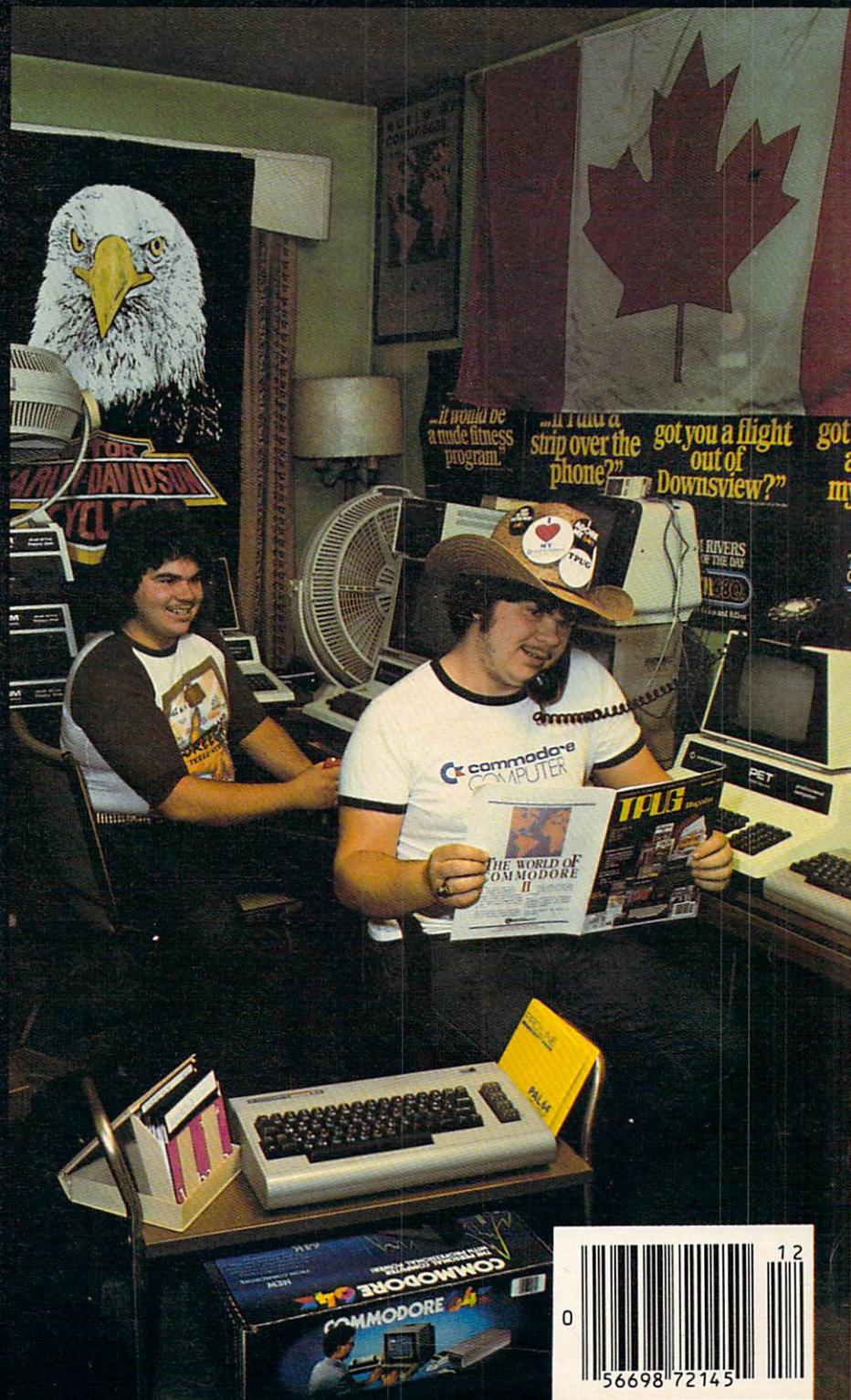


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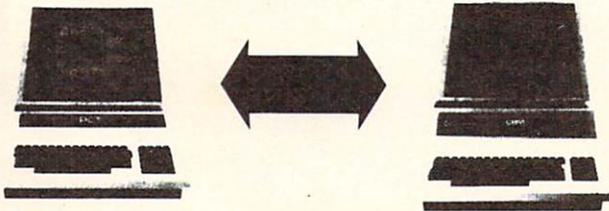
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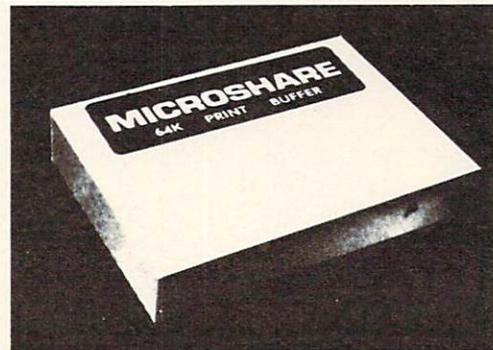
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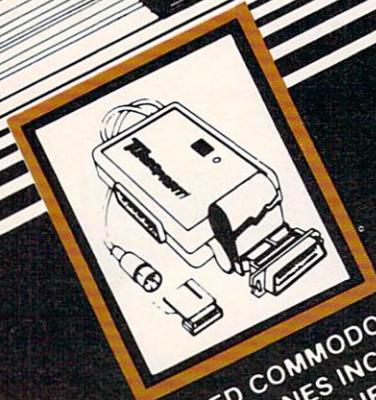
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Featured on our cover are **Richard Bradley**, the TPUG BBS Sysop, and his brother **David Bradley**, newly elected to the TPUG Board Of Directors. Both are well-known for their work as TPUG C-64 librarians.

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Printing

Delta Web Graphics, Scarborough, Ont.

Cover Photo

Roberto Portolese Studio, Toronto, Ont.

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TPUG yearly membership fees:

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Student member (full-time, attends meetings) — \$20.00 Cdn.

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Associate (U.S.) — \$20.00 U.S.

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Toronto, Ont.

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Telephone numbers:

Business Office (416) 782-8900

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Magazine Office (416) 782-1861

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

Subscription: 15,500

Newsstand: 10,000

ISSN #0825-0367

Distributed by:

CompuLit Distributors

PO Box 352

Port Coquitlam, BC

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(604)464-1221

Micron Distributing

409 Queen Street W.

Toronto, ON

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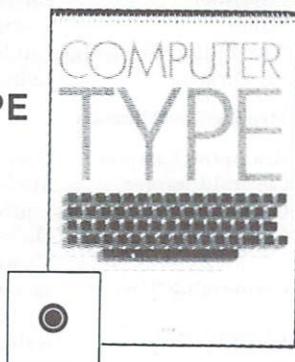
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editorial

Working on a magazine gives one a curious perspective on life. Here I am, in mid-October, with green leaves still on the trees and the clocks still set to daylight-saving time, writing an editorial which will be read by most of you during the darkest days of a Canadian winter. The November issue of *TPUG Magazine*, which to you is a month old, is at the printers and will not be mailed to you for a while yet. But, in order to try to make this editorial seem interesting to you, I must think ahead and imagine the circumstances in which it will be read.

In some ways, this is like writing a "user friendly" computer program. Careful, logical planning and clever coding techniques are no use whatsoever unless the programmer can put himself in the user's shoes, imagining what he will want to do and what mistakes he is likely to make.

I wonder who won the U.S. presidential election. What wonderful new products were exhibited at the World of Commodore next month?!

There are other similarities between programming and working on a magazine. I guess all programmers know what it is like to have spent a long time working on a long and complex piece of software. You think you have made it perfect. All the flowcharts you have drawn have taken account of every possible contingency. Your coding has been checked and double-checked. Weeks of testing by yourself and

all your friends have shown that the program works exactly as it should. Finally, you submit it to the TPUG library or start selling it as a commercial product. Three days after it appears, someone calls you to say that he has discovered a bug. . .



For us, the bugs tend to appear the day after an issue of the magazine comes back from the printers. Usually, they are not too serious. A few typos have gotten into print, despite all the proofreading by ourselves and by everyone else who happened to drop into the office during "production week". Sometimes we find little mistakes which have been made by the printers, or by one of the other companies which do some of the production processes for us. These flaws are not fatal, but they are annoying. We try to make a perfect magazine, yet every issue so far has contained a

few little errors. Like programmers, we have to shrug our shoulders and become fatalists. We do our best.

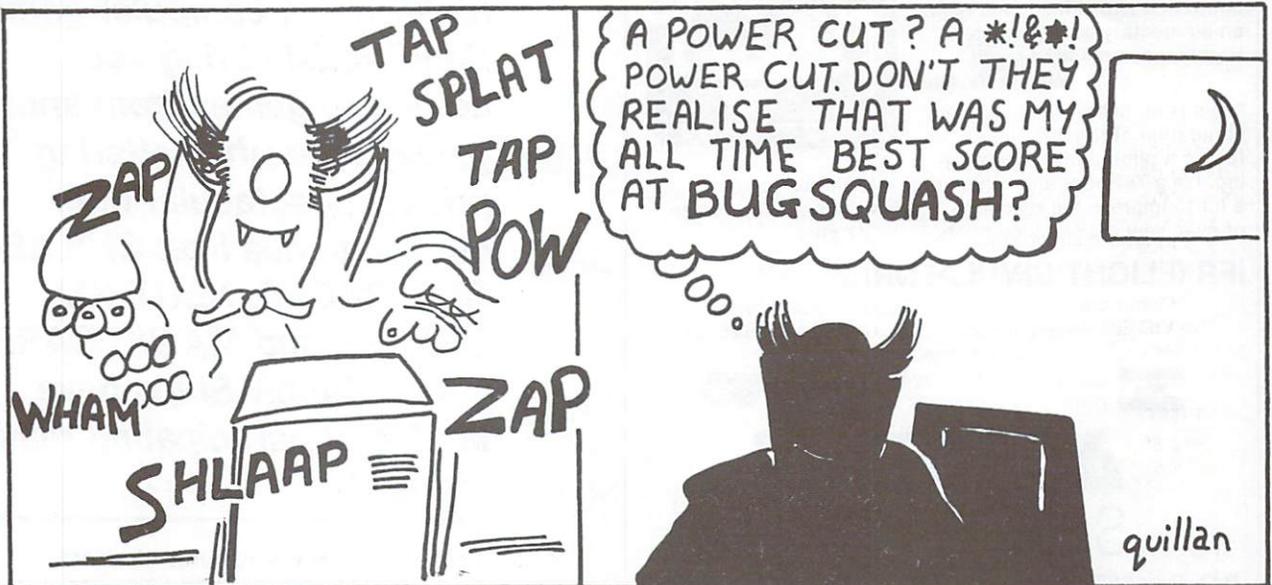
Sir Isaac Newton, whose birthday falls this month (well, not this month — your month — you know what I mean!) would have sympathized had he lived long enough to meet Einstein. Newton's wonderfully elegant law of universal gravitation, which seemed to provide perfect, quantitative answers to many kinds of problems, turned out in the end to be imperfect. It was merely an approximation to the effects of bending spacetime into knots which, in turn, may yet turn out to be merely a by-product of something else. Newton did the best he could, and it was very good. But it was not perfect. How are the mighty fallen?!

Who knows? Maybe, by now (then, whenever) Commodore will actually have released the new Plus/4 and C-16 machines onto the Canadian market. Maybe we will have been timely in printing an introduction to these machines in the November issue. You know. I don't.

But I do know that it's 5:00 p.m. on a nice, mild day. The sun is not only above the horizon; it is shining. Whether you are celebrating Newton's Birthday, Christmas, Chanukah, the coming New Year or anything else, I wish you a thoroughly enjoyable and safe festive season. But, right now, I'm going out for a walk in this sunshine.

David Williams

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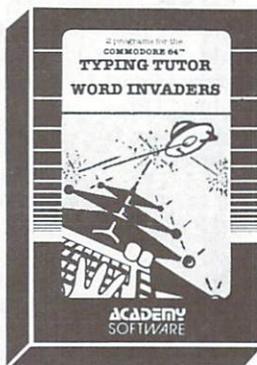
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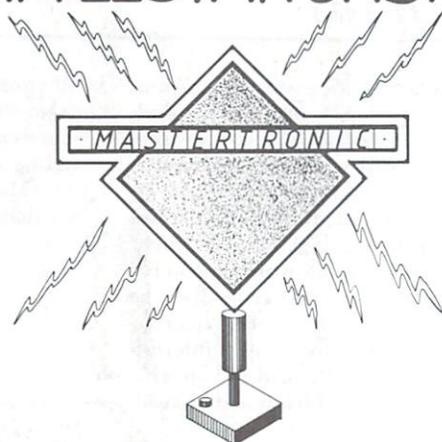


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I bought a small printer from a local K-Mart for by VIC 20. It's a Citizen 2-colour printer. I can't seem to get my local K-Mart to get any paper for it. I've also been to other K-Marts but to no avail. Would some other VIC 20 user know where I can get rolls of printer paper 70mm wide by mail for it?

Bob Hart Jr.
Alton, Illinois

I have a VIC 20 and a C-64 computer which are in turn connected through a Cardco "A" printer interface to a Star Gemini "15" printer. This set up works, but far from ideally. As well as other problems, the Commodore graphics and some cursor control characters are not available. I have tried a Cardco "+G" interface and this is worse, as my printer is a Gemini 15, not a 15X, and will not print characters and graphics on the same line. Therefore I would like to change the character set ROM in the printer, however Star Micronics is no help what so ever. Is there a TPUG member who has information on a Commodore character set ROM for the Gemini 10/15 IE; the price and where these ROM's may be obtained and/or the source code in order to burn an EPROM myself.

Paul W. Aitchison
325 Dalhousie Street
Brantford, ON N3S 3V8

I have a Commodore MPS-801 printer hooked up to the C-64. When LISTing a long program to the printer it prints right on the perforation lines between the sheets of tractor-feed paper. How do I get the MPS-801 to skip a few lines either side of the perforations especially during a long LISTing?

The Epson MX-100 I use at the office has a simple CHR\$ command that accomplishes this. I'd even settle for a few machine language POKEs to accomplish this on the MPS-801.

John Abele
2904 Papermill Rd.
Huntingdon Valley, PA 19006

I have a problem with the program "DM MASTER.C" on disk (C)T6. I can only get it to select and make a character. When the "W" (weapons) selection is selected the program says "You do not start with a weapon." That is as far as we can get. We have tried different levels, different characters etc. but to no avail. I also printed the program on the printer but not being much at programming, still don't know what I am doing wrong. Could someone supply some information so we may get the program to operate.

Lorne R. Ingrey
Berwyn, Alberta

I have the program "CASTLE QUEST.40" which I have tried time and time again to play, but it is very difficult due to the limited instructions. Can someone provide me with a list of all the commands used in this game. Also I need the answers to the following questions about the game. How do you give the fertilizer to the tree, to get the apple in the conservatory? What do you do about — the large mirror in the storage room? — the picture of the king in the king's quarters? — the oriental rug in Merlin's room? — the statue of the queen in the queen's quarters? What do you do with the medicine cabinet in the royal washroom?

Liana B. Share
St. Laurent, Quebec

I donated a C-64, several texts and a few programs to a resident of one of our local mental health facilities about a year ago. He has taken a lively interest in the C-64 and has begun corresponding, asking me various computer-type questions. Until recently I've been able to keep up with him by following the educator's process of quickly "reading the lesson" as soon as I find out what it's going to be. Yesterday I received a question I'm unable to answer, and I can't seem to find the answer in my books. Can someone help?

The question: "When I type columns of figures to the screen how do I keep the decimal points lined up?"

Name withheld
Minnesota

Asst. Bus. Manager's Note: Perhaps someone in the western United States would like to assist in answering the various questions this computer enthusiast has. If so, please let me know.

HINTS

(?) Where to get a VIC-1605 adaptor — C. A. Radley (British Columbia)

You can get the 1605 Modem adaptor by requesting same and sending \$17.12 to the following address: Commodore Business Machines Ltd., 7261 Victoria Park Avenue, Markham, Ontario L3R 2M7. It should arrive within two weeks. It works just fine. It plugs into the back of the VIC MODEM. You then plug a modular phone jack into the adaptor and then wire the other end direct to the phone junction box. If you have jacks in the wall you will need a cord with a male modular plug on both ends.

Herb Carruthers
Vonda, Saskatchewan

(?) How can I get Easy Script to change print styles on my Okidata with Cardco?/+G— Mary Brigito, New York

My setup is a Prowriter with the +G and I had the same problem until just a few days ago when I finally discovered the secret. I'm not sure the same thing will work with the Okidata but it's worth a try.

First, be sure all the switches in the +G are set ON. Then turn everything on and LOAD Easy Script. Don't send any commands to the printer. Tell Easy Script you have a CBM printer (choice 0).

Put in your normal formatting commands, but be sure they are compatible with the pitch of the print you plan to use; both the left margin and the right margin need to be different for condensed than for pica, for example.

From BASIC, to put the Prowriter into condensed print, I must send it CHR\$(27)"Q". As far as I know, most printers work about the same way; send the ESCAPE command (CHR\$(27)) followed by a code specific to what you want. The Prowriter uses N for pica, E for elite, P for proportional, and Q for condensed. I suspect that your Okidata uses other codes. Look in your printer manual to find them.

From Easy Script, to put the Prowriter into condensed print, I type F1 then 'up-arrow' then SHIFT-Q. The fl'up-arrow' causes a reversed capital E to appear on the screen and the Q looks normal. Don't use either : or ;, don't use quotes, and don't use lower case. My first line would read:

EQNow is the time. . . (Except the E would be reversed color.)

I can switch print styles anytime, anywhere including right in the middle of a word if I want. (Underlining too.) It does give some margin problems that you have to work around, though, especially the proportional style.

GOOD LUCK!

W. D. Bainard
Richland, Washington

Some TPUG members may be having trouble with older C1526 printers hanging up when used with VIC 20. Typing SYS64490 sets the serial port timing to the C-64's speed. The 1526 then works fine.

Howard M. Messick
Hartly, Delaware

continued on next page



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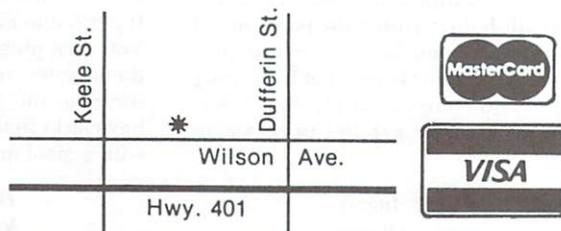
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In the August/September issue of *TPUG Magazine* there was a reference to expanding the Commodore 64 system by the monolith RAM system, marketed and developed by Richvale Telecommunications. I have recently found out that this package has been dropped due to the developer going back to university. Also, Richvale stated that they are not considering developing this package at a future date.

Vickie Martin
Oakville, Ontario

(?) *Is it possible to expand the C-64 to 128K or higher — Jim McCoy (Florida)*

It is possible to expand the memory of the Commodore 64. LETCO (an acronym for Leader Electronic Technology Company) has made an adapter for its 64K cartridge expander originally used with the VIC 20, so that it can be used with the Commodore 64. The price for the cartridge is \$109.95 and the adapter is \$29.95.

As you know, if you try to POKE to any location above 65535, you will get an ?ILLEGAL QUANTITY ERROR. This will be true no matter what you plug into the back of your computer. So how does this expansion work? Jim McCoy correctly deduced that the expansion would have to take the form of bank switching. This is because the Commodore 64 uses a sixteen bit addressing system. That means that the system cannot address any more than 64K at one time (there are only 65536 different combinations that 16 bits can form). However, it is possible to use part of the RAM, then switch it out, and switch in new memory. When the new memory is in, no program (not even the microprocessor) has access to the other RAM. This is exactly how the expander works.

The 8K RAM where cartridges normally go, locations 32768 to 40959, is transformed into eight separate banks of 8K each. The current bank is selected by a POKE. Bank switching is very useful for storing data, (as opposed to programs). For example, a videogame which contained several high resolution screens could make excellent use of this memory expansion. Since each screen uses 8K, the programmer could put each screen into one bank and then switch when the scene changed. This is just one example. Any application which did not need to access more than one bank at once could make use of this product.

However there is one problem. Commercial software that makes use of this product will be extremely limited at first. A software company would be unlikely to commit a product to the users who have the memory expansion; conversely, 64 users would be

unlikely to buy the memory expansion until there was good software that makes use of it. One further point is that 64K is quite a lot of memory for most people. Many would much rather use global files than spend over a hundred dollars for more memory. What we can hope for is that companies, which already have good software, make versions that will utilize the memory expansion. It would be a very small revision for programs like *Paperclip* or *EasyScript*.

Even if this does not happen, it is nice to know that the unexpandable Commodore 64 is expandable, and that those users who want more memory can get it.

Matthew Shulman
Toronto, Ontario

Mr. Howard Verschell wrote in the August/September magazine that the manual for the Cardco interface indicates that the computer must always be turned on first.

Mr. Jim O'Hare adds — My Cardco manual advises that the printer must always be turned on first. In actual fact it doesn't seem to make any difference. I've recently begun turning on the whole system (C-64, Cardco?G, Epson RX80) at once with a switchable power bar and everything works fine. This suggests to me that his problem with the Gemini 10X is due to some other cause.

Jim O'Hare
Victoria, British Columbia

THIS AND THAT

Doris Bradley
Assistant Business Manager

Seasons Greetings

Greetings to you all from all of us in the TPUG office! We are a truly international club with members on every continent. We have members of every colour, creed and political persuasion. We seem to get along quite well as a world community of Commodore computer users — let's try to extend this good will to other aspects of our lives. It has been said many times but at no time has it had greater meaning — Peace on earth, Goodwill to men! This is my wish for you and yours.

Doris Bradley



PET Library

The PET library is still the largest that TPUG has, though the Commodore 64 library is due to overtake it sometime before summer. This PET library has grown up over a number of years, but now we are coming to the point where there are very few programs being submitted to the PET library. So please dust off those programs or ideas for programs and help us support the PET owners. In all likelihood the PET owners will be in a position similar to that of the B-128 owners. They'll have good computers but find it increasingly difficult to get any support for them. TPUG wants to continue to support PET and CBM computers so keep those programs for the library and articles for the magazine coming.

Four-Minute Backup/ Fast Backup/FBACKUP

I hope you had an opportunity to read *Piracy — A Case History* by Jim Butterfield, in the November issue of *TPUG Magazine*. In it he introduced you to the author of this program, Thomas Tempelmann, a student in West Germany who has sold a total of 70 copies world-wide. I recently spoke to Thomas. (I made my first international long distance phone call!) I asked him for permission to actually announce a plan whereby the users of this program can provide a 'thank you' to the author.

As you probably know, TPUG has FAST BACKUP.C on disk (C)TA. Rather than remove it from that disk (a procedure we normally follow when we discover that a program is considered copyright), we are adding the following note to the program.

"This program was written by Thomas Tempelmann, a student who lives in West Germany. If you find it worthwhile and intend to use it, please send a **cheque or money order for \$5.00 (made out to TPUG)** to Thomas Tempelmann, c/o TPUG, 1912A Avenue Rd., Ste. 1, Toronto, Ontario, Canada M5M 4A1. TPUG is willing to act as a clearing house, will purchase German marks and forward the money to the author."

ANYONE who has received this program as a 'public domain' program is welcome to participate in thanking the author for his work in this way! Here's a way to demonstrate the spirit of Christmas!

Other computer clubs/magazines please feel free to spread the word far and wide!

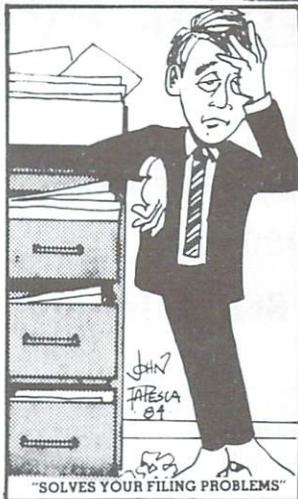
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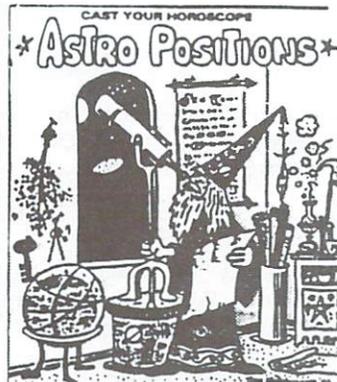
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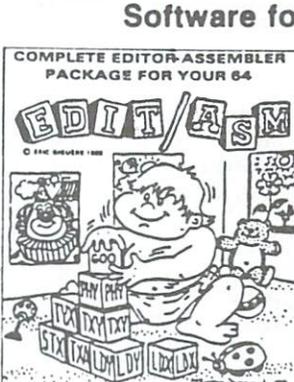


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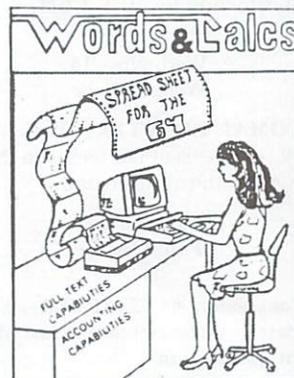


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Fall/Winter Schedule

* * * Please note: The exceptions to the "rule" for the designated date for a meeting (e.g. 2nd Thursday) are shown in bold.

★ **BRAMPTON CHAPTER** — Central Peel Secondary School, 32 Kennedy Rd. N. on the second Thursday of the month at 7:30 in the Theatre.

Thu. Nov. 8 Thu. Jan. 10
Thu. Dec. 13 **Thu. Feb. 14**

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

Wed. Nov. 14 Wed. Jan. 9
Wed. Dec. 12 **Wed. Feb. 13**

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

Thu. Nov. 29 Thu. Jan. 31
Thu. Dec. 27 **Thu. Feb. 28**

Commodore 64 CHAPTER — York Mills C.I., 490 York Mills Rd., (east of Bayview) on the last Monday of the month at 7:30 p.m. in the cafeteria.

Mon. Nov. 19 Mon. Jan. 28
Mon. Dec. 17 Mon. Feb. 25

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

Wed. Nov. 7 Wed. Jan. 2
Wed. Dec. 5 **Wed. Feb. 6**

EASTSIDE CHAPTER — Dunbarton High School, (from the traffic lights at Highway 2 and Whites Rd. — go north on Whites Rd. to next traffic lights — turn left to parking lots) on the second Monday of the month at 7:30 p.m.

Mon. Nov. 12 Mon. Jan. 14
Mon. Dec. 10 **Mon. Feb. 11**

FORTH CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the second Tuesday of the month at 7:30 p.m. in the Story Hour Room (adjacent to the auditorium).

Tue. Nov. 13 Tue. Jan. 8
Tue. Dec. 4 **Tue. Feb. 12**

HARDWARE CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Friday of the month at 6:30 p.m. in the Story Hour Room (adjacent to the auditorium).

Fri. Nov. 2 Fri. Jan. 4
Fri. Dec. 7 **Fri. Feb. 1**

MACHINE LANGUAGE CHAPTER (6502) — Fenton High School, off Kennedy Rd., south of Steeles Ave., Brampton, at 7:30 in the computer room. For further information call Garry Ledez c/o 416-782-8900.

Tue., Dec. 4

SuperPET CHAPTER — York University, Petrie Science Building (check in Room 340). Use north door of Petrie to access building. On the third Wednesday of the month at 7:30 p.m.

Wed. Nov. 21 Wed. Jan. 16
Tue. Dec. 18 **Wed. Feb. 20**

VIC 20 CHAPTER — York Public library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Tuesday of the month at 7:30 p.m. in the auditorium.

Tue. Nov. 6 Tue. Jan. 15
Tue. Dec. 4 **Tue. Feb. 5**

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

Thu. Nov. 15 Thu. Jan. 17
Thu. Dec. 20 **Thu. Feb. 14**

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TPUG ASSOCIATE CLUB CHAPTER MEETINGS

UNITED STATES ★

Boston Computer Society/Commodore Users Group

— meets at Minute Man Tech High School, Rt 2A (just off Rt 128) in Lexington, MA every 2nd Monday of the month at 7 p.m.
Contact Harvey W. Gendreau 617-661-9227

Commodore Houston Users Group (Texas)

— **Clear Lake Chapter** — Nassau Bay City Hall, NASA Road #1, on the first Wednesday of each month at 7 p.m.
— **Central Chapter** — Farrish Hall, University of Houston main campus
— **NW Chapter** — Bleyl Jr. High School, 10,000 Mills Rd. (Cypress-Fairbanks SD), on the 3rd Thursday of each month at 7:30 p.m.
— **Klein Chapter** — Hildebrandt Middle School, 22,800 Hildebrandt Rd. (Klein ISD), on the 3rd Tuesday of each month (except July & August) 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 p.m.
Contact Gordon Hale 313-239-1366

Greater Omaha Commodore 64 Users Group

— meets at South Omaha campus of the Metropolitan Technical Community College, 27th and Q Streets in Room 120 of the Industrial Training Center on the first Thursday of the month at 7 p.m.
Contact Bob Quisenberry 402-292-2753

Manasota Commodore Users Group (Florida)

— meets at Mr. G's Computer World, 2057 Whitfield Industrial Way, Bradenton, FL on the 2nd and 4th Thursdays of the month at 7 p.m.
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— meets at Warren Woods High School in Warren on the 3rd Tuesday of each month at 7 p.m.
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Contact Mike Wilson 705-645-6300

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— meets at Archbishop Jordan High School, Sherwood Park on the last Friday of each month at 7 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.
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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 p.m.
Contact Tim Miner 705-566-9632

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Contact John Moore 519-253-8658

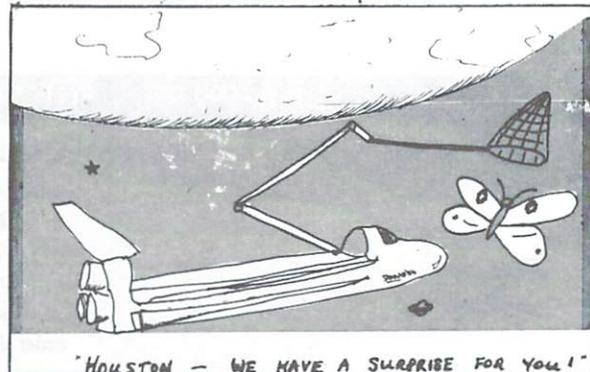
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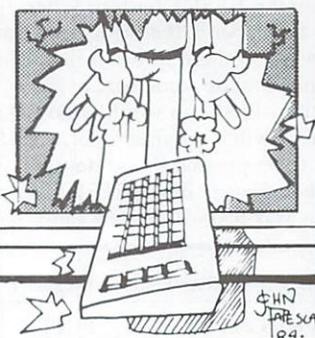
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MICROGRAFIX

Richard Bradley
Toronto, ON

Finally I have found an interface for the Commodore 64 and VIC 20 computers that is really a joy to work with! The interface is the MW 350, from Micro World Electronix, Inc.

Upon opening the green-and-white box you will find everything you need to get you going in minutes: the interface and an excellent *User's Instruction Manual*. The interface itself has two cables permanently connected to opposite ends of a black box. Looking from the front of the interface, the serial cable is on the right and the Centronics Parallel cable is on the left. On the top of the black box are two bright green stickers. The first has the usual things like the brand name and the manufacturer's address: the second has a kind of mini-manual, to help with the setting of dip switches at a glance.

Speaking of the dip switches, I am pleased to inform you that they are completely accessible from the outside of the interface. This is a big plus over some of the other graphics interfaces that are presently available. I find the exterior dip switches make this interface ideal for all users. They are especially good for people who get very nervous about taking any components of their computer system apart. The six dip switches control four main areas: Switches 1, 2 and 3 control what kind of printer you are using. With these settings you can match your printer with one of the four standards that exist with most Centronics parallel printers. These four standards are EPSON, PRO/NEC, OKIDATA and SEIKOSHA. In the manual there is a breakdown of which printers fall under which of the four standards. There is also a UNIVERSAL setting that will allow all printers to print without graphics. Switch 4 controls line feeds (AUTO or NO LINE FEED). Switch 5 toggles between the EMULATE and TRANSPARENT mode. Switch 6 allows the printer to be addressed as either Device 4 or Device 5.

There is also an interface reset switch. This can be used for a number of things. If you would like to have the MW 350 run its internal self-test, which it does on power up, you would press and release the RESET button. When the interface has completed its tests, the paper will advance one line, to tell you that all is well. If you were in the middle of printing something and realized that you have made some sort of error, you might want to abort the printing. First you would stop the computer and then press the RESET switch on your interface. (NOTE: The RESET does not need to be pressed if you do not have a buffer in your interface). The best feature of the RESET switch is that if you press and hold it, the MW 350 will print a status report that looks like this:

MICROGRAFIX INTERFACE STATUS REPORT

RELEASE 1.5

PRINTER	BUFF	MODE	LNFD	DEV#	LMAR	RMAR	FLEN	123456
UNIVERSAL	4K	EMULATE	OFF	004	000	000	000	---*---

From this, you are given a full report on how your interface is set up. Included with this is a diagram of the dip switch settings.

With the MW 350, there are a few other features that are unparalleled (no pun intended folks) by any other graphics printer interface. These include the ability to set left margin (0-255), right margin (0-255) and form length (20-127). This would be especially useful if you wanted to put a program listing in a binder. You could set the left margin to 10 and then punch holes in the paper without losing

any information. The way in which I find it most useful is when I am doing a listing on a wide carriage printer, using 8½" X 11" paper. If I happen to have a line that is over 80 characters long, I lose everything past the 80th character on the roller. To get around this, I can just set the right margin to 80 (actually, I use 70) and then I will be sure of getting the whole program on paper. Through use of these three settings, it should be possible to print good listings on whatever sized paper you have available.

The two most important things that any interface should have is complete 1525 emulation and an easily accessible transparent mode. The MW 350 has both. In the emulation mode, all 1525 features (including secondary addresses) are accessible. The simplest way to check this is to run the printer test that comes on the Commodore demonstration disk. If you were to compare the output from the 1525 and the output from a centronics parallel dot matrix printer, the only difference you might see would be in the quality of the print. To enter transparent mode, all you have to do is change one dip switch. This mode is most commonly used with word processors.

High Resolution Printing

Many people have seen the various graphics packages that will print high-resolution pictures on your printer. Other interfaces sometimes require multiple passes to draw a single line of a picture. With the MW 350 this is not the case at all. Providing, of course, that you have satisfactory software to dump a picture from the screen to the printer, the MW 350 not only prints it, but prints it fast and it will look good. (Of course, the quality of the picture will also depend on your printer).

Some Other Nice Features

Although the standard unit does not include a buffer, there are provisions available to expand to either 2K or 4K. The unit I have for review includes the 4K buffer. I have never before had a printer buffer, but after using the MW 350 I have come to appreciate the value of such a feature very much. The MW 350 is regularly powered by the printer, but with some printers (like EPSON for instance) the power is not provided. If this is the case, you can get a separate cable that connects from your cassette port to power the interface. To find out if you require this extra cable you have to consult your printer manual to see if 5 volts is provided on pin 18 of the 36 pin connector.

SUMMARY

The interface is full-featured. The documentation is complete and concise (all 48 pages of it). The interface can be used with virtually any Centronics Parallel printer. I rate this an excellent product — it is by far the best printer interface that I have used. If you are looking around for a good interface, look no farther. . . it is here!

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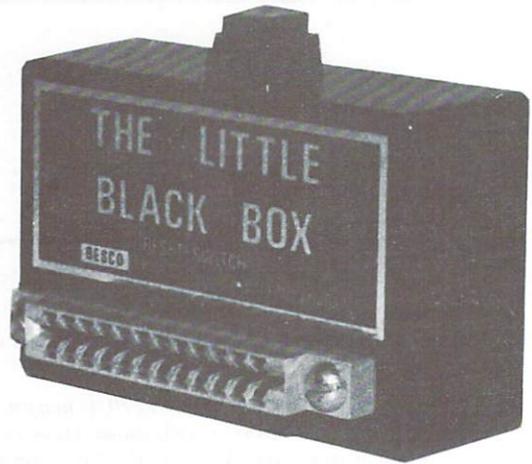
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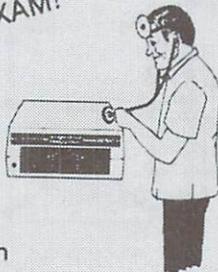
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THE BEGINNER AND THE DISK - PART V

Or: *Things Mother Commodore Never Told You*

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Barrie, ON

After our one month respite, we're back to wrap up some of the disk handling techniques of interest to beginners. The principal DOS functions of NEW and INITIALIZE appeared in Part I (June); the Wedge and error handling came in Part II (July); disk LOAD and SAVE was in the August/September issue; and October's copy discussed VALIDATE and SCRATCH. That leaves us with RENAME, COPY and DUPLICATE as the remaining DOS functions that have not been described.

Rename

Let's suppose that you have been slaving away, creating the world's greatest blackjack game. Along the way, you have had seventeen stages of development. Because you are a stickler for redundancy, they're all on a disk, and identified by the sequence of names: "BJ 1", "BJ 2", . . . , "BJ 17". Now you are ready to bless the last version with its true moniker: BLACKJACK.

Let's get the disk directory into memory first, to make sure that this is the right diskette:

```
LOAD "$0", 8           (all machines, Drive#0)
>$0 or                 (with the Wedge)
@$0                    (with the Wedge)
CATALOG D0             (BASIC 4.0 only)
DIRECTORY D0          (BASIC 4.0 only)
```

By now you know that the first technique is a BASIC LOAD command: you did remember to SAVE that program in memory first, right? Use LIST to generate the screen display, if you didn't use the Wedge or BASIC 4.0 commands.

To RENAME the subject program or file, you must use the following syntax:

```
OPEN 15, 8, 15        (all machines, Drive#0)
PRINT#15, "R0:BLACKJACK=BJ 17"
CLOSE 15
>R0:BLACKJACK=BJ 17   (Wedge only)
@R0:BLACKJACK=BJ 17   (Wedge only)
RENAME "BJ 17", D0 TO "BLACKJACK" (BASIC 4.0 command)
```

Notice that I've specified Drive#0 after the "R" command, even though this is used on a single disk drive. Be very careful that the filenames appear with the *new* filename first. It's just like BASIC's assignment statement "LETA=A+1" where the right-hand side is calculated and assigned to the variable name on the left-hand side. To complicate the issue, BASIC 4.0 reverses the presentation. The excuse here is that the word "TO" will make it obvious that the old is renamed TO the new filename.

Misspelling of the old filename is quite common, and the disk error light will merrily blink away at you unless you get it right.

Copy

The main reason for a COPY command is to generate a duplicate of your valuable program or file. Most people would like that backup on another diskette. Your single disk drive severely cramps your style. Even those people who have two 1541's (or 2031's) will not gain anything. The COPY command cannot transfer from one "unit" to another.

These limitations do permit you to add a backup copy to the same diskette. Of course, this means altering the filename, since dupli-

cate names are not allowed in the directory. Using the above diskette as an example, we'll make a second copy of the RENAMED "BLACKJACK" program:

```
OPEN 15, 8, 15        (all machines, Drive#0)
PRINT#15, "C0:BJACK-BU=0:BLACKJACK"
CLOSE 15
>C0:BJACK-BU=0:BLACKJACK (Wedge only)
@C0:BJACK-BU=0:BLACKJACK (Wedge only)
COPY "BLACKJACK", D0 TO "BJACK-BU", D0
(BASIC 4.0 command)
```

The COPY function has made an identical copy of BLACKJACK and placed it on the same diskette. The new name was chosen to be BJACK-BU for this copy. The "BU" stands for "backup", a convention that I frequently use. You'll have to watch out for filenames exceeding sixteen characters, for both RENAME and COPY.

For those lucky folks who can put two disk drives in the same place, the ability to copy files is improved. Two single drives cannot use this COPY command, since they must have different device numbers.

Well, you might ask, what good are these two disk drives sitting here, if I can't use them both? Jim Butterfield's COPY-ALL64 is the solution for you. With two drives, say Device#8 and Device#9, connected the program offers you a menu selection from the "source" disk. It even allows you to format (NEW) the "destination" disk. If you want to copy programs from more than one source disk, the program offers that choice when the first one has been completed. If there isn't room on the destination disk, the program asks if you have a fresh one—and also allows it to be formatted before the transfer takes place. As a further bonus, you can use wild cards and pattern matching in the selection of files to be transferred. COPY-ALL will transfer all types of disk files.

The only preparation you need is to make sure that the two disk drives have different device numbers (units). If you have made the permanent hardware address change for one of them, then skip the next paragraph.

The utility disk that came with your 1541 has a program called DISKADDRCHANGE. With both drives connected to the system, make sure one is turned off. LOAD this program into the other one, RUN it and change it to Device#9. Now power up the other disk drive, LOAD the COPY-ALL64 into one (remember that it could be Device#9 now!), and RUN it. Follow the prompts and your copying will proceed forthwith. When finished, turning off the power will restore the old device number.

Even if you have but one disk drive, or instead want to make your backups to tape, don't get frustrated. Jim Butterfield has again come to the rescue with UNICOPY. It's available for either PET/CBM BASIC 4.0 or for the Commodore 64. This program will copy a disk, with menu selection of programs or sequential files. It offers the capability to transfer them to another disk or to cassette tape.

The data is temporarily stored in the computer's RAM, which means that a full disk isn't going to be copied in one pass. However, since it offers the directory of the source disk one-at-a-time, you can get just what you want. One caution is in order here—the destination disks must be formatted in advance, so be sure to get a couple ready in advance. Pattern matching and wild cards are again possible. After one copy is complete, you can make another backup quickly—just answer yes and insert another destination disk/tape. If your choice of programs is too big to fit in memory, the screen message "more" indicates you didn't see all the available

continued overleaf

programs from the source disk. In this case, you must reRUN the program and reinstall the source disk. Skip the files already copied as the filenames appear, and start the selections from where you left off. You cannot copy RELATIVE data files with UNICOPY.

UNICOPY will copy the DOS5.1 program; other machine language object code that doesn't load where BASIC wants it; and picture files, sprite definitions or character sets that can't be copied easily. It's a real gem, and fits a very empty spot in the utilities repertoire.

I would be remiss if I didn't mention the COPY command where you have a dual disk drive. This is a case where a double drive adds up to more than two single ones put together. The difference, with the 4040/8050/8250 or the MSD dual drive, is that both drives (#1-left, #0-right on the Commodore drives. On the MSD dual drive, #0 is on the LEFT and #1 on the RIGHT!) are part of the same *unit* or *device*. Now we can take advantage of the DOS COPY function.

So, to make a backup copy of our BLACKJACK program, with the source program in Drive#0, and the destination disk in Drive#1, we could enter:

```
OPEN 15, 8, 15 (all machines, Drive#0)
PRINT#15, "C1:BLACKJACK=0:BLACKJACK"
CLOSE 15
>C1:BLACKJACK=0:BLACKJACK (Wedge only)
@C1:BLACKJACK=0:BLACKJACK (Wedge only)
COPY "BLACKJACK", D0 TO "BLACKJACK", D1
(BASIC 4.0 command)
```

You will notice that there's no need to change the program name—the different disk surface doesn't care about the other one. Lazy folk like myself may recognize that the destination filename, since it's the same as the source filename, can be abbreviated. The wild card symbol will do the trick:

```
OPEN 15, 8, 15 (all machines, Drive#0)
PRINT#15, "C1:*=0:BLACKJACK"
CLOSE 15
>C1:*=0:BLACKJACK (Wedge only)
@C1:*=0:BLACKJACK (Wedge only)
COPY "BLACKJACK", D0 TO "*", D1 (BASIC 4.0 command)
```

In fact, without using a COPY-ALL version, you can copy the whole disk in Drive#0 to Drive#1 with the commands:

```
OPEN 15, 8, 15 (all machines, Drive#0)
PRINT#15, "C1=0"
CLOSE 15
>C1=0 (Wedge only)
@C1=0 (Wedge only)
COPY D0 TO D1 (BASIC 4.0 command)
```

Be sure to remember that the destination is on the left of the equals sign, but appears second if you have BASIC 4.0 commands to work with.

Duplicate

The foregoing discussion on dual disk drives leads us to this final DOS command. If you don't have a dual drive system, then DUPLICATE is not available to you. Period. The command allows for an exact backup of a given disk, much more quickly than a single file copy program. The syntax would be:

```
OPEN 15, 8, 15 (all machines, Drive#0)
PRINT#15, "D1=0"
CLOSE 15
>D1=0 (Wedge only)
@D1=0 (Wedge only)
BACKUP D0 TO D1 (BASIC 4.0 command)
```

A sticker over the write-protect notch of the source disk will guard against data being written to the wrong diskette. Rather than just suggest to you that a "write-protect" sticker is a good idea, I *insist* that you do it. It's all too easy to goof, and get the command backwards—then goodbye forever to the valuable stuff! (Voice of experience speaking).

It might be worth mentioning that you should not just carry on after getting an error #26 (WRITE PROTECT ON). It seems that the recording head *will* write something as its next operation. So remove the diskette and reset the disk drive before resuming.

The examples above demonstrate a duplicate of the disk in Drive#0 being made on to a "blank" disk in Drive#1. Of course the "blank" disk could be any one that you don't mind losing the data from. It certainly will become that shortly!

You could issue the opposite sequence, and put the source disk into drive 1. Just put yourself into a habit of doing it the same way all the time, then you are less likely to wreck a valuable disk. (Of course, the write-protect sticker will rescue that, won't it?)

Letters

I have received several questions since this column began. Although I cannot respond personally to each, here are a few typical ones:

Q. My dealer strongly recommends a head cleaner for disk maintenance. What is your opinion? J.H., Ashburn, ON.

A. I've never used one in the six years I've had a disk drive. Perhaps the heads were cleaned when it was in for service (twice). As with audio tapes, I'm a believer in the "self-cleaning" properties offered by the disk jacket, and in using good quality media.

Q. Can our group reprint your series in our club newsletter? W.E., Shelby, OH.

A. Sorry, no. Although the magazine doesn't show it, I have retained copyright on the articles. By accepting slightly less remuneration, I'm hoping to use the series in another way in the future.

Q. Several readers have taken issue with my assertion that there is no easy way to transfer the Wedge. Each writer has provided a "short" BASIC program to do the job. COMPUTE! did one a while back, too.

A. Your programs do work, but I take issue with the general method. It requires that you know the magic values to POKE into memory in advance. While these have been published for the DOS5.1, you are stuck to do it with any other similar type of file. Use the copy utilities instead.

Q. How do you trap a disk error in your program? E.H.-D., Rouyn, QU.

A. After each disk access, call the error test subroutine below. Be sure to open the command channel in your program and leave it open, if there are other disk files concerned.

```
1000 REM DISK ERROR CHECK
1010 REM COMMAND CHANNEL WAS OPENED AS:
1020 REM OPEN 15, 8, 15
1030 INPUT#15, EN, EM$, ET, ES
1040 IF EN < 20 THEN RETURN
1050 PRINT "DISK ERROR"; EN; EM$; ET; ES
1060 CLOSE 15: END
```

Other logic can be used if "EN" represents a true error. Here we just abort the program. You will probably need to CLOSE any other open files, before you CLOSE15.

So long until next month, when we will enter the wonderful world of files. Keep those cards and letters coming in, through the Editor. TPUG

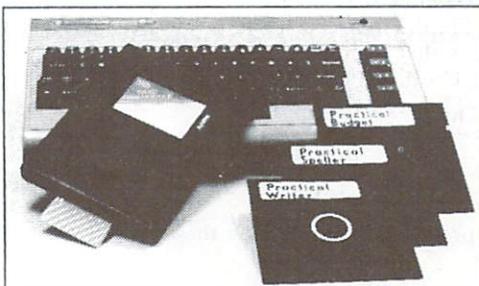
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TPUG COMAL COURSE - Part IV

Borge Christensen
Tonder, Denmark

6. HOW TO FIGURE OUT A FIGURE.

Before you start working with this part of the article, you should store VALUE and INTERPRET on disk by using the command:

```
LIST 10-170 "VALUE+INTERPRET"
```

If you use a cassette, the following command must be applied:

```
LIST 10-170 "VALUE+INTERPRET",1          device code: 1=tape
```

The COMAL system is disk-oriented, so default device code is 8.

Clear the workspace (NEW) and the screen (press <CLR>) and enter these lines:

```
DATA "                                     "
DATA "          XX                       "
DATA "          XXXX                      "
DATA "          XXXX                      "
DATA "          XXXXXX                    "
DATA "          XXXXXX                    "
DATA "          XXXXXXXX                  "
DATA "          XXXXXXXX                  "
DATA "          XXXXXXXXXXXX              "
DATA "          XXXXXXXXXXXX              "
DATA "          XXXXXXXXXXXXXXXX          "
DATA "          XXXXXX  XXXXX             "
DATA "          XXXXX   XXXXX             "
DATA "          XXXX    XXXX              "
DATA "          XXX     XXX               "
DATA "          XXX      XXX              "
DATA "          XX      XX                "
DATA "          XX      XX                "
DATA "          X       X                 "
DATA "          X       X                 "
//
```

Be careful! Each string must be 24 characters long! And note that the first item is a string of 24 blanks. String constants must always be enclosed in double quotes.

Now type RENUM 5000 to get your delta-wing DATA lines numbered from 5000 to 5210. Type LIST to see that this has really happened, and then use the command:

```
LIST "UP DELTA/L"          on tape: LIST "UP DELTA/L",1
```

to store the lines for later use.

Re-enter VALUE and INTERPRET by using

```
ENTER "VALUE+INTERPRET"    on tape: ENTER "VALUE+INTERPRET",1
```

Type LIST to check that you have the following in workspace: The function VALUE from 10-90, the procedure INTERPRET from 100-170, and the DATA statements from 5000 and on. Replace line 130 in INTERPRET with the following

```
130 TEXT$:=TEXT$+CHR$(BYTE)
```

Then erase line 140 with the DEL 140 command. Type AUTO 180 and enter these main lines:

```

DIM TEXT$ OF 64, THISLINE$ OF 24
//
REPEAT
  READ THISLINE$
  INTERPRET(THISLINE$)
UNTIL EOD
TEXT$(64:64):=CHR$(0)
//
DEFINE 1,TEXT$
SETGRAPHIC 0
IDENTIFY 0,1
SPRITECOLOR 0,7
SPRITEPOS 0,50,50
//

```

The program is complete now. Try to RUN it. If you have typed in the correct lines, a small yellow delta-wing sprite should appear on the screen with its upper left corner at position (50,50).

A hi-res sprite consists of 504 pixels arranged in 21 rows of 24 pixels each. Within this frame, a pixel can be ON or OFF. If it is ON, it shows the sprite's foreground color; if it is OFF, it shows the present background color, which means that it is invisible.

The states of the 24 pixels in a row is simply represented as 3*8 bits; i.e. 3 bytes. The ON state is indicated by a "1", and the OFF state by a "0". With 21 rows of 3 bytes each, you get 63 bytes. Yet an extra byte, no. 64, is needed, which must be set to zero to signal a hi-res sprite.

A byte may be represented as a character. This conversion is done by the built-in CHR\$ function. Having performed this conversion, the 64 bytes that describe a sprite can be stored in a string of 64 characters, and from then on you can define the sprite by referring to the string that holds the full description of it. The picture below may prove helpful:

column:	1-8	9-16	17-24
row:			
1	TEXT\$(1:1)	TEXT\$(2:2)	TEXT\$(3:3)
2	TEXT\$(4:4)	TEXT\$(5:5)	TEXT\$(6:6)
...			
21	TEXT\$(61:61)	TEXT\$(62:62)	TEXT\$(63:63)

Let us take a second look at some of the main lines:

TEXT\$:=TEXT\$+CHR\$(BYTE)	One byte is added as a character to the string variable TEXT\$.
TEXT\$(64:64):=CHR\$(0)	The 64th character of TEXT\$ is signalling a hires sprite.
DEFINE 1,TEXT\$	Sprite no. 1 in the pool of available sprites is defined.
IDENTIFY 0,1	Acting sprite no. 0 is modelled after sprite no. 1 from the pool.
SPRITECOLOR 0,7	The foreground color of acting sprite no. 0 is set to yellow.
SPRITEPOS 0,50,50	Acting sprite no. 0 is positioned with its upper left corner at the point (50,50).

You should be aware of the difference between a sprite that is available in the pool and an actually acting sprite. If you think of the whole sprite affair as a puppet show, you can have 48 puppets ready in the cupboard, but only 8 of them can act on stage at the same time. The DEFINE statement is used to fill up the cupboard with puppets – to hire actors for the show – and the IDENTIFY statement is making one of them ready to act on the stage.

However, the picture is not quite adequate, since more than one acting sprite may use the same definition. But it may be useful to guide your thinking at the beginning. As you get used to the language your mind will be relieved of these semi-concrete restraints.

continued overleaf

If your computer is still in graphics mode then press <f1> to return to text mode. By pressing <f3> you can get back to graphics mode again, if you wish to take an extra look at the delta wing.

We would like to save the text that holds the definition of the sprite. Type AUTO 320 and enter this procedure:

```
PROC SAVESPRITE
  OPEN FILE 3, "UP DELTA", WRITE
  WRITE FILE 3: TEXT$
  CLOSE
ENDPROC SAVESPRITE
//
```

Type RUN and wait until the sprite appears on the graphics screen. Then use this direct mode call

```
SAVESPRITE
```

and note that the disk drive starts. Use CAT to check that a **sequential data file** with the name of "UP DELTA" is now on disk.

Important note. Under revision 0.14 the WRITE FILE statement cannot be used to store a data file on tape. The OPEN statement must be replaced by

```
OPEN FILE 3, "UP DELTA", UNIT 1, WRITE
```

and instead of the WRITE FILE statement, this one must be applied:

```
PRINT FILE 3: TEXT$
```

Press <f1> to get back to the textscreen. Then type RENUM and compare your program with the listing which is found in the addendum. Now cut away the DATA statements by using the command

```
DEL 370-
```

and store the rest of the program by typing

```
SAVE "GEN SPRITES" on tape: SAVE "GEN SPRITES",1
```

Clear the workspace and the screen and enter these lines:

```
DATA " " "
DATA "XXX "
DATA " XXX "
DATA " XXXX "
DATA " XXXXX "
DATA " XXXXXX "
DATA " XXXXXXX "
DATA " XXXXXXXX "
DATA " XXXXXXXXX "
DATA " XXXXXXXXXX "
DATA " XXXXXXXXXX "
DATA " XXXXXXXXXX "
DATA " XXXXXXXXXX "
DATA " XXXXXXXXX "
DATA " XXXXXXXX "
DATA " XXXXXX "
DATA " XXXXX "
DATA " XXXX "
DATA " XXX "
DATA "XXX "
```

Type RENUM 5000 and store the lines using the command

```
LIST "RTDELTA/L" on tape: LIST "RT DELTA/L",1
```

Then reload the "GEN SPRITES" program (LOAD "GEN SPRITES") and list it to see that it has arrived safely in workspace. Allocate the DATA lines to it by typing

```
ENTER "RTDELTA/L" on tape: ENTER "RT DELTA/L",1
```

and LIST again. Rewrite line 320 of SAVESPRITE to become

```
320 OPEN FILE 3,"RT DELTA",WRITE
```

and RUN the whole thing. A yellow delta wing headed to the right should appear on the graphics screen, and if that is in order you can store the description by calling SAVESPRITE.

WARNING. Do not forget to change the filename in the OPEN FILE statement. If you forget that, the system will try to store the new contents of TEXT\$ under the same name as before. As the OPEN FILE statement stands, this is impossible, and the sad result is that nothing at all is stored. Deliberate overwriting of files will be dealt with later.

Type CAT to see that you have two delta wings stored: "UP DELTA" and "RT DELTA". And now it is your turn. Using the same procedure as before, design two more delta wings, one pointing downward and the other pointing to the left. The first one should be stored in "DN DELTA" and the second one in "LT DELTA".

Be on your guard with all the loading, saving and linking business. Always give it an extra thought before you LIST something on disk or tape. Is this really what I need to allocate later on? And do not forget to renumber the lines before storing them. Otherwise they may come in later and overwrite the procedures and mainlines they were supposed to support. In revision 2.00 it is much easier. There you have an extra command called MERGE that automatically places lines fetched from the disk or tape at the end of the program that resides in workspace. But for now, we shall have to dream about that — and keep asking COMMODORE!!! TPUG

To Be Continued. . .

VIC 20 NOTES *OCTOBER MEETING*

At the October VIC 20 meeting, Russ Groombridge brought some good news for owners of 1541 disk drives. It seems that disk drives older than about six months go out of alignment easily, and realignment is an expensive job. Commodore has announced a fix that improves the operation of the head mechanism, and will install the upgrade for about \$70 (Cdn). Russ warned that Commodore Canada will not even look at a unit that was purchased in the U.S.

Anne Gudz, who is the new announcer for the VIC 20 group, issued a warning for members who would like to use the VIC 20 for word processing. When she bought her printer, Anne wanted a better print quality than is provided by the 1525, and opted for a 1526 instead. Now she finds, according to the technical types at Commodore, that this printer was not meant to be used with the VIC 20. A difference in timing causes the printer to "hang" after about three lines. It is possible to reset the VIC 20 timer with POKE 67160,0: POKE 67161,1 however, this fix is wiped out by most M/L or cartridge W/P programs. Anne is still looking for a processor that will let her use her printer.

(Editor's Note: For a further suggestion, see the "Help-Hints" column elsewhere in this magazine.)

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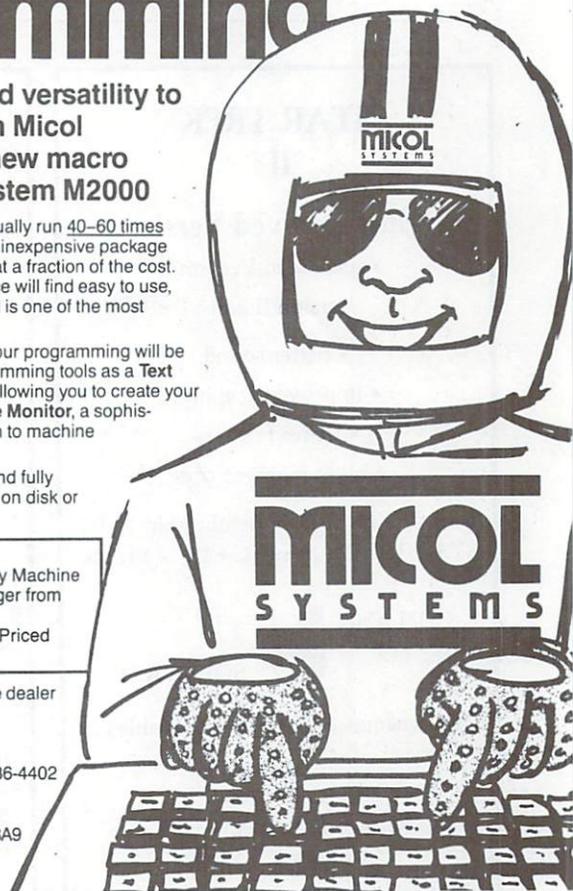
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MENU HANDLING - Part III

John Easton
Toronto, ON

OK, we've done enough talking. Let's construct an INTRODUCTORY PAGE and then gather a statistic (that's singular, in deference to our harried editor).

Remember, we bypassed the subroutines with a GOTO 1000 command way back in our setup area, so we'll now construct our

PROGRAM STRUCTURE starting at line 1000. Actually, I usually prefer to put REMARKS at even module numbers such as 1000 and, as it's terrible practice to GOTO (or GOSUB) a REM statement, my common practice would be to GOTO 1010 for a proper target line.

```
999 :
1000 REM ***** PROGRAM STRUCTURE *****
1001 REM *****
1010 GOSUB 10010 : REM TITLE PAGE
1020 GOSUB 11010 : REM STATISTICS
1999 :
2000 REM ***** LOAD MAIN MENU *****
2001 REM *****
2010 PRINT VT$(24)"[RVS] Thank you, now we can be friends ! [RVS/OFF]";
2020 FOR I = 1 TO 2000 : NEXT
2030 PRINT CL$ : PRINT LN$
2040 PRINT "[RVS] Loading PROGRAM DIRECTORY Please Wait [RVS/OFF]"
2050 PRINT "[RVS]" LN$
2060 POKE KEY,EN : REM ENABLE LOAD BY RE-ENABLING STOP-KEY
2070 LOAD "DIRECTORY",8
2080 END
2070 :
10000 REM ***** TITLE PAGE *****
10001 REM *****
10010 PRINT CL$ : REM CLEAR SCREEN
10020 :
10030 :Note - print your whiz-bang title page
10090 :
10100 GOSUB 300 : REM SPACE - BAR PROMPT
10110 RETURN
10120 :
11000 REM ***** STATISTICS *****
11001 REM *****
11010 PRINT CL$;VT$(2);"To satisfy my insatiable curiosity,"
11020 PRINT "would you please indicate the area you"
11030 PRINT "represent -" : PRINT LN$
11040 PRINT VT$(8) , "[RVS] 1.[RVS/OFF] Newfoundland"
11050 PRINT , "[RVS] 2.[RVS/OFF] Nova Scotia"
11060 PRINT , "[RVS] 3.[RVS/OFF] New Brunswick"
**** and so on up to
11170 PRINT , "[RVS]12.[RVS/OFF] Yukon Territories"
11180 PRINT , "[RVS]13.[RVS/OFF] Other"
11190 PRINT VT$(24);"[RVS] PLEASE SELECT APPROPRIATE # 1 TO 13 [RVS/OFF]";
11200 GOSUB 400 : REM DOUBLE-GET
11210 IF A < 1 or A > 13 THEN PRINT BEL$ : GOTO 11010
11220 POKE 834,A : *** Note - our first 'pigeonhole' is filled with data.
11230 RETURN
```

continued overleaf

MAIN MENU PROGRAM

Now that we've successfully loaded the DIRECTORY program from inside the BOOT program (an operation sometimes called 'chaining') we'll discover that the computer still thinks it's running the original BOOT program, complete with its artificially high End-of-BASIC pointer. What's more, we've still preserved STRING

VARIABLES by means of concatenation to an area way up at top of memory. One aspect of this DYNAMIC LOAD that we've just performed is that the program automatically proceeds to the start of BASIC and RUNs.

With that in mind, we might as well include our standard subroutines at the start of this new Directory Program plus any other housekeeping stuff.

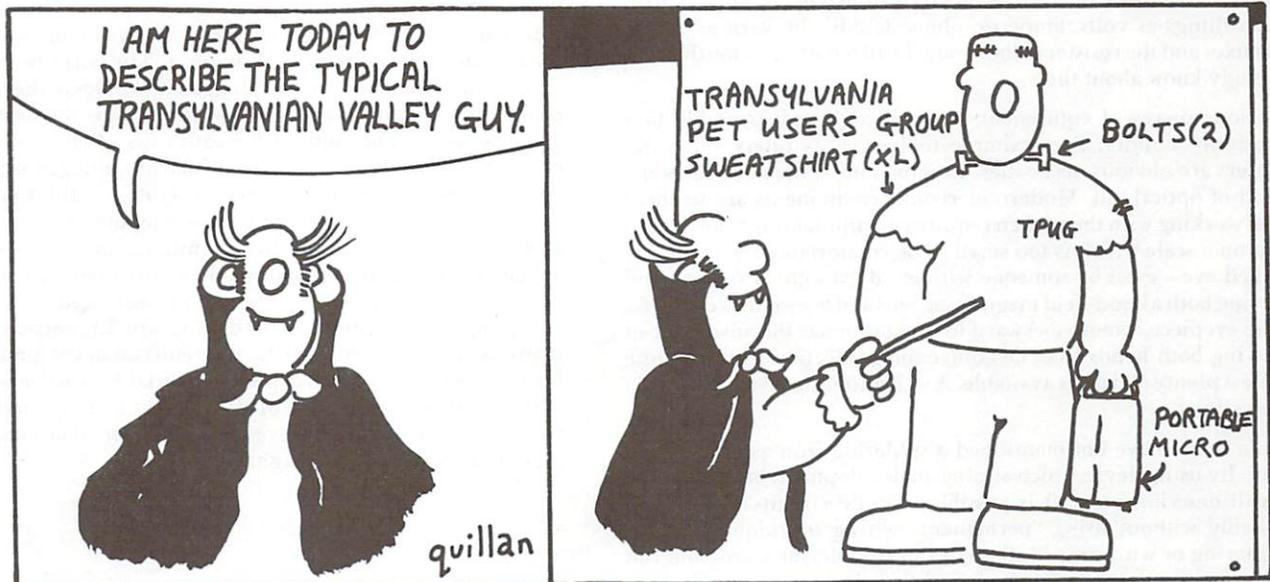
```
0 REM ***** DIRECTORY *****
10 PRINT CL$:POKE 59468,14:PRINT CHR$(14)
**** Note, no telling where you might be coming from, so let's clean up the
screen
20 POKE 50003,64:C=PEEK(50003):IF C=64 THEN 80
30 KEY=144:EN=85:DI=EN+3 : REM STOP KEY - ROM 4
40 EX = 64730 : REM EXIT - ROM 4
50 GOTO 110
60 :
80 KEY=780:EN=49:DI=EN+3 : REM STOP KEY ^64
90 EX = 64738 : REM EXIT ^64
100 :
110 POKE KEY,DI : REM DISABLE STOP KEY
130 DIM D(75):COUNT = 1
140 GOTO 1005 : REM SKIP SUBROUTINES
145 :
150 PRINT VT$(22)" * NOTE INFORMATION NOT AVAILABLE * "
160 PRINT " Please make another choice ":PRINT BEL$
170 FOR I = 1 TO 2000 : NEXT
180 PRINT VT$(22) BL$:PRINT BL$
190 ON FL GOTO 1010,20010,30010 : REM RETURN TO CURRENT MENU
200 :
to INSERT STANDARD SUBROUTINES
999 :
1000 REM ***** PROGRAM STRUCTURE *****
1001 REM *****
1005 IF VAL(FL$) THEN FL=VAL(FL$):ON FL GOTO 1010,20010,30010
**** Note line 1005 is only accessed on program entry.
If you have been here previously, you will be directed to
the last menu you accessed.
1010 GOSUB 10010 : REM MAIN MENU
1020 GOSUB 400 : REM DOUBLE-GET
1030 FL=1:FL$=STR$(FL) : REM SET MENU FLAG
1040 IF A = 0 THEN 2010 : REM EXIT
1050 IF A > 12 THEN PRINT BEL$ : GOTO 1020
1060 POKE 836 + A, COUNT : COUNT = COUNT + 1
1070 ON A GOTO 20010,30010,150,150,150,150,150,150,150,150,150,150
1100 :
1110 GOSUB 400 : FL = 2 : FL$ = STR$(FL)
1120 IF A = 0 THEN 1010 : REM PREVIOUS MENU
1130 IF A > 12 THEN PRINT BEL$ : GOTO 1110
1140 POKE 849 + A COUNT : COUNT = COUNT + 1
1150 IF A > 2 THEN 150 : REM ONLY 2 CHOICES THIS EXAMPLE
1160 GOTO 4010
1200 :
1210 GOSUB 400 : FL = 3 : FL$ = STR$(FL)
1220 IF A = 0 THEN 1010 : REM PREVIOUS MENU
1230 IF A > 8 THEN PRINT BEL$ : GOTO 1210
1240 POKE 862 + A, COUNT : COUNT = COUNT + 1
```

```

1250 IF A > THAN 2 THEN 150
1250 GOTO 6010
1260 :
2000 REM ***** EXIT *****
2001 REM *****
2010 PRINT CL$:PRINT VT$(9)
2020 PRINT LN$
2030 PRINT TAB(7)"THANK YOU FOR YOUR INTEREST"
2040 PRINT TAB(7)"          COME AGAIN          "
2050 PRINT "[CRVS]" LN$
2060 FOR I = 1 TO 74 : *** or however many pieces
of data you're collecting.
2070 : D(I) = PEEK (833 + I)
2080 NEXT I
2090 IF C < 160 THEN OPEN 2,8,2,"1:DATA FILE,A":GOTO 2110
2100 APPEND#2,"DATA FILE",D1 : REM APPEND DATA RECORDS ON DRIVE ONE
2110 FOR I = 1 TO 74
2120 : PRINT#2,D(I);CHR$(13);
2130 NEXT I
2140 PRINT#2,"*" : CLOSE 2
2150 FL$ = "" : REM NULL MENU FLAG
2160 POKE KEY,EN : REM ENABLE LOAD
2170 LOAD "BOOT",8
2190 :
4000 REM **** PROGRAM LOAD MODULES ****
4001 REM *****
4010 POKE KEY,EN : REM ENABLE LOAD
4020 PRINT "[HOME] BL$ : PRINT BL$ : PRINT "[HOME]"
4030 ON A GOTO 4110,4210
4040 :
4110 PRINT " Loading > PURPOSES < Please wait "
4120 LOAD "PURPOSES",8
4210 PRINT " Loading > OPERATION < Please wait "
4220 LOAD "OPERATIONS",8
6010 POKE KEY,EN
6020 PRINT "[HOME] BL$ : PRINT BL$ : PRINT "[HOME]"
6030 ON A GOTO 6110, 6210 ***** etc.

```

MR. DRACULA



USING THE USER PORT - Part II

David Williams
Toronto, ON

Joining the Construction Industry

In the first article of this series, I discussed how one user port on Commodore computers is programmed. In the remainder of the series, I intend to discuss various kinds of hardware which you can build and connect to the user port of your computer. I suspect that this is a topic which causes many of you some unease. It is an interesting fact about many computer users that they are perfectly comfortable in writing software for their systems but are very shy of attempting to build hardware.

Perhaps the problem is the realization that, while software can be written with virtually no financial investment (apart from the cost of the disks or tapes on which to store it), hardware inevitably costs money. Tools and equipment have to be bought, and every circuit you build consumes components which have to be purchased. However, the expense really is not great. The tools which are needed to make the circuits I will discuss would cost a total of well under a hundred dollars and should last indefinitely. The components would cost even less — maybe \$20 or \$30 — and can, if you feel it is worth the effort, be recycled from one circuit which has served its purpose to the next one you are building. Surely these figures should not daunt someone who has already spent at least several hundred dollars on a computer system!

Maybe another fear is that of doing some serious damage — causing smoke to pour out of your computer, maybe even burning down your house! Indeed it is possible, with enough perverse determination, to do these things, but disasters of this magnitude are far more likely to happen as results of accidents while cooking in the kitchen than from any while constructing electronic hardware.

Getting Equipped

Before you can start designing and building hardware, it is vital that you get to know the elementary facts of electricity and electronics. If you have taken high-school physics, you should already know such things as *Ohm's Law*. If you don't, I strongly suggest that you obtain a physics text book and learn what it has to say. The space available for this article is nowhere near sufficient for me to explain such things as volts, amperes, ohms, farads, the various metric prefixes and the resistor colour code. I will have to assume that you already know about them.

Various pieces of equipment are well nigh indispensable to a hardware builder. Some simple tools such as pliers and wirecutters are obvious necessities. Less obvious is the need for some kind of optical aid. Modern electronic components are so small that working with them often requires manipulations to be carried out on a scale which is too small to be comfortably seen with the naked eye — even by someone with good eyesight. I recommend having both a hand-held magnifying lens and a jeweller's eyepiece. The eyepiece is more awkward to use, but it has the advantage of leaving both hands free. Of course, magnification is of little use unless plenty of light is available. A well-illuminated work area is a necessity.

Note that I have not mentioned a soldering iron as an essential tool. By using devices such as plug-in development boards (which I will describe later), it is possible to build circuits which work reliably without using "permanent" wiring techniques such as soldering or wire-wrap. Although I own soldering irons, and can use them quite competently, I find that they are rarely, if ever, useful in the development of simple hardware.

One vital tool which I have not yet mentioned is a "multimeter" — an electrical meter which can be switched to measure voltages, currents and resistances, all of these over wide ranges of magnitude. It is virtually impossible to do any intelligent work with electronic hardware without being able to measure these vital electrical quantities. Of course, more complex equipment such as an oscilloscope can be used for this purpose, but a multimeter is usually adequate and is much cheaper.

Electronics stores usually stock a wide variety of multimeters. The simplest and cheapest consist of electro-mechanical meters — which have needles which move across scales — and are set up to measure different quantities by plugging connecting leads into various combinations of terminals. These meters are quite inexpensive — often less than \$20 — but tend to be awkward to use because of the need to fiddle with connecting leads. More sophisticated instruments, costing around \$50, also have electro-mechanical meters, but use multi-position rotary switches to select the various functions. They are also usually protected against accidental overloads, which is a very valuable feature. Even more elaborate meters have digital displays, with no mechanical moving parts, and are built very strongly to withstand the rigours of everyday use by servicemen. They can cost several hundred dollars. The choice of how much to spend and what type of meter to buy is yours. All I will tell you is that my own meter is one of the better electro-mechanical types.

Consumable Supplies

The tools I have already mentioned should last indefinitely. There are also things which hardware builders need which, either from wear and tear or because they become incorporated permanently into circuits, need occasional replacement.

Among these are clip-leads — those handy pieces of insulated wire with alligator clips on both ends. I recommend that you go to an electronics store and buy at least a packet of ten, with insulation in assorted colours. You may think that they will last for ever, but experience shows that the clips tend to fall off eventually. If you have a soldering iron, you can put them back on. Otherwise, just buy new leads. They're cheap.

I strongly recommend that you get some kind of development board on which to build your circuits. The ones I use are those which are sold by Radio Shack. Figure 4 is a photograph of one of them with a small circuit built upon it. The wires from the electronic components are simply plugged into holes in the top surface of the board. Beneath this surface, a set of sprung metal contacts grip the wires. The contacts beneath rows of adjacent holes are connected together, so that wires which are plugged into holes in any one row are connected together. Quite complex circuits can thus be built simply by plugging the components into the board. Modifying and debugging the circuits are obviously very easy. When a circuit has been finalized, the components can in theory be moved to a printed circuit board and soldered in place, thus releasing the development board for re-use. In practice, however, many people prefer to leave their circuits on development boards for long periods so as to keep the potential for easy modification. This also avoids the trouble of moving all the components and the need to solder them. However, it also means that new development boards have to be bought.

Even on development boards, it is sometimes necessary to connect together points which are too distant to allow the components to be plugged into the same row of holes. Pieces of insulated single-strand wire with bared ends can be used to connect different rows together. I recommend having plenty of single-strand wire with various colours of insulation. Using wires of different colours is a very useful way to avoid confusion.

Power Supplies

Many circuits which you are likely to want to connect to the user port of your computer will need more power than can be obtained from the computer itself. They will need some kind of external power supply. My own preference is to use supplies which are unlikely to cause any damage even if they are accidentally connected directly to pins on the user port. In other words, I use my choice of a power supply — especially the voltage it produces — as one of my lines of defence against causing accidental damage to my computer. Bearing in mind that the user port is designed to accept voltages between zero and +5 volts, I would therefore NOT choose to use a 24-volt transformer as a power supply! Sometimes I use a 6-volt lantern battery. Six volts is slightly higher than the recommended maximum for the user port, and I would not deliberately put this whole voltage into the computer. However, experience shows that the port is unlikely to be damaged by a brief application of six volts, and, since 5-volt batteries are not made, I have to take the risk. More often, I use one of those adapter plugs which are used for such purposes as recharging pocket calculator batteries from the A.C. supply. These are checked for safety by official regulatory bodies (the Canadian Standards Association, in Canada), and provide supplies of direct current which are very well isolated from the A.C.. However, unless they are being used to produce their maximum rated currents, they frequently produce somewhat higher voltages than those which are marked on them. I suggest that you measure the actual voltage which any of these adapters produces before using it. One which I often use is rated at 4.5 volts. It actually produces nearly six volts. I have another (which I do not use on user-port circuits) which is rated at six volts. It produces more than nine volts!

Incidentally, the last paragraph may not be fully applicable outside North America. Batteries and A.C. adapters vary from place to place around the world. However, the general principles remain the same. Overseas readers should use them to choose among whatever power supplies are available to them.

Electronic Components

Having obtained tools, development boards, power supplies and plenty of connecting wire, you still lack some vital items — the actual electronic components out of which to build your circuits.

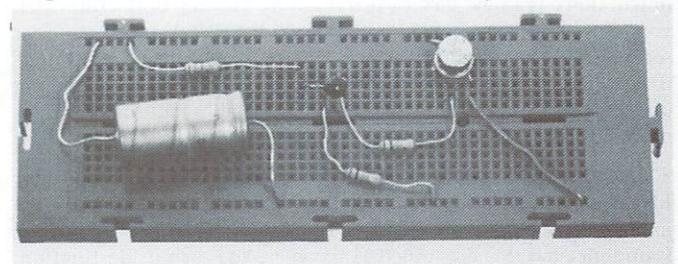
Beginners at hardware construction often make a serious mistake when buying components. They design a circuit (or find one which someone else has designed), count up exactly what parts it needs, and go to an electronic store to buy just those components. By buying items in ones and twos, they pay high unit prices for them (the prices may still be only a few cents per item, but they add up if a circuit requires tens or hundreds of components). When they get home, they almost inevitably make a minor mistake, ruining a component, and find themselves having to make another trip to the store to replace a five-cent resistor. If the circuit fails to work perfectly first time (home-designed hardware rarely does), they decide to make a few minor changes, necessitating further trips to the store. If this happens in an evening or during a weekend, a long delay may be needed before the replacement components can be bought. The tedium and frustration which this involves often causes people quickly to lose all their enthusiasm for building hardware.

I strongly recommend any novice hardware builder to invest in an inventory of components. Many electronic stores sell such things as bags of assorted resistors. Buy them! The price per resistor will be far lower than it would if you bought them all individually, and you will have all those components to play with when you want to modify or debug a circuit. Similarly, bags of mixed low-voltage electrolytic capacitors and the like are often well worth buying.

Semiconductor components are also worth obtaining in quantity. Stores such as Radio Shack sell plastic packs containing several dozen general-purpose transistors (the ubiquitous 2N2222 is a prime example) or diodes such as the 1N914. Buying these packs has several advantages over buying the components individually. The unit price is lower. Replacement components are available if you damage one or find that you have a “dud” (yes, it does happen sometimes). Very importantly — the pack almost always carries a diagram showing which wire or pin on the component goes to each internal connection point. I know many true horror stories in which hardware novices have been badly misled by ignorant salespeople who wrongly instructed them about the connections on components which they were buying individually.

Figure 4

Photo by Roberto Portolese



Of course, I am not suggesting that you should go out and buy vast quantities of expensive integrated circuit chips. If you are building a circuit which uses complex I.C.'s, you would probably be well advised to buy them individually. However, this is not an issue which a beginner is likely to have to consider. The circuits which beginners might reasonably want to build — and most of those which I make — consist of discrete components, without complex chips.

The Effects of a Component Inventory

I once worked in the electronics workshop of a TV station. The walls of the room were lined with little drawers containing a vast assortment of components. It was wonderful! Virtually any type of part which had ever been incorporated into TV-related equipment was available from our stock. Working from a circuit diagram, we could build any circuit with exactly the parts which the diagram specified, which were almost always to be found in the drawers.

It is unlikely that any hobbyist — certainly not a beginner — would have such an extensive inventory as this. With the inventory which I have at home, for example, I quite often find that I do not have all the exact components which are specified in a circuit diagram. I then have two choices — to go out and buy the components or to try using others which are similar, but not identical, to those specified. Sometimes I try the second choice and find that it doesn't work. I then have to go and buy the parts anyway. In short, having a limited inventory of components does not eliminate the need to buy parts individually when building circuits which have been designed by other people. It does, however, greatly reduce the number of parts which have to be so bought.

continued overleaf

Circuits which you design yourself are different. It is very often possible to design a circuit to use only the parts which are available, even if they are from quite a limited collection. A hardware enthusiast who designs his own circuits has much more freedom than one who does not. Even if his inventory of components is quite small, he can usually find some way of making a circuit which does what he wants. This is the main reason why almost all the circuits which I build are ones which I have designed myself, and why I would recommend all would-be hardware hobbyists to learn enough about electronics to enable them to design their own circuits. Doing so is also much more fun. It's like writing a computer

program, as opposed to merely typing-in one which someone else has written.

To Be Continued. . .

In The Next Article. . .

This has been a somewhat "bitty" installment — stuff you should know before you start building circuits. Next time, we'll look at the functions of some electronic components and start discussing how to put them together to make useful hardware. *TPUG*

ENVOY 100 MESSENGER SERVICE

David Howell
Cambridge, ON

If the cost of "reaching out and touching someone" is getting you down, there is a new service provided by Mother Bell with which you should become accustomed. The Bell ENVOY 100 Messenger service is a North American-wide network providing both electronic mail and message transfer capabilities. Best of all, it is being offered to the home user at a very affordable rate of \$5.00 per month.

The Electronic Mail function (ENVOYPOST) is my prime use for ENVOY. My parents have retired to Florida and I am running a management business for them in their absence. Some of the correspondence has taken as much as six weeks to reach its destination. Telephone calls to the sunny south are very expensive. Canada Post's Priority service costs nearly \$40.00 to send a letter that far. ENVOY seemed worth a try when I saw the exhibit at the Computer Show.

Two months later, I remain convinced that it was a good move. I can now send letters of up to two pages to Florida and usually get next day delivery if entered into the system by 8:00 pm. Only once did it take longer than two days, when sent on a Thursday, before a long weekend. The messages are sent via phone lines to a major centre post office, dumped onto a printer and physically placed in an envelope and given 'priority' mail service. In this way, even non-computer people can benefit from ENVOY. If the delivery is for a Canadian destination, letters can be up to four screen pages and there are two delivery modes; Regular and Special (same day) Delivery.

For a more immediate transfer of more confidential data, there is an auto-delivery mode much like the TELEX system. This requires that your computer be on-line in auto answer mode. There is an added charge for this service.

The purpose of ENVOY is to move steps closer to a 'paperless office'. It offers all the features found in a conventional place of work.

Mailbox: All of your private messages are stored here. You have your own security code and sole access to them.

Workspace: From your electronic desk you can create, answer, forward or modify messages.

Saved Area: You can file things here to be saved for later use or destroyed at a given time.

Bulletin Board: General interest items are posted here.

Public Area: Directories and distribution lists are stored here.

Purged Area: Round file area. Things are temporarily placed here for 24 hours in case you decide you want them back.

Whether you choose the message mode (COMPOSE), or the Electronic Mail mode (COMPOSE ENVOYPOST), the creation and editing of the messages is the same. At this point, ENVOY becomes a word processor, with features typical of any professional software. The only exception is that each 80-character line must end with a carriage return.

One can expect to pay handsomely for a service which offers so much. This is where you will likely be surprised. As I mentioned initially, for the home user, the cost is five dollars (\$5.00) per month plus the user charges. These are based on units of use called 'kilocharacters' which represents 1000 characters. The cost per kilocharacter is thirty cents. You should be aware that you are charged for EVERY character which appears on your screen.

The ENVOYPOST part of the system is very reasonable, as well. A letter to the U.S. has a flat rate of \$1.60, no matter how long, but not exceeding two screen pages. Each address for the same message adds five cents to this price, as well as your kilocharacter charges. Therefore, a one-screen-page letter to the United States would cost:

Flat Rate: \$1.60

Address : @\$0.05

Kilocharacter: @\$0.30 (send)

Kilocharacter: @\$0.30 (receive)

approx. total \$2.25 The total is approximate, since it depends on your typing skills.

REMEMBER YOU PAY FOR EVERYTHING YOU INPUT OR RECEIVE FROM THE SYSTEM. THIS INCLUDES TYPING, VIEWING, EDITING AND ALL CONTROL COMMANDS.

There are two exceptions to the character charge. When a message is sent to you from the system's co-ordinator, you get a free read and free storage for a week. For all other messages, there is a charge of \$0.005 per day for a 1kc message. If you can't afford this fifteen-cent-a-month charge, then you can always save your messages on paper!

As I mentioned before, you pay to input or receive anything from the system. When I signed on, I was offered at-home training but I couldn't see the need for bringing someone sixty miles to teach me what I could probably figure out myself. There is a price to pay for trying to be independent. ENVOY offers some on-line training documents which I requested and, as you might have guessed, had to pay for as well. My suggestion is to swallow your pride and take the help. The cost didn't break me, but I wouldn't have tried so many experiments, either, had I known I was on my own.

The only unsuccessful experiment I tried was uploading word processor (PaperClip) files into ENVOY. After so many lines of file loading, the DATAPAC re-enter sign appears, at which point nothing more is transmitted to ENVOY. Mother Bell Envoy's boys are currently looking into this.

Corporate users are certainly able to benefit from this system, as well. The cost for a company is \$20.00 per month, including the administrator, plus \$3.00 per user ID under the company name. Ideally, if all users in a large corporation were very fluent in their ENVOY use, much time and paper saving could be realized. The managers of respective companies can best judge this for themselves.

My bill for the first month was \$55.00. It breaks down like this:

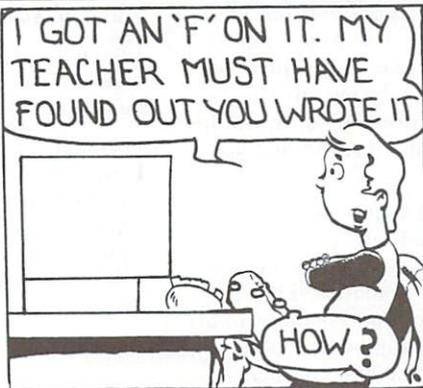
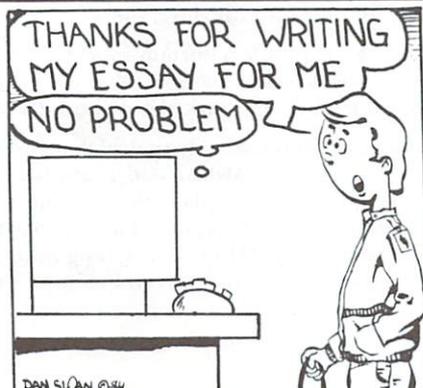
Initial one time start-up fee	\$25.00
Monthly Rate @ \$5.00 + one month in advance	\$10.00
Usage (70 kc)	(approx) \$21.00
Taxes	(approx) \$ 2.00

The figures don't add up, since the statement included seven pages of itemized and cross-referenced information, so it was hard to determine what was included where.

ENVOY lives up to its promise of being a relatively inexpensive, yet reliable messenger and mail service, as well as being easy to use. There were more than 10,000 users at the beginning of 1984, a number which is growing steadily. Future plans include extension of the messenger service to all of North America. I would hope, too, that future customers will have a choice between accepting Bell's offer of training or being given an amount of free kc's to do their own. Also, it would be useful to have (in addition to the on-line directory) a printed ENVOY directory, much like the phone book, to list all corporate and private users. In this period of expansion, however, this would not be very practical.

ENVOY will never replace "reaching out and touching someone", but there are many things it can do as well or better. It is indeed worth a long look. TPUG

GARBYTE



SPP Statistics For Personal Computers

SPP (Statistics for Personal Computers), a sophisticated statistical software package, is available for Commodore 4000, 8000, 64 series and IBM PC, and soon will be for Victor 9000.

The package is menu-driven and includes in part descriptive statistics; cross-tabulations; correlation; linear, cubic and quadratic regression; multiple regression; one-way and two way ANOVA (unbalanced if desired); as well as non-parametric statistics.

Data can be displayed in the form of histograms, scatter plots, normal probability plots, box diagrams and tables. Excellent data-editing, transformation, selection and manipulation facilities. Up to 100 variables per case, missing values supported throughout. Fast: compiled BASIC.

SPP was authored by Mr. Patrick Royston, of London, England. (Masters Degree in Statistics, and Master in Information Science).

SPP for PET and 8000 series (100 variables, # of cases limited to disk space)	\$500.00
SPP for 64 (same limits as for PET)	\$350.00
SPP JR (for 64 only) (20 variables, 100 cases, but otherwise same as SPP for 64)	\$100.00
Manual only	\$20.00
SPP JR to SPP 64 upgrade	\$230.00

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3. Special prices for multiple copies to educational institutions
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USER GROUP PRESENTATIONS

Jim Butterfield
Toronto, ON

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Most observers classify computer users into three generation groups: beginners, intermediates and experts. It's a little like the school grading system. When you have successfully mastered grade 1, you may move on to grade 2, and so on.

There's some justification for this scheme. Obviously, a user must learn fundamentals before proceeding to more complex areas. If you don't know how to turn the machine on, you can't type in a program. If you can't type in a program, you can't run it. The first stages seem quite clear.

A number of questions arise about such a scheme. Should the various groups be segregated, so that a beginner may not participate in "expert" subjects, and vice-versa? Should clubs and user groups promote themselves from beginner clubs to advanced clubs as members gain experience? And are the lines of demarcation really that clear?

I can recall being at a TPUG meeting where presentations were under way. Some presentations are exciting and interesting, whereas others are . . . well, not quite so exciting and interesting. At the time, a younger member was outlining how to scratch files. Until just before that time, the poor fellow had to buy a new disk every time he filled one up; he didn't know how to remove the files he didn't need any more. To him, the discovery of the fact that files could be scratched was a marvellous and novel thing. And perhaps that was true for a few of the attendees.

I was standing near a clever young man who had written a good number of programs. "I won't come to any more meetings," he said. "I know all this stuff and these presentations do nothing for me."

I didn't know what to reply. Certainly, if he hoped that every meeting would be on an advanced technical plane, he would be doomed to disappointment. I wondered: is this the only reason that members attend meetings? To obtain technical advancement? Surely there must be other reasons. What about social aspects? How about swapping notes on the performance of programs and peripherals? And surely there is pleasure in showing others how to do something new, even if the information flows only one way.

It seems to me that there will be some members who will never be satisfied with a program. They want to be entertained and educated in the same way they would expect if they went to a movie, theatre or trade school. The fact is that clubs are not made up of professional entertainers; they use volunteer help and must do the best they can. The same is true of software distributed by clubs: most of it is not professional work but is simply contributed programs written by members.

There is a need to police presentations (and software), of course. I'm all in favour of the beginner's "show-and-tell" presentation. There may be information of interest to others, it may entertain and it will be good for the member to gain presentation skills. But there's a limit. A member who has used the sound features of a computer to make the sound of a duck quacking has a good two-minute presentation to make which will inform and entertain. A

half-hour speech on the same subject would be tiresome to all . . . the presenter would be a dead duck.



. . . the presenter would be a dead duck . . .

Magazines, newsletters and clubs often make a simple mistake. They think that everyone has been around from the beginning and remembers everything that has happened. Some of us start late — magazines have new readers, clubs have new members — and don't know things that may have gone before. Some of us forget. The idea that we never need to repeat a simple concept but can go on to the next one in sequence can be deadly. One of the great killer phrases in articles and speeches is: "As you know . . ."

That's part of the fallacy of "advanced groups". There's always something simple and apparently obvious that many of the group members don't know. There's the programmer who writes nice graphic animations but who has never discovered that holding down SHIFT and then pressing RETURN takes you to the next line without "actioning" the previous line on the screen. There's the student who joins an advance machine language course who knows how to write a binary multiplication routine but cannot clear the computer's screen.

I don't mind users grouping together to study advanced topics — I'm all in favour of it — but I hope that no group gets the idea that "dumb people can't join in". There are beginners who would like to listen in just to see if they can catch any of it, or to learn a few good buzzwords with which to impress their friends. Some may want to go to ask advice; for example, what would be a good study route to catch up with the more advanced users?

I have this vision of an expert-level group in which most of the members might be scared to ask a question. After all, it might be a *dumb* question and then they'd be kicked out of the group!

Personally, I find that others tell me a great deal that I don't know. I gasp with astonishment when Mike Todd plugs some custom hardware into a 4040 disk and displays the contents of a disk track — every bit mapped out for inspection. I'm amazed when I get a phone call from Tulsa asking: "How come typing a line number of 350800 causes the computer to crash?" And I'm impressed when

random POKEing by an English schoolboy turns up the fact that (on the VIC 20 and Commodore 64) POKE 22,35 causes programs to list without line numbers.

I support the idea of special interest groups – some of which have “level” implications. But any club should still provide a forum for intermingling of users at all levels. Beginners can ask questions. Experts can show off their knowledge. People with missions can go after the specific information they need.

When you can do it, it's best to appeal to a cross-section of levels. Even if you're talking about an elementary concept, you can often dress it up within an interesting program. Sometimes you can demonstrate the concept in an amusing way. Remember – computers are fun! If you have a chance to make a presentation, try to keep the idea of fun in there somewhere. *TPUG*

Forecasting with the 8032 - Part V

John Shepherd
Islington, ON

The TPUG February PET disk, (P)T6, contains four programs which can be used to project historical data into the future. The process is called time series analysis. The first four parts in this series of articles (*TPUG Magazine*, May, June, July and October) defined some of the forecasting terminology and concepts, and showed how to use the first three of these programs.

Exponential Smoothing

The fourth and last program on the disk, “forst exp.8”, uses a forecasting technique called exponential smoothing. In our last article we saw how a simple-moving-average of N prior periods could be used to generate a forecast. In such a forecast each of the N prior “demand items” carries an equal weight in the calculation of the moving average or the forecast. An exponentially smoothed forecast is similar to a moving average forecast except that a “smoothing constant” is used to give the heaviest weight to the most recent data, and progressively less weight to older data. Such a procedure often produces improved forecasts that are more responsive to changes in the data pattern.

This smoothing constant is called alpha (we will use the symbol “a” in our equations). Theoretically it can vary from zero to one.

Simple Exponential Smoothing

For simple-exponential-smoothing, the following formula is used to calculate the forecast:

$$F = SC = a*YC + (1-a)*SP$$

where,

F is the forecast for whatever lead time is chosen
SC is the “smoothed value” for the current period
a is the smoothing constant
YC is the demand for the current period
SP is the “smoothed value” for the prior period

It can be shown that the smoothed value SC is a weighted average of all prior historical data. The weights decline exponentially with time, and this is why the procedure is called exponential smoothing.

Double Exponential Smoothing

We saw in the last article in this series that simple-moving-averages always lag a trend in the data. In a similar manner, forecasts generated from simple-exponential-smoothing will also lag a trend. The lower the value for alpha, the greater will be the lag, because of a heavier weighting for the older data. For this reason, “double-exponential-smoothing” is always used where the data shows a pronounced trend.

For double-exponential-smoothing, the following formula is used to calculate the forecast that is corrected for a linear trend:

$$F = SC*(2+M) - DC*(1+M)$$

where,

F = the forecast
SC = a*YC + (1-a)*SP and is the current period simple smoothed value
M = a*LT/(1-a)
DC = a*SC + (1-a)*DP and is the current period double smoothed value
a = alpha, the smoothing constant
YC = the demand for the current period
SP = the simple smoothed value for the prior period
DP = the double smoothed value for the prior period

Triple Exponential Smoothing:

Triple exponential smoothing can be used if the data seems to have a non-linear or quadratic trend. The formulas are somewhat more complex, and are not reproduced here, although the model is available as an option in the program.

Choice of Smoothing Constant

As alpha increases, the most recent data carries more weight, but the system responds more readily to random variations in demand. If alpha is made equal to one, the forecast is identical to the naive model (Part IV, *TPUG Magazine* October). As alpha is decreased, the older data carries more weight, and the forecast becomes less responsive to sudden “step” changes in the current data.

Generally, alpha for simple exponential smoothing should be between 0.01 and 0.30. If the results of a set of trials indicate an optimum value greater than 0.30, then some other more appropriate forecasting model should be considered. Alpha for double exponential smoothing should be between .01 and .16 and for triple exponential smoothing should be between .01 and .11.

Some exponential smoothing models automatically increase the alpha smoothing constant if the relative amount of forecast error experienced also increases. This makes the model more sensitive to step changes in the data. The alpha is later automatically decreased as the forecast error is subsequently reduced. An “error tracking signal” is generated each time the forecast is calculated, and this signal is itself exponentially smoothed using a smoothing constant called “gamma”. This procedure is called “adaptive smoothing”.

Program “forst exp.8”

continued overleaf

Load "forest exp.8" and run it. As we saw for the moving average program, the name of the data file is asked for first. Load "forst data.8", our record of five years' monthly beer sales. The program next asks for the forecast lead time. Let's say 2 months.

Next choose one of four forecasting models; simple, double or triple exponential smoothing, or the naive model. For our data, let's try the double exponential smoothing alternative, and elect to adjust for seasonality, because we know that the data shows a strong cyclical pattern.

For each of the three exponential models we have three options:

(1) Determine the optimum alpha.

In this case the program asks for a range of alpha to test for and the increment to use over this range. For each increment of alpha the program calculates the M.S.E. and M.A.D. of forecast error for the prior periods. A forecast with a standard deviation of expected forecast error is calculated, using the alpha with the lowest M.S.E.

(2) Use a single fixed alpha, as input by the user.

The program then calculates the forecast and standard deviation of expected forecast error for the single alpha chosen.

(3) Use adaptive smoothing.

The program asks for a tracking error smoothing constant (gamma) which is usually set at about 0.1. The forecast is then calculated, and shows the standard deviation of expected forecast error and the most recent value of alpha.

Let's choose the first option — determine the optimum alpha. Set the range of alphas at 0.05 to 0.20, in increments of 0.01. For each of these values of alpha, the program calculates the M.S.E. of forecast error and shows that this is at a minimum if alpha is 0.13. At this alpha the forecast for period 62 is 21.7 units (thousands of cases of beer), and the standard deviation of forecast error is 1.6 units. These values are close to those arrived at earlier in this series of articles, using other models. While the data is still in memory, try the other exponential models, and compare forecast errors and the forecasts generated.

In the final article in this series we'll establish some general forecasting principles to help in using these programs advantageously. We'll also compare how these various models are able to produce short-term forecasts using our data file of monthly beer sales.
TPUG

MISSING KEY

Dave Powell

Mississauga, ON

The **Missing Key** product is a cable, a switch and a program. The cable becomes a part of your serial bus. Hitting the switch activates the operating system power-on reset. Running the program restores your BASIC program. But so does turning the power off and reloading your program: what's the big deal? Well, this product does the job when your program is locked out and (silly you) there's no backup because you were going to save "after just one more test". This sounds pretty useful to me.

According to the instructions, the cable "replaces" the serial cable which runs between the C-64 and the first peripheral on the bus — usually a disk drive. In fact, the cable is 3" between plugs, so "replacing" is rarely possible. I don't know if it comes in longer versions, but I adapted by attaching the **Missing Key** cable in series with my existing cable: that is, plug the **Missing Key** in the C-64 serial port, then plug the old cable into the free end of the **Missing Key**.

The switch is a sturdy little job on the end of about 2' of wire, which runs into the C-64 end of the cable. This allows a fair amount of discretion in placing the switch. Although I leave mine unattached, the switch comes with a peel-and-stick base, which separates, using Velcro. This means that the switch is normally firmly attached, but can be removed easily when one is re-configuring the system. Good idea.

A word to the wise: the switch has a light touch, and is activated by a downward pressure. Don't put it where you put your manuals down, or where your cats Do Not Fear To Tread. For some reason, it can't tell the difference between the times you want to use it and those that you don't!

How does the product work? As advertised. It restores BASIC programs which were locked out — Note the "BASIC": with other environments, it will get you back to home base (the reset state you see when you power on) and then you have to reload. This is useful when one wants to switch between commercial products, which often leave such a mess in low memory that, previously, one had to switch off and on before a different product would load.

One unfortunate by-product of the power-on reset is that programming aids and wedges might be lost and will have to be reloaded (*after* running the reset program).

Technical Stuff.

On the C-64 there are two places that the RESET line sees the outside world. In the user I/O port it's finger 3, and in the serial bus it's pin 6. Now if you've got a 1525 printer, there's no access to the bus, 'cos it's full of DIN plugs. The user port isn't bad unless one has a modem or whatever plugged in. If you can get at one of these places, momentarily connecting the RESET line to ground (pin 2 in the bus, finger 1 in the I/O port) activates the reset. I had a paperclip bent to the right spacing for the user port, but it's not too convenient, and I always worried about what would happen if I touched the wrong pair. The **Missing Key** uses the Serial bus reset, and a micro-switch in place of a paperclip. Much safer! Even my wife will use the switch, and I no longer get angry when I find that she's absent-mindedly bending my precision-formed paperclip into a pretzel.

The program supplied is a short (\$E0) machine language program which loads at \$C000 (49152). I imagine it snoops around BASIC program memory, relinks the BASIC pointers between statements, resets the pointer to the beginning of variables, and maybe a few others, and exits. This all works fine, as long as one doesn't get too fancy. For instance, apart from loading and SYSing to the reset program, don't do anything else. While I was experimenting one time I got a disk directory linked to my test 3 line program!

A backup program is provided on the disk. Judging from the packaging, the product might be available on datasette as well. The hardware will work on a VIC 20, by the look of it, but unless there's a VIC 20 version available, the program would most likely need changes.

This is an excellent product. It is designed with a specific function in mind, and performs that function admirably. *TPUG*

Missing Key by Soft People Inc. 2042 Marshall Ave., St Paul, MN 55104 612 644-1551. Disk or tape for the C-64. \$29.95 U.S.

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SUPERPET SOFTWARE

Brad Bjorndahl
Bramalea, ON

It is about time to consider software that is available for the SuperPET. There are three general categories: PET programs such as those available from the TPUG library, programs written in many high-level languages (such as Fortran) and those written specifically for the SuperPET. This is a large volume of material and it is generally good quality, often well-documented and fairly inexpensive.

All SuperPETs have a switch which configures the machine to run exactly like an 8032. All programs which run on an 8032 will run on a SuperPET. In fact, bigger programs can be run since the extra 64K of bank switched memory is available in 8032 mode.

Many programs written in Fortran, BASIC, Pascal and COBOL can be modified to run on the SuperPET. The main constraints are program size and I/O procedures. For example, I have executed a Fortran subroutine on the SuperPET which was originally written for a CRAY. This particular subroutine applies a Fourier transform to an array. It has no I/O. Normally this transform produces complex numbers which microFortran does not support. Fortunately, this subroutine handled complex numbers as ordered pairs of real numbers. The few changes that were necessary were easily made with the help of the Fortran debugger.

As usual, APL is different. Waterloo microAPL apparently lacks a number of features which are available with more powerful micro- and mainframe implementations. This is not to say that microAPL is restrictive, only that conversion may not be straightforward.

The third category of programs are those which take advantage of particular features of the SuperPET. A favorite of assembly language programmers is to load utilities into one of the 16 4K banks of memory. Bank 15 is used only by APL and COBOL, so it is often selected for this purpose. Another example is the file management which encourages programmers to enquire whether output is to Printer, IEEE4, Terminal or Disk. (The difference between the first two is that output to Printer is converted from "PETSCII" to ASCII).

The TPUG library has a good selection of all three categories. The following is a (biased) selection of programs from the set of SuperPET disks: i.e. the (S) series.

There are many APL workspaces on the disks. T1, T3, T5 and T7 are almost full of APL examples, utilities and statistical procedures. Especially impressive are the microAPL implementations of the extensive EDA (Exploratory Data Analysis) and Anscombe statistical packages. Additional data management routines are provided in Fortran. For example, on T2 can be found programs for smoothing data, fitting polynomials to data and numerical integration. On TC there are such things as reciprocal averaging, calculation of covariation matrices and nearest neighbour tests of randomness.

Pascal and COBOL are barely represented. There are a few small Pascal programs on T4 which illustrate the use of pointers for sorting and recursion for calculating factorials. On the same disk are several programs in Waterloo microBASIC for listing files, sorting numbers and finding a knight's tour on a chess board. These programs are highly structured by using defined functions and the "CALL" statement with procedures.

There are several BASIC 4.0 programs, as well. T6 has a program which illustrates how the bank-switched memory can be used with

a few appropriate POKES. The extra 64K can only be used in 4K increments, since only one bank can be active at a time. For the same reason, though, it is entirely possible to have — for example — bank 0 and bank 1 contain BASIC statements with identical line numbers. Also on T6 are two programs which read sequential files and direct them to a printer while optionally converting "PETSCII" to (or from) ASCII. One of them has been compiled with PETSPEED. On T8 is a program which displays disk contents on the screen by track and sector. It also allows blocks to be edited. It is nicely formatted, and a compiled version is included.

Half the disks contain assembler programs. There are a number of utilities: disassembly (on T2, improved on T8), 2-column directory listings (T4), adding a separate keyboard (TB), saving text after an inadvertent exit from the editor (TD), dumping to printers (TB) and modem support (TD). There are a few machine language games (T4 and T8). All source code is included, except for the games. Disks T8, T9 and TA contain disassembled source for the Waterloo operating system. Many branch addresses and subroutines have been identified. Similarly, source code for the Waterloo microEditor can be found on TC, along with some useful macros.

There are other sources of SuperPET software. The International SuperPET Users Group (ISPUG) is "dedicated to the mutual assistance by and between SuperPET users and owners". Membership in ISPUG buys a one-year subscription to their *Gazette* and the right to buy and copy disk releases, much like TPUG. The *Gazette* is packed with articles, notes, comments and updates on the SuperPET. It is difficult not to compare it to those enormous magazines that 'sprang up' for the IBM PC. The *Gazette* consists of about thirty 8" X 11" pages, contains as much useful nuts-and-bolts information as any PC journal, and is more entertaining. ISPUG has put together a Starter-Pak for those new to the SuperPET. This consists of a 40-page manual and a disk full of examples of language usage (e.g. methods of file handling). Also by ISPUG is the Utility disk (two 4040 disks); it is daunting, even though there is some overlap with the TPUG library. The file describing the contents is 114 blocks alone. There are two monitor programs; one (SPMON) is particularly good for tracing program flow and the other (XMON) extends the ROM monitor and allows customized commands to be built in. The utility disk also contains an extremely fast version of the editor. It was upgraded by two ISPUG members. There is a nice bar graph program in structured BASIC. There are utilities for sorting, listing directories, setting date and time, changing disk addresses, etc. Membership as of July 1984 costs \$15.00 (U.S.) from Canada and U.S. and \$25.00 (U.S.) elsewhere. Write to Paul V. Skipski, Secretary, ISPUG, PO Box 411, Hatteras, N.C. 27943 USA. Cheques are payable to ISPUG.

The operating system in the SuperPET ROM was produced by Waterloo for the 6809 microprocessor. There is another O.S., called OS/9, which was also written for the 6809. TPUG and several members are modifying the source of OS/9 to run on the SuperPET. It is difficult to exaggerate the impact of a new O.S. SuperPET owners will essentially have a new machine and a new universe of software will open up. Compilers, new languages, new peripherals, multi-tasking and improved file handling will all become available. There is a hardware modification and the cost will not be negligible, but for personal or business use the change will be extraordinary. OS/9 will remove the spectre of obsolescence for a long time. Future articles will have a lot more to say about OS/9. TPUG

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MACHINE LANGUAGE FOR THE COMMODORE 64 AND OTHER COMMODORE COMPUTERS: A REVIEW

By Jim Butterfield

Publisher: Brady Communications Co., Inc., A Prentice-Hall Publishing Co., BOWIE, MD 20715, U. S. A.

Price: \$12.95 US (\$17.95 Canadian)

Level: Beginner, machine language programming

After five years of development, Jim Butterfield has taken his machine language course for beginners and committed it to paper. Thousands of people (including this reviewer) have taken this two-day intensive program. Lately there has been a swarm of books, some with software, to introduce the topic of machine language to the waiting multitudes. All those which I have seen have serious shortcomings, most because they treat the subject in isolation. The computer you use is very important to the learning of machine language. Jim has indeed married the real world to the theory he's trying to teach.

The book is divided into eight chapters, which account for 146 pages of the book's total of 326 pages. The remainder is a massive reference section, which will surely be of value to even the experienced veteran of ML. Its contents will be described later.

Chapter 1 (First Concepts) discusses the inner workings of the computer and the microprocessor. Binary and hexadecimal notation is covered. As the first sample program is introduced, the practical considerations of where to put it and how to enter it are dealt with. The machine language monitor (MLM) is described in sufficient detail to get the program in and execute it. As early as this, Jim has given an example, the tools to do the job and described the environment of the computer to make it work. This three-part theme is the foundation for the entire book and is scrupulously followed in subsequent chapters. There are examples to try and projects in every chapter, as Jim insists that "programming students learn by doing."

Chapter 2 (Controlling Output) introduces the built-in ROM subroutines that you can employ in your programs. We've now graduated to the assembly/disassembly functions of the extended MLM. Since we have done "hand assembly", we recognize the function that this feature does for us — another theme that it's important to keep in touch with what's happening *inside* the machine. How to connect your ML to BASIC

is introduced, perhaps removing the mystique that a SYS instruction is only for the priesthood.

Chapter 3 (Flags, Logic, and Input) describes the flags in the status register which control the conditional branching (IF/THEN of ML). Because the names of these flags are somewhat confusing, Jim assigns them new names — the negative flag becomes the "high-bit" flag. He describes logical "and", "or" and "exclusive-or" for bit manipulation. To input values to a ML program, we meet the GETIN subroutine of the ROM, which we can use and also the STOP key test routine (rather handy!).

Chapter 4 (Numbers, Arithmetic and Subroutines) is the best description of signed arithmetic and performing arithmetic on multi-byte numbers that I have seen. Once again, the confusion is stripped away and replaced by a simple explanation of the concept. Preparing ML code in modules, or subroutines, is recommended for larger jobs.

Chapter 5 (Address Modes) is where some of the instructions introduced finally get classified. Many books start out with this subject, and flounder because the reader has no foundation with which to understand them. We are half way through the book before we learn the categories. The text is finely drawn in describing the modes clearly. My major criticism of the book comes here — the illustrations are not as helpful as they should be. Particular examples, with actual register contents, are given in the text, but the illustrations do not show any values. The indexed and indirect modes are hard enough to picture — please give us the *numbers*, as well as the arrows in the diagrams!

Chapter 6 (Linking BASIC and ML) is the subject no one else touches. Your ML must run on a real-world computer. It's essential that you know its architecture before you can be sure that the ML will co-exist. Comprehensive detail on how BASIC operates and the implications of storing your ML program in memory are discussed. Jim suggests that many programmers have given up on ML because they unwittingly put a perfect program in the wrong spot. The topic of passing values back and forth between BASIC and ML is dealt with lightly.

Chapter 7 (Stack, USR, Interrupt and Wedge) brings us to some advanced ideas. We can link into the operating system via interrupts and by using a "Wedge" technique. The CHRGET routine is explained: the interpreter comes here to fetch the next character from BASIC. By intercepting this, we can introduce our own commands and

add them to the interpreter. On the VIC 20 and Commodore 64, this job has been simplified. As you can guess, there's a sample program to do that job.

Chapter 8 (Timing, Input Output) looks briefly at how to calculate the actual machine time involved in a ML program. The major part of the chapter is a very important guide to three more ROM routines. Performing input and output from devices is a very common requirement. With amazing clarity, Jim demonstrates just how simple it is to switch input and output from one device to another. Another dragon gets slain without a whimper. A brief summary of the instruction set follows. Jim wraps it up with a description of what a symbolic assembler can do. Because this would have insulated you from the details, he doesn't recommend you use one until you have reached this stage.

The Appendices are huge, as mentioned above. It might not be exaggerating to suggest that this is the only reference you need to keep within reach of your machine. We have the MOS Technology reference to the 6502 instruction set and some general discussion of the Commodore computer architecture (PET, CBM, VIC 20, C-64, Plus 4 and B Series). Memory maps for all machines give the "scratchpad" memory allocations and purpose of each location. Diagrams of the interface chips are included. B Series and Plus 4 (preliminary) are there! The BASIC and kernal ROMs of the Commodore 64 are broken down to identify what goes on where (e.g. \$A9A5 — Perform LET). A superchart of all 256 possible characters with decimal, hex, ASCII and screen representations is there. The extended MLM Supermon program is given for the Commodore 64. The manufacturer's reference information is provided for all the interface chips used in Commodore computers. And finally, since a disk is to be available as a companion, there is a brief description of the programs there, and how to use them.

There are projects in there that tweak your curiosity. Perhaps you know all the address modes and have written a few routines in ML. The chapters on BASIC organization, where to put your programs and how to use the Kernal ROM routines are classics.

As you can tell, I rather liked the book. As of this writing, the major problem may be getting a copy. Prentice-Hall in Canada did not bring many books into the country. I have not seen many ads for the book in computer magazines yet. I would urge you to harass your book dealer or computer store to get a good supply. This one deserves to be a top-seller. TPUG

—David Hook

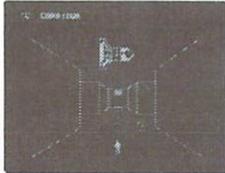
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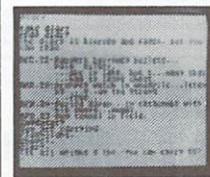
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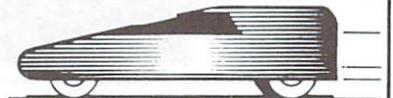


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(V)TB - SEPTEMBER 84

(1 disk/tape)

LIST-ME(V)TB.L Contains information about the programs on (V)TB.
PIGS.V Try to move all the pigs from one row to another. Figure out the rules as you play the game.
CRAZY 8/BOOT8K.V Tape boot program for Crazy 8's.
CRAZY 8'S 8K.V Game of Crazy 8's for the VIC. Play against the computer or with others. Requires an extra 8K of memory.
CRAZY/DISK BOOT Disk boot program for the game of Crazy 8's.
BATTLESHIP.DOC Short program explaining the following Battleship programs.
B-SHIP/TAPE.V Tape boot program for the game.
B/SHIP8K.V Play the game of Battleships against the computer.
B-SHIP/DISK.V Disk boot for the program above.
BAY STREET8K.V Excellent simulation of the stock market.
RIKI BOOT/TAPE.V Tape boot for the following game.
RIKI TIKI.V Capture the snakes on the game grid.
RIKI BOOT/DISK.V Disk boot for the above program.
VIC NOS LOAD.V Program which allows you to load NOS format programs.
VIC NOS SAVE.V Allows the saving of NOS Basic-code programs. **Information on the above 2 programs may be found in the July issue of TPUG Magazine.**
SYNONYM.V Practice identifying synonyms.
ADDITION.V Practice addition problems.
TRAIN.V Try to solve time/speed/distance problems.
TIMES TABLES.V Practice times tables on the VIC.
DECODE.V Morse Code practice.
CHEMIST.V Try to dilute an unstable solution with correct ratio.
SUBTRACT.V Practice in solving subtraction problems.
MANITOU.V Play an algebra game with an Indian God.
DR. ROM8K.V Excellent psychiatric program which will advise on your problems.
3D TIC-8K.V Two-player game of 3-dimensional Tic-Tac-Toe.
POKER8K.V Try to beat the VIC in a game of Poker with graphics.
HAUNTEDHOUSE 3K.V Pick up the cats and avoid the spirits – joystick necessary.

CASTLE DUNGEON.V Wander through the castle and defuse the bombs in the 5-minute time limit – HiRes graphics.
D Main Castle program – loaded by above.
FRANTIC FISHER.V Boot program for following:
FRANTIC2.V Club the fish, and use your umbrella to avoid falling objects – graphics.
TIC TAC TOE.V Game of Tic Tac Toe with two players – use joystick.

(C)S4 - MUSIC 4

(1 disk/tape)

LIST-ME(P)TC.L Contains information about the programs on (P)TC.
–KRAUSE IEEE– Programs from E. Krause – Saskatoon, Saskatchewan.
D-MENU D-XXXX Programs to operate Nicolet scope on IEEE bus.
D-IEEE These programs were demonstrated at the 1984 TPUG Conference.
D-FCP H-XXXX Help files for Nicolet scope programs
D-DISK H-MENU-OSC
H-MENU-OSC H-MENU-PROG
H-IEEE H-IEEE-FR
H-IEEE-FR H-IEEE-TR
H-IEEE-TR H-IEEE-CT
H-IEEE-CT H-IEEE-DK
H-IEEE-DK H-FCP
H-FCP DIR
DIR File for D-XXXX programs.
–KRAUSE MISC– Other programs from A. E. Krause
SERIAL POLL IEEE serial poll program.
3-MODE HTR CNTLR Three mode (P I D) controller simulation program for feedback controller design – requires MTU graphics support for graphics display.
AIM16 V1.2 Data acquisition program for Connecticut Microcomputer Co. model AIM16 A/D.
FIND TYPE Identify computer type – VIC, C-64, or PET.
– 8050 ONLY – Program from B. O'Dell.
MAINT-B 8050 utility – handy program to do directory work and labels etc. for your disks.

(S)TI - OCTOBER 84

MAINT-B-INSTR For "MAINT-B".
 MAINT-B-CHOP For "MAINT-B".
 DISK-DATA For "MAINT-B".
 — OTHER PROG —
 TINY FORTH.8 Language — version of FORTH for the
 8032 from John Bos.
 R65C02 ASSM1 Assembler — for CMOS 6502 (Rockwell)
 — Basic version.
 R65C02 ASSM1.GT Assembler — for CMOS 6502 — compiled
 on PETSPEED.

TPUG Toronto — SuperPET Distribution Disk for October 1984

"describe.oct/84" SEQ This describe file.

*The major contribution on this months disk is from Rob Lockwood. This contribution is tutorial in nature, providing the APL user with an array of useful idioms. These hints and ideas on the use of the various APL functions will provide an insight to the power and flexibility of the language.

69 "idioms:aws" PRG This is the controlling workspace for loading the screen images of the tutorial material.
 4 "des1:at" SEQ There are 77 screens of information numbered sequentially. Loading idioms:aws will lead you through them in a predetermined order.
 to
 3 "des77:at" SEQ
 21 "spmon:men" PRG This is an extended 6809 SuperPET monitor by Terry Peterson, made available to the SuperPET user community of TPUG by ISPUG. This monitor is loaded at \$6000 from the main menu. This is an excellent debugging tool from the author of HESMON. All dos commands may be entered from from within the program; programs to be analyzed can be loaded directly by spmon.
 21 "spmonlo:men" PRG The same program as SPMON, but linked to load at \$2000, so that programs which load in high memory can be analyzed.
 42 "spmon.doc0:e" SEQ Brief instructions on the capabilities of 'spmon'.

This disk assembled and described by Bill Dufield for the TPUG SuperPet Group. TPUG

(P)TC - OCTOBER 84

(disk only)

LIST-ME(C)S4.L Contains information about the programs and files on (C)S4. (Some very good music created by the program Master Composer) To play a certain piece, all you have to do is LOAD and RUN the BOOT that goes with that song.

BEAT IT BOOT.C
 BEAT IT
 BILLIE JEAN BOOT
 BILLIE JEAN
 CBM THEME BOOT
 CBM THEME
 DOWNTOWN BOOT
 DOWNTOWN
 E.T. THEME BOOT Just in case you ever come across
 E.T. THEME other music of this type but
 EVERGREEN BOOT don't have a BOOT program for it,
 EVERGREEN all you have to do is LOAD the
 GHOST BOOT program ,8,1 then enter NEW,
 GHOSTBUSTERS press RETURN and enter SYS 30120
 GLORIA BOOT and press RETURN.
 GLORIA
 GREAT LORD BOOT
 GREAT LORD
 I WILL BOOT
 I WILL
 MAGNUM BOOT
 MAGNUM THEME
 RAIN DROPS BOOT
 RAIN DROPS
 RHAPSODY BOOT
 RHAP1
 RHAP2
 RHAP3
 ROCKY 3 BOOT
 ROCKY 3 THEME
 STAIRWAY BOOT
 STAIRWAY
 TIL END BOOT
 TIL END TIME
 TIME IN A BOOT
 TIME IN A JUG
 UPTOWN BOOT
 UPTOWN GIRL
 JUKEBOX.C This program allow you to pick songs from
 the menu. It should come in handy.



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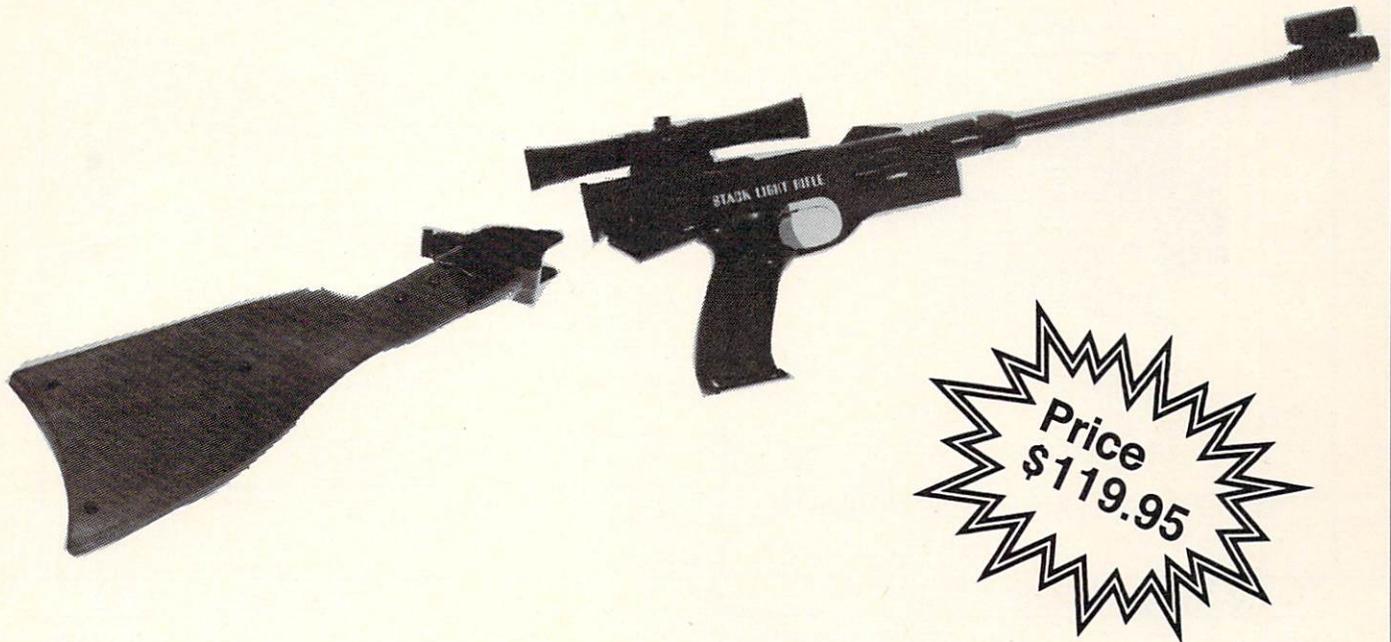
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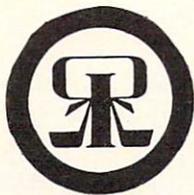
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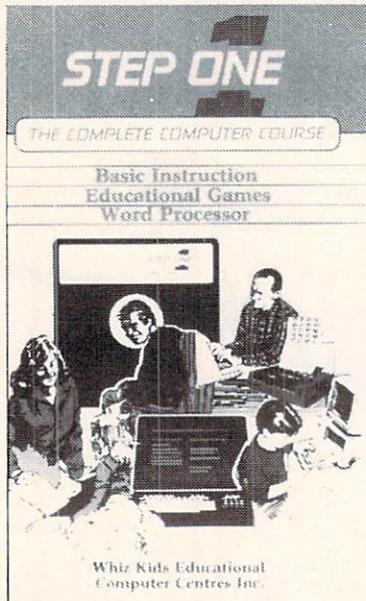
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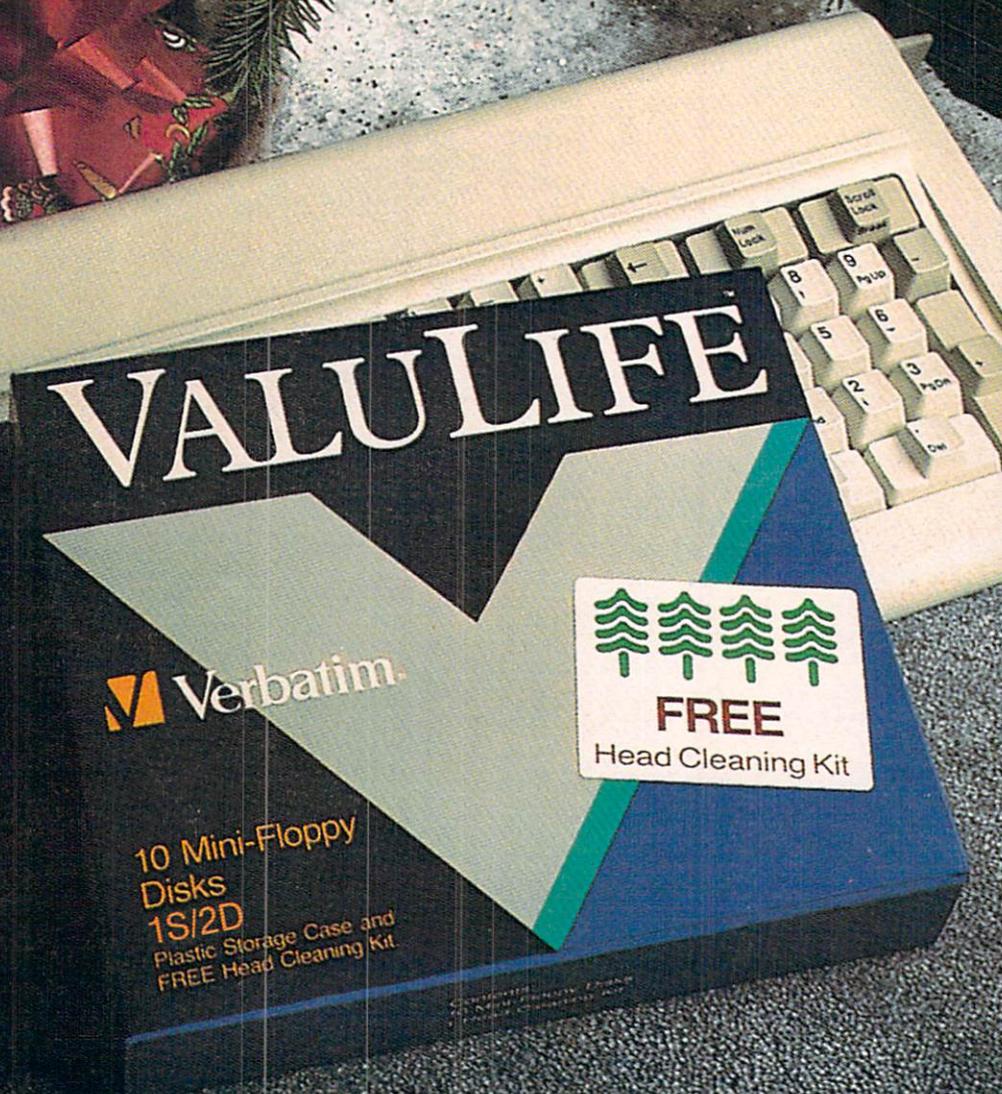
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