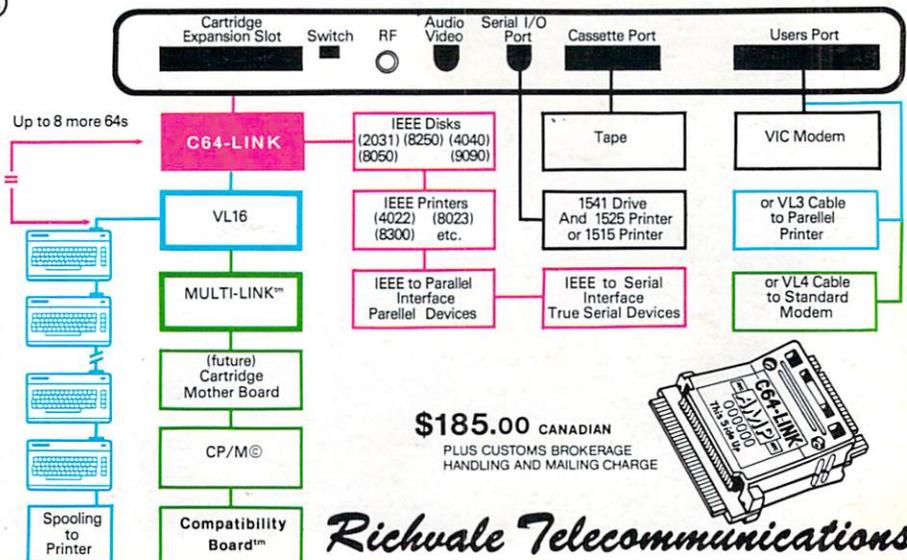


## C64 LINK<sup>®</sup> The Smart 64

Give These Expanded Capabilities to Your 64 and VIC 20

- The ability to transfer data from any type of device to another (IEEE, Serial, Parallel)
- BASIC 4.0 which allows you to run more PET BASIC programs and gives you extended disk and I/O commands.
- The ability to have several 64s on line together - sharing common IEEE devices such as disks or printers with Spooling Capability.
- Built-in machine language monitor.
- A built-in terminal or modem program which allows the system to communicate through a modem to many bulletin board systems and other computer mainframes.
- Compatibility with CP/M.

Contact your local Commodore dealer or RTC.  
Payments by VISA, MASTERCARD or BANK TRANSFER.  
Mail orders also by certified cheque, etc.



**\$185.00** CANADIAN  
PLUS CUSTOMS BROKERAGE  
HANDLING AND MAILING CHARGE



*Richvale Telecommunications*

10610 Bayview Avenue (Bayview Plaza) Richmond Hill, Ontario, Canada L4C 3N8 (416) 884-4165